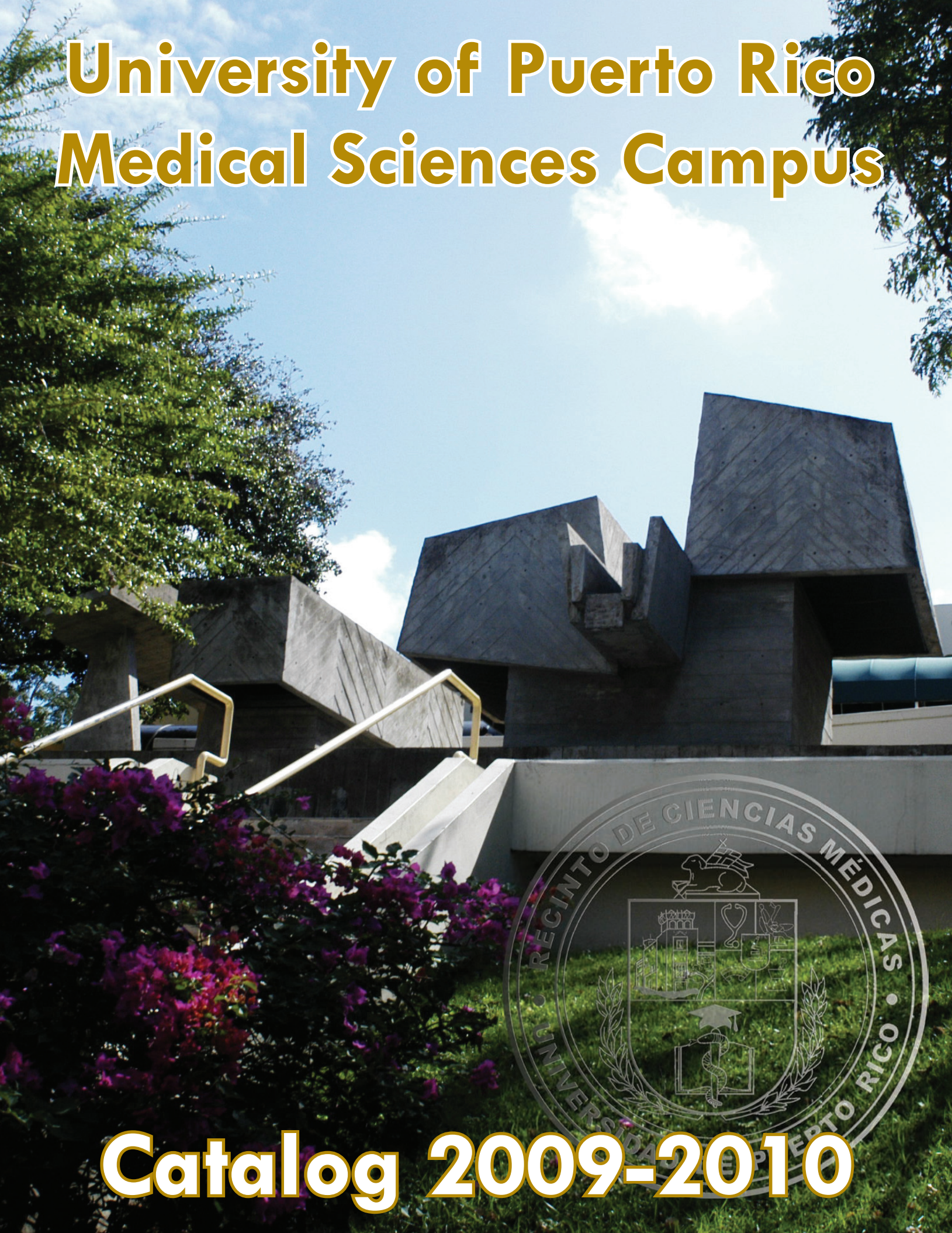
University of Puerto Rico
Medical Sciences Campus



Catalog 2009-2010

Catalog 2009-2010

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Cover
Designed by architect Efraín Pérez-Chanis, this aesthetically pleasing structure was part of the building's original cooling system.

CONTENTS

i MESSAGE FROM THE CHANCELLOR AND DEAN FOR ACADEMIC AFFAIRS

ii GOVERNANCE

iii ACADEMIC SENATE

iv DEGREES OFFERED BY THE UNIVERSITY OF PUERTO RICO AT THE MEDICAL SCIENCES CAMPUS

1 GENERAL INFORMATION

12 Library Faculty

13 RESEARCH FACILITIES AND PROGRAMS

24 SERVICE PROGRAMS

31 ADMISSIONS, REGISTRATION, AND GRADUATION PROCEDURES

39 STUDENT SERVICES

48 GENERAL AND ACADEMIC POLICIES

ACADEMIC PROGRAMS

54 SCHOOL OF MEDICINE
- 56 Doctor of Medicine Degree Program
- 72 Course Descriptions
- 121 Faculty
- 62 Biomedical Sciences Division Graduate Programs
- 97 Course Descriptions
- 136 Faculty
- 68 Joint Degree Programs
- 117 Course Descriptions

142 SCHOOL OF DENTAL MEDICINE
- 159 Course Descriptions
- 194 Faculty

207 SCHOOL OF PHARMACY
- 216 Course Descriptions
- 240 Faculty

243 FACULTY OF BIOSOCIAL SCIENCES AND GRADUATE SCHOOL OF PUBLIC HEALTH
- 264 Course Descriptions
- 315 Faculty

320 SCHOOL OF HEALTH PROFESSIONS
- 347 Course Descriptions
- 407 Faculty
- 344 Joint Degree Programs
- 403 Course Descriptions

413 SCHOOL OF NURSING
- 420 Course Descriptions
- 434 Faculty

Welcome to the Medical Sciences Campus of the University of Puerto Rico!

The Medical Sciences Campus is one of eleven academic units within the University of Puerto Rico Higher Education System. We have a dual role in academics by also assuming a leading position as an Interdisciplinary Academic Health Center, with international prestige, dedicated to:

- education in the health sciences field
- the advancement of knowledge through state of the art research projects
- the development of health services delivery models and public policy for Puerto Rico

The Campus is located at the Dr. José Celso Barbosa Medical Center in Río Piedras and is composed of six professional schools; of Medicine, Dental Medicine, Public Health, Pharmacy, Health Professions and Nursing. Academic offerings include more than 60 accredited programs within these fields.

Historically, the campus has educated health professionals that have exhibited outstanding achievements in their fields of science and health services in Puerto Rico and in the Hispanic communities in the United States and abroad.

The Medical Sciences Campus institutional focus is targeted to promoting and supporting synergism among the faculty and students of the six professional schools. The Institutional Mission provides an opportunity for the advancement of scholastic activity through the development of programs and initiatives in teaching, research and services. All our degree granting programs are authorized by the Puerto Rico Council of Higher Education and those susceptible to professional accreditation hold such status as certified by their corresponding professional accrediting agencies. The Campus is also accredited by the Council on Higher Education of the Middle States Association.

We encourage you to pursue your academic and research interests at our campus and invite you to examine the academic offerings included in the Campus' 2009-2010 Catalog.

Let this be your Alma Mater; become one of our students!

Dr. Rafael Rodríguez-Mercado
Acting Chancellor

Dr. Ilka C. Ríos-Reyes
Acting Dean for Academic Affairs



Dr. Rafael Rodríguez-Mercado
Acting Chancellor



Dr. Ilka C. Ríos-Reyes
Acting Dean for Academic Affairs

GOVERNANCE

UNIVERSITY OF PUERTO RICO

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Acting Chancellor, UPR-Utuado

MEDICAL SCIENCES CAMPUS

ADMINISTRATIVE BOARD

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President
University of Puerto Rico
ex officio

Dr. Rafael Rodríguez-Mercado
Acting Chancellor
Medical Sciences Campus

Dr. Ilka C. Rios-Reyes
Acting Dean for Academic Affairs
Medical Sciences Campus

Mr. Eleuterio Pomales
Acting Dean of Administration
Medical Sciences Campus

Dr. María Hernández
Acting Dean of Students
Medical Sciences Campus

Dr. Walter Frontera
Dean
School of Medicine

Dr. Yilda Rivera
Dean
School of Dental Medicine

Dr. José F. Cordero
Dean
Faculty of Biosocial Sciences and
Graduate School of Public Health

Dr. Wanda Maldonado
Acting Dean
School of Pharmacy

Dr. Estela S. Estapé
Dean
School of Health Professions

Dr. Suané Sánchez
Dean
School of Nursing

Academic Senate Representative

Prof. Zulma Olivieri
Academic Senate Representative

Miss. Janet A. Vélez
Student Representative

Dr. Ana M. Díaz
Executive Secretary

ACADEMIC SENATE

EX OFFICIO MEMBERS

Dr. José Ramón de la Torre
President
University of Puerto Rico

Dr. Rafael Rodríguez-Mercado
Acting Chancellor
Medical Sciences Campus

Dr. Ilka C. Ríos-Reyes
Acting Dean for Academic Affairs
Medical Sciences Campus

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Acting Dean of Administration
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Dr. Estela S. Estapé
Dean
School of Health Professions

Dr. Suané Sánchez
Dean
School of Nursing

Dr. Irma Quiñones
Director of the Library

Prof. Blanca Amorós
Director
Counseling Office

Dr. Juan Carlos Soto
Student Ombudsperson

Prof. Francisca Corrada
Faculty Ombudsperson

Dr. Pedro J. Santiago-Borrero
Faculty Retirement System
Representative

Mr. Carlos Carrión
Parlamentarian

Prof. Luis Ortiz
Executive Secretary

ELECTED ACADEMIC SENATORS

SCHOOL OF MEDICINE

Basic Sciences

Sen. Raúl Rivera
Sen. Quennie Bodón
Sen. Loyda M. Meléndez
Sen. María J. Crespo
Sen. Braulio Jiménez
Sen. José Ortiz

Clinical Sciences

Sen. Nydia Bonet
Sen. Julio Dieppa
Sen. Petra Burke
Sen. América Facundo
Sen. William Méndez
Sen. Ricardo González
Sen. Ricardo González
Sen. Sarah Huertas
Sen. Fernando López-Malpica
Sen. Johana De Jesús
Sen. Inés Elena García
Sen. Myrna Quiñones

SCHOOL OF DENTAL MEDICINE

Sen. Angel R. Pagán
Sen. Lorna Rodríguez
Sen. David Malaret
Sen. Salvador Salivia

SCHOOL OF PHARMACY

Sen. Frances Rodríguez
Sen. Rafael García

SCHOOL OF HEALTH PROFESSIONS

Sen. Diana E. Hernández
Sen. Melba L. Muñiz
Sen. Luis Javier Santiago

FACULTY OF BIOSOCIAL SCIENCES AND GRADUATE SCHOOL OF PUBLIC HEALTH

Sen. Heriberto Marín
Sen. Ana Luisa Dávila
Sen. Marta Bustillo
Sen. Ana Luisa Dávila

COUNSELORS, SOCIAL WORKERS, AND PSYCHOLOGISTS

Sen. Judith Baralt

SCHOOL OF NURSING

Sen. Elizabeth Arbelo
Sen. Leonor Irizarry

LIBRARY FACULTY

Sen. Pedro del Valle

ELECTED STUDENT SENATORS

Sen. Marlene Rosario
Sen. Emanuel López
Sen. Judith M. Vélez
Sen. Juan M. Corona
Sen. Isadora González
Sen. José Guzmán
Sen. Jorge de Jesús
Sen. Daniel González
Sen. Zayra Marrero
Sen. Odrick Rosas

EX OFFICIO STUDENT SENATORS

Sen. Felix Rivera-Mariani
Sen. José O. García
Sen. Enrique Fuentes
Sen. Janet A. Vélez

DEGREES OFFERED BY THE UNIVERSITY OF PUERTO RICO AT THE MEDICAL SCIENCES CAMPUS

School of Medicine
Doctor of Medicine (M.D.)

Postgraduate Clinical Training Programs

Accredited Residency Programs:

Dermatology
Emergency Medicine
Family Medicine
  Geriatrics
Anesthesiology
General Surgery
Neurological Surgery
Orthopaedic Surgery
Otorhinolaringology
Urology
Internal Medicine
  Cardiology
  Endocrinology
  Gastroenterology
  Geriatric Medicine
  Infectious Diseases
  Nephrology
  Pediatric Neurology
  Pulmonary Disease
  Rheumatology
  Hematology/Oncology
  Neuromuscular Medicine
Neurology
Obstetrics and Gynecology
Ophthalmology
Pathology
Pediatrics
  Critical Care Medicine
  Hematology/Oncology
  Neonatal
Physical Medicine and Rehabilitation
Psychiatry
  Child and Adolescent Psychiatry
Radiology
  Nuclear Medicine

Biomedical Sciences Division Graduate Programs

Master of Science with Specialty in Anatomy (M.S.)
Master of Science with Specialty in Biochemistry (M.S.)
Master of Science with Specialty in Microbiology (M.S.)
Master of Science with Specialty in Physiology (M.S.)
Master of Science with Specialty in Pharmacology (M.S.)
Master of Science with Specialty in Toxicology (M.S.)

Doctor of Philosophy with Specialty in Anatomy (Ph.D.)
Doctor of Philosophy with Specialty in Biochemistry (Ph.D.)
Doctor of Philosophy with Specialty in Microbiology (Ph.D.)
Doctor of Philosophy with Specialty in Physiology (Ph.D.)
Doctor of Philosophy with Specialty in Pharmacology (Ph.D.)
Doctor of Philosophy with Specialty in Toxicology (Ph.D.)
Doctor of Philosophy with Specialty in Biology (joint offer between MSC and Río Piedras Campus)

Joint Degree Programs (Between the School of Medicine and the School of Health Professions)

Graduate Certificate in Clinical Research
Master of Science in Clinical Research (M.Sc.)

SCHOOL OF DENTAL MEDICINE

Doctor of Dental Medicine (D.M.D.)

Advanced Dental Education Programs

Postdoctoral Certificate in General Dentistry
Postdoctoral Certificate in Oral and Maxillofacial Surgery
Postdoctoral Certificate in Prosthodontics
Postdoctoral Certificate in Pediatric Dentistry
Postdoctoral Certificate in Orthodontics

Master of Science in Dentistry with Specialty in Oral and Maxillofacial Surgery
Master of Science in Dentistry with Specialty in Prosthodontics
Master of Science in Dentistry with Specialty in Pediatric Dentistry

Master of Science in Dentistry with Specialty in Orthodontics

SCHOOL OF PHARMACY

Doctor of Pharmacy Program (Pharm D)

Master of Science in Pharmacy with Specialty in Industrial Pharmacy
Master of Science in Pharmacy with Specialty in Pharmaceutical Sciences

FACULTY OF BIOSOCIAL SCIENCES AND GRADUATE SCHOOL OF PUBLIC HEALTH

Master of Public Health (General Option)
Master of Public Health with Specialty in Biostatistics
Master of Public Health with Specialty in Epidemioogy
Master of Public Health with Specialty in Maternal and Child Health
Master of Public Health with Specialty in Gerontology
Master of Public Health with Specialty in Nurse – Midwifery
Master of Science with Specialty in Evaluation Research of Health Systems
Master of Health Services Administration
Master of Science with Specialty in Epidemiology
Master of Science in Demography
Master of Public Health Education
Master of Science with Specialty in Environmental Health
Master of Science in Industrial Hygiene
Master of Health Sciences with Specialty in Nutrition

Graduate Certificate in Gerontology
Graduate Certificate in Developmental Disabilities Early Intervention
Certificate in Nurse-Midwifery
Graduate Certificate in School Health Promotion

Doctor of Public Health with Specialty in Environmental Health (D.P.H.)

SCHOOL OF HEALTH PROFESSIONS

Associate Degree in Dental Assisting with Expanded Functions
Associate Degree in Ophthalmic Technology
Associate Degree in Radiologic Technology

Bachelor of Health Sciences
Bachelor of Health Education
Bachelor of Science in Veterinary Technology
Bachelor of Science in Nuclear Medicine Technology
Bachelor of Science in Medical Technology

Post-Bachelor Certificate of Science in Medical Technology
Post-Bachelor Certificate in Dietetic Internship
Post-Bachelor Certificate in Cytotechnology

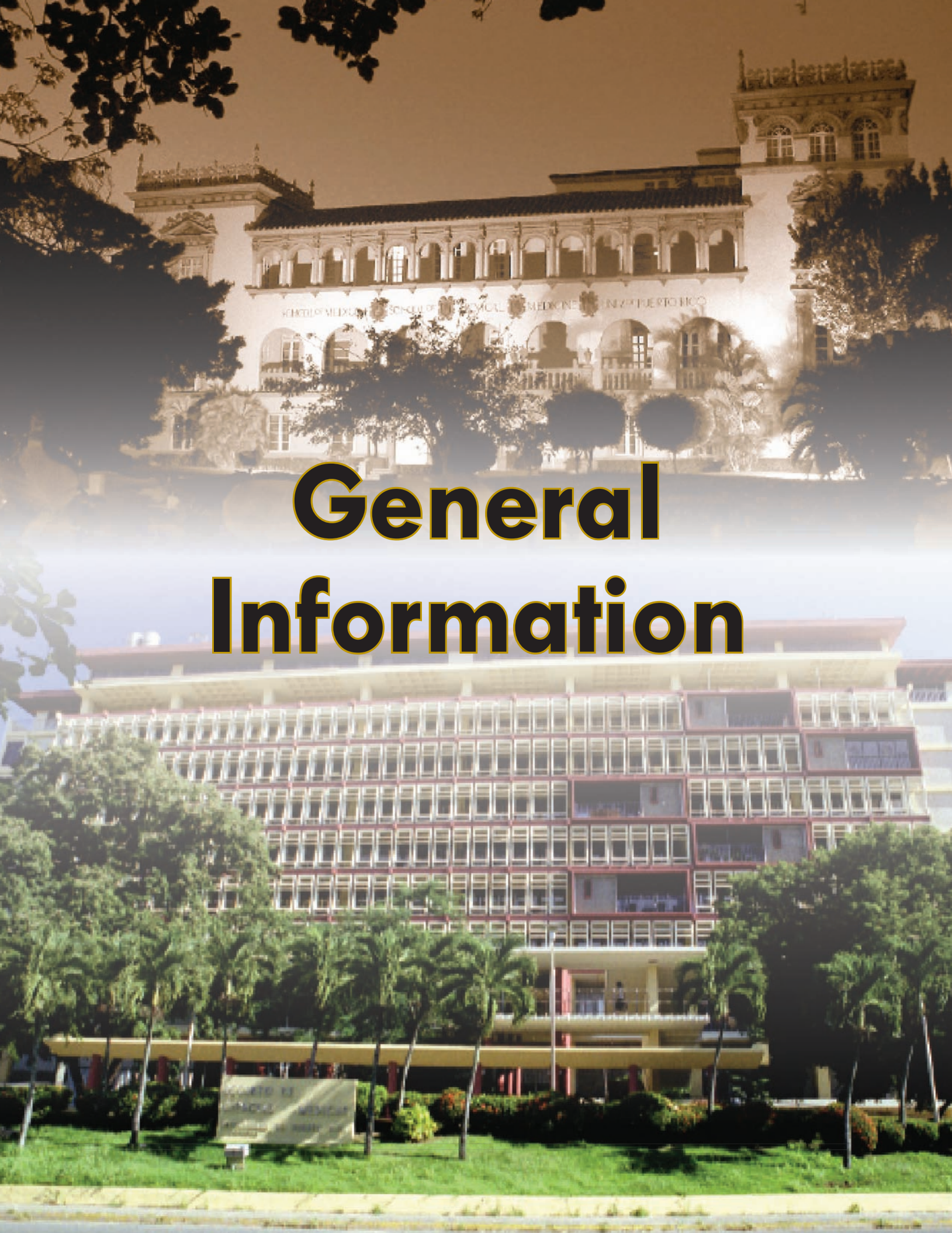
Master of Science with Specialty in Speech-Language Pathology
Master of Health Information Administration
Master of Science in Clinical Laboratory Sciences
Master of Science in Physical Therapy
Master of Science in Occupational Therapy

Doctor in Audiology (Au.D.)

SCHOOL OF NURSING

Bachelor of Science in Nursing

Master of Science in Nursing (MSN)
Master of Science in Nursing with Specialty in Anesthesia (MSN) (no new admissions)
Master of Science in Nursing with Specialty in Family Nurse Practitioner (FNP)



General Information

ORGANIZATION OF THE UNIVERSITY OF PUERTO RICO

The University of Puerto Rico is a multiunit, state supported, university system consisting of eleven campuses: Río Piedras, Mayagüez, Medical Sciences, Cayey, Humacao, Aguadilla, Arecibo, Bayamón, Carolina, Ponce, and Utuado. It is a co-educational university system offering graduate, first professional, five, four, and two-year programs with over 69,000 students, 5,000 faculty members, and 9,000 other employees.

THE BOARD OF TRUSTEES

The Board of Trustees is the governing body of the University of Puerto Rico. It is composed of thirteen (13) members that include: one (1) regular student past his/her freshman year, two (2) tenured faculty members, and ten (10) citizens representing the community. One of the ten community representatives must be a University of Puerto Rico graduate. All community representatives are appointed by the Governor in four (4), six (6), and eight (8) year terms. Student and faculty representatives are elected from among student and faculty representatives in the University Board for a period of one (1) year.

The Board of Trustees is charged by law with the responsibility of authorizing the creation or reorganization of university units, approving the institution's budget, approving or amending university bylaws and overseeing the overall functioning of the institution.

THE PRESIDENT

The President is the chief executive officer and official representative of the University System. He/she is appointed by the Board of Trustees for an indefinite term. With the collaboration of the University Board, the President coordinates and supervises all University activities and takes actions to promote the development of the institution. He/she presides over the University Board and is an ex-officio member of the faculties, academic senates, and administrative boards of the University System. The President, with the advice of the University Board, submits a plan to the Board of Trustees for the comprehensive development of the University on the basis of projects and recommendations, which originate at the institutional units. He/she also prepares a comprehensive budget for the University System based on the budget proposals submitted by the chancellors and approved by the administrative boards of the campuses.

The President also submits to the Board of Trustees the appointment of the chancellors of the institutional units, the financial officers, and other appointments which require confirmation by the Board of Trustees.

THE UNIVERSITY BOARD

The University Board is composed of the University President, who presides it, the chancellors of all system units, the Director of Finance, three additional officials appointed by the President with the approval of the Board of Trustees, a representative elected by each academic senate, and six student representatives. The Board's essential functions are to integrate the University System's planning and advise the President as to the coordination of the various institutional units in their academic, administrative, and financial matters.

The University Board prepares the General Student Bylaws and submits the document to the Board of Trustees for final approval. It considers the comprehensive development plan and budget proposal for the University System presented by the President, which is then submitted to the Board of Trustees for its approval.

CHANCELLORS AND CAMPUS ADMINISTRATIVE BOARDS

All campuses are headed by a chancellor who exercises administrative and academic authority according to the provisions of the University Law and other university regulations. The Chancellor of each campus is nominated by the President of the University after consulting with the corresponding academic senates. The appointment is then submitted for consideration by the Board of Trustees. The Chancellor presides over the Academic Senate, the Administrative Board, and faculty meetings, and prepares the budget proposal, which is submitted to the President and the University Board upon approval by the Administrative Board of the campus.

Each campus has an administrative board composed of the Chancellor, who presides it, the deans, a student

representative, and two senators elected from among the elected members of the Academic Senate. The Administrative Board is an advisory body to the Chancellor. It oversees administrative matters, including budget proposals submitted by the Chancellor. At the request of the Chancellor, the Board grants leaves, academic rank, tenure, and promotions to academic personnel according to the University Bylaws.

THE ACADEMIC SENATES

All university campuses have an academic senate composed of the Chancellor, who presides it, the deans, the Director of the Library, and representatives elected by each faculty from among its tenured members, including librarians, counselors, social workers, psychologists, and students. The Senate constitutes the official forum of the academic community for the discussion of issues pertaining to many aspects of the institution's life.

The academic senates establish academic policy and general guidelines for appointments, tenure, promotion, and leaves of absence of faculty members. Academic senates elect their representatives to the University and Administrative Boards and make recommendations to the Board of Trustees as to the creation or reorganization of colleges, schools, and units, appointment of chancellors and deans, and evaluate and recommend proposals for the creation of new academic programs. In addition, they submit student bylaws to the University Board, and establish general rules regarding campus or institutional matters which involve common responsibilities.

HISTORY OF THE MEDICAL SCIENCES CAMPUS

In 1904, the Government of Puerto Rico created the Anemia Commission in response to a pressing health problem in the island. Dr. Bailey K. Ashford and others pioneered in the mass treatment of hookworm disease, establishing the grounds for the Institute of Tropical Medicine, which began operations in 1912. In 1926, under the auspices of Columbia University, the Institute became the School of Tropical Medicine of the University of Puerto Rico.

A specially designed and equipped building for research and teaching was erected next to the Capitol Building in Old San Juan. The School offered programs in the areas of medical technology, health education, public health, nursing, and sanitation, and soon became a renowned center for research and teaching.

The agreement between the University of Puerto Rico and Columbia University was terminated by mutual consent in 1948. The following year, the Legislature of Puerto Rico authorized the establishment of the School of Medicine. The new School admitted its first class in August, 1950 and was accredited in the spring of 1954 by the Liaison Committee on Medical Education. The first forty-five (45) Doctor of Medicine degrees were awarded in June of that year.

In 1953, the San Juan City Hospital became the main clinical setting. The Department of Preventive Medicine was part of the School since its inception. It offered programs in the field of public health, drawing on the long tradition of research and teaching in this area initiated at the School of Tropical Medicine.

On June 21, 1956 the Legislature appropriated funds for the establishment of a school of dentistry. The new School of Dentistry (now School of Dental Medicine) enrolled its first class of twenty-nine (29) students in August, 1957 in a program leading to the degree of Doctor of Dental Medicine.

In 1960, a Department of Health hospital facility located on the grounds of today's Medical Center became the main clinical setting for the School of Medicine and was renamed the University District Hospital. The clinical faculty of the School of Medicine moved to the hospital while the Basic Sciences faculty and the School of Dentistry remained at the original building in Old San Juan.

In the area of basic sciences, the Council on Higher Education of the University of Puerto Rico approved the establishment of graduate education programs leading to the degrees of Master of Science and Doctor of Philosophy in Anatomy, Biochemistry and Nutrition, Medical Zoology, Microbiology, and Physiology. In 1964, the Pharmacology and Toxicology Graduate Program was added.

During the 1960s and 1970s the School of Medicine established and expanded residency programs in the clinical specialties. The School of Dentistry created postgraduate programs in Pedodontics and Oral Surgery. Programs in Dental Assisting and Dental Hygiene were also added.

Other programs offered during that period by the Department of Preventive Medicine were Cytotechnology, Demography, Health Services Administration, Radiologic Technology, Medical Records, and bachelor and master's degree programs in Nursing.

The Medical Sciences Campus became a campus as a result of the organizational reform of the University of Puerto Rico, as stated by the University Law of January 20, 1966. Previously, the School of Medicine and the School of Dentistry had deans who reported directly to the Chancellor of the University. Both units operated autonomously with funds assigned directly by the Legislature. Their faculties had no representation in the Academic Senate or the University Board.

The establishment of the Medical Sciences Campus involved the appointment of a chancellor for the Medical Sciences Campus, the centralization of administrative procedures (formerly under the School of Medicine), and the establishment of a contract between the Chancellor of the Medical Sciences Campus and the Secretary of Health for the use of the University District Hospital and facilities of the Puerto Rico Medical Center. In addition, the Chancellor of the Medical Sciences Campus was appointed the official representative of the University in the Board of Directors of the Puerto Rico Medical Center. The Schools of Medicine and Dentistry, the Physical Therapy, Occupational Therapy and Speech Pathology programs, and the Biomedical Sciences graduate programs were organized as units under the new Chancellor.

In 1970, the Department of Preventive Medicine of the School of Medicine became the Graduate School of Public Health under the direction of a dean. In 1971, the Deanship for Student Affairs was established.

In 1972, the Medical Sciences Campus administrative offices and the basic sciences departments, previously located at the School of Tropical Medicine building in Old San Juan, moved to new facilities at the Puerto Rico Medical Center, joining the clinical departments operating at the University District Hospital since 1960. Offices and research laboratories were provided for the basic sciences and clinical faculties in the main building of the Campus, which is adjacent to the University District Hospital and to other buildings of the Puerto Rico Medical Center.

In 1975-76 the Campus underwent an internal reorganization approved by the Council on Higher Education on February 13, 1976, effective July 1, 1976. This reorganization included: the creation of the Deanship for Academic Affairs and the Deanship of Administration, the establishment of the College of Health Related Professions (now School of Health Professions) under which all the technical and professional allied health programs were grouped, the reorganization of the School of Public Health as the Faculty of Biosocial Sciences and Graduate School of Public Health, and the creation of the Office of the Associate Dean for Biomedical Sciences of the School of Medicine.

In 1977, the School of Pharmacy, established in 1913, moved from the Río Piedras Campus to the Medical Sciences Campus. Additional buildings were constructed or remodeled to house the School of Pharmacy and the College of Health Related Professions and its School of Nursing.

With the addition of the School of Pharmacy, the Medical Sciences Campus truly united the major health professions programs offered by the University of Puerto Rico System. The location of the five schools near the Puerto Rico Medical Center facilitated clinical practice and fostered life as a health sciences campus.

As the institution entered the eighties, planning and development activities were given high priority and were sustained throughout the decade. A Comprehensive Development Plan and a Campus Mission Statement issued in 1984, were followed by strategic plans at the schools and campus level, as well as by a revised mission statement in 1986 and subsequently in 1994.

In 1995, the School of Nursing, until then part of the College of Health Related Professions, became an administratively separate unit and the sixth campus school.

Growth as a campus is also evidenced in the institution's programmatic areas of teaching, research, and service. In the eighties and nineties, new academic programs were added in response to identified health manpower needs. Among them, Master of Science programs in Epidemiology, Pharmacy, Clinical Laboratory, and Industrial Hygiene, as well as a Master of Public Health with a Specialty in Gerontology and Nurse Midwifery. Also, a Doctor of Public Health program enrolled its first class in 1998, a Doctor of Pharmacy degree in August 2001, while the Doctor of Audiology degree admitted its first class in August 2007.

ACCREDITATION

Licensing and Accreditation

The Medical Sciences Campus operates as a higher education institution licensed by the Puerto Rico Council on Higher Education and is accredited as a campus by the Commission on Higher Education of the Middle States Association of Colleges and Schools (MSA).

- First Accredited: 1949
- Reaccredited: 2005
- Next Self Study Evaluation: 2010-2011

Middle States Commission on Higher Education
3624 Market Street, Philadelphia, PA 19104
Telephone: (267) 284-5000
E-mail: **info@msche.org**
Spanish: (267) 284-5015 or
españolinfo@msche.org

In addition, schools hold accreditation by the accrediting bodies in their fields.

- State Licensing:
  Puerto Rico Council on Higher Education
- National and Specialized Accreditation:
  Commission on Higher Education, Middle States Association; Commission on Dental Accreditation of the American Dental Association; Joint Commission on Allied Health Personnel in Ophthalmology and Commission on Accreditation of Allied Health Education Programs; Joint Review Committee on Education in Radiologic Technology; Joint Review Committee on Educational Programs in Nuclear Medicine Technology; National Accrediting Agency for Clinical Laboratory Sciences; Committee on Veterinary Technician Education and Activities of the American Veterinary Medical Association; Commission on Accreditation in Physical Therapy Education of the American Physical Therapy Association; Accreditation Council for Occupational Therapy Education of the American Occupational Therapy Association; Commission on Accreditation of Allied Health Education Programs and Cytotechnology Programs Review Committee of the American Society of Cytopathology; Commission on Accreditation for Dietetics Education; Commission on Accreditation of Health Informatics and Information Management Education; Council on Academic Accreditation of the American Speech-Language-Hearing Association; Commission on Collegiate Nursing Education; Accreditation Council for Pharmacy Education; Liaison Committee on Medical Education; Council on Education for Public Health; Commission on Accreditation of Healthcare Management Education; Commission for Midwifery Education of the American College of Nurse-Midwives.

VISION

An interdisciplinary academic health center internationally renowned and a model of excellence in: health care; the education of health professionals, researchers and scholars; interaction with the community; and interdisciplinary research, all of which translates into an improvement in the health of the population and in the health care services system of Puerto Rico.

MISSION

Higher education academic center in the health sciences, with expertise in the undergraduate, graduate, postgraduate, and continuing education of health care professionals; a leader in prevention, health promotion, and protection services and in research aimed at advancing knowledge and improving current health conditions in Puerto Rico, in close alliance with the community and the health sector.

VALUES

- Excellence at the core of academic life and university endeavors.
- Integrity in university activities and processes.
- Respect for the search for truth, justice, freedom, equality, and human dignity.
- Commitment to ethical, humanistic, and professional principles.
- Honesty and respect in communication.
- Creativity and innovation in generating ideas, developing new knowledge, searching for solutions and making decisions.
- Professionalism characterized by inter-professional

collaboration, flexibility, and acceptance of diversity.
- Continuing education and independent learning fostering reflective, creative, and critical thinking.
- Leadership and social responsibility in addressing the health problems of the population of Puerto Rico.
- Comprehensive development of the physical, mental, social and spiritual health of human beings.
- Sensitivity and commitment to the needs of the community

GOALS

Academic and Student Development

1. Prepare the scientists, educators, and professionals who will promote and maintain the best health conditions of the Puerto Rican people, by working as an interdisciplinary health team.
2. Provide excellent education in the health sciences from pre- and post baccalaureate levels to postgraduate levels.
3. Procure that students attain the highest level of excellence in knowledge, development of human sensibility and ethical values, social conscience, critical thinking skills, and lifelong learning.
4. Provide a variety of health services in tune with community needs as an integral component of educational, research, and professional development of the faculty.
5. Update the health professionals' knowledge and skills so that they may effectively practice their professions.

Research Development

6. Strengthen scientific, basic, and applied research as the institution's contribution to the search for knowledge in the health field.

Institutional Development

7. Maintain a common purpose between administrative tasks and teaching, research, and service pursuits.
8. Develop and maintain a commitment to excellence among university personnel.
9. Widen national and international collaborative agreements for the strengthening and academic and cultural enrichment of the institution.
10. Promote an environment that fosters creative activity, the respect for human values, and the attainment of social progress.
11. Endow the Medical Sciences Campus with financial stability in accordance with its academic philosophy.

THE MEDICAL SCIENCES CAMPUS

The Medical Sciences Campus is composed of the School of Medicine, the School of Dental Medicine, the Graduate School of Public Health, the School of Pharmacy, the School of Health Professions, and the School of Nursing. Three support deanships, i.e., Academic Affairs, Student Affairs, and Administration, assist the Chancellor and the schools in daily operations.

The Chancellor is the chief executive officer for both the academic and administrative affairs at the Medical Sciences Campus. He/she coordinates the various administrative structures common to all academic units and promotes and directs academic planning for the comprehensive development of the institution. The Chancellor represents the Medical Sciences Campus at institutional bodies and the community at large, and is assisted by the Academic Senate on academic affairs, and by the Administrative Board on administrative matters.

Each school is headed by a dean who represents it at the Administrative Board and who is an ex-officio member of the Academic Senate. The schools are represented at the Academic Senate by academic senators elected by each faculty. There are also two faculty representatives to the Administrative Board elected from among academic senators.

OFFICE OF THE CHANCELLOR

As chief executive officer of the campus, the Chancellor oversees administrative and academic processes assisted by the staff of the offices of: Budget, Physical Planning, Information Systems, Student Ombudsperson, Press and Public Relations, Employee Assistance, Legal Advisors, and Contracts, External Funds and Financial Administration.

The Chancellor also presides the Academic Senate and the Administrative Board.

DEANSHIP FOR ACADEMIC AFFAIRS

The Deanship for Academic Affairs of the Medical Sciences Campus was created in 1976 as part of a reorganization of the Campus. The Deanship is charged with the responsibility of overseeing those academic processes that pertain to all schools, such as development of new academic programs, curricular revisions, continuing education, faculty development, accreditation processes, and coordination of interdisciplinary activities.

The Deanship for Academic Affairs comprises two main divisions, each under an Assistant Dean, and several service and research units under the Office of the Dean. The two main divisions are the Office of the Assistant Dean for Academic Development and Planning and the Office of the Assistant Dean for the Integration of Technology and Access to Information in Academia. The first division comprises the Academic Development Office, Accreditation Office, and the Institutional and Academic Research Office. The second division groups the Library, Compu-Centro, the Center for Technological Support in Academia, and the Puerto Rico Health Sciences Journal. All units are described below. Research units are described in the Research Facilities and Programs section of this Bulletin.

Office of the Assistant Dean for Academic Development and Planning

Academic Development Office

The Deanship for Academic Affairs supports the schools in curricular and other related activities. These tasks are carried out by the Academic Development Office, which is also responsible of offering faculty development activities and maintaining close collaboration with the schools and the University Central Administration office. This assures that all academic processes are conducted according to established practices within the University System.

Accreditation Office

The Accreditation Office coordinates the campus accreditation processes by the Commission on Higher Education of the Middle States Association and the institutional licensing process by the Puerto Rico Council on Higher Education. The Office also offers consulting and support services to campus schools and programs in their professional accreditation activities. Campus schools and programs are accredited by twenty professional accrediting agencies.

Institutional and Academic Research Office

The Institutional and Academic Research Office collects and analyzes institutional data in order to support decision-making, strategic planning, budgeting, and assessment activities. The Office produces the campus Annual Report, the campus Fact book, and researches numerous areas of campus activity as requested by university authorities.

Office of the Assistant Dean for the Integration and Access to Information in Academia

Library

The University of Puerto Rico Medical Sciences Campus Library is the main health sciences information resource in the island and the most complete collection of its kind in the Caribbean. Collections and services are geared to academic programs in Medicine, Public Health, Dentistry, Pharmacy, Nursing, and Allied Health.

The Library offers a full range of services to faculty, students, and staff of the Medical Sciences Campus and health professionals in the community. These services include book and journal loans, reserve collection, reference and virtual reference, interlibrary loans, and computer literature searches, both end-user and librarian mediated. The staff also offers workshops on the use of library resources. The collection totals over 125,000 book and journal volumes, including 1,145 active journal subscriptions. The monographs collection contains 45,953 book titles. Books and journals are kept in open stacks with adjoining reading areas.

Non print materials such as CD, DVD and videocassette programs are available in the Audiovisual Center that houses a collection of over 2,000 non print materials and provides facilities for individual and group viewing.

The Puerto Rican Collection contains unique and valuable information about the history and development of the health sciences in Puerto Rico. The Bailey K. Ashford collection, which contains part of the personal library and

archives of Dr. Ashford, is a valuable collection for the study of the history of tropical medicine. The Historical Archives house institutional documents from 1966 to the present.

The Medical Sciences Campus Library online catalog, as well as Medline and numerous other information databases may be accessed through the campus web page **www.rcm.upr.edu** or library web page **http://rcm-library.rcm.upr.edu**. The library has a proxy server for remote access; users should have an institutional email in order to use the different databases and services.

As a Resource Library of the National Network of Libraries of Medicine, the Library participates in a document delivery program. It is also a member of the Consortium of Southern Biomedical Libraries (CONBLS). Through these programs, materials that are not available in the collection are obtained from other health sciences libraries using the ARIEL software for interlibrary loan transmittal. Reciprocal agreements are in place with the Veterans Administration Hospital, and the Río Piedras Campus Natural Sciences Library.

Library Hours

Monday to Thursday	7:00 am -11:00 pm
Friday	7:00 am -9:00 pm
Saturday	9:00 am -10:00 pm
Sunday	9:00 am -10:00 pm

Closed on Holidays

Library Faculty

Center for Technological Support in Academia

The Center for Technological Support in Academia promotes and facilitates the processes of instructional design and production of learning materials, using the latest technology available. The goals of the Center are to provide the resources needed for the design of instructional materials tailor made to the needs of students and faculty members, to coordinate and produce learning materials geared at augmenting instructional quality, and promote the utilization of media technology integrated into the teaching learning process.

The Center provides graphic arts and photography services, as well as production of instructional and educational television programs. It also has downlink capability for teleconferences.

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The Center provides graphic arts and photography services, as well as production of instructional and educational television programs. It also has downlink capability for teleconferences.

Compu-Centro

Compu-Centro, the computer services and informatics unit of the Deanship for Academic Affairs, is located on the second floor of the campus main building. It opens from 7:30 am to 9:00 pm during the academic year. The Center helps faculty, students, and staff in their efforts to develop and enhance their information technology skills, and supports the academic, research, and service activities of the institution.

Compu-Centro holds several activities throughout the year from which users may select, depending on their needs. These include workshops, formal courses, special training sessions, one-on-one teaching, small group teaching, conferences, demonstrations, orientations, and technical help and support. The staff also plans and organizes custom-made activities for individuals, groups, or faculty members with special needs or interests.

Compu-Centro operates a two- room PC technology section, used for training and independent work, and two electronic classrooms for formal courses and specialized training. Each classroom is equipped with instructor and student PC workstations, a high-resolution video projector, an electronic whiteboard, and printers. All units in these classrooms are connected to the campus computer network and the Internet. Computers provide access to the most commonly used computer applications on campus, including specialized health sciences programs.

Puerto Rico Health Sciences Journal

Published four times a year since 1982, the Puerto Rico Health Sciences Journal is a peer-reviewed journal indexed in Index Medicus. It is the campus' scholarly publication, covering all health sciences areas, including biosocial and health services issues.

Other Units

Central Division for Continuing Education and Professional Studies

The Central Division for Continuing Education and Professional Studies was created in 1981, and transferred to the Deanship for Academic Affairs in 1985. The Division provides continuing education and professional development activities to health professionals in Puerto Rico. It also offers support to other continuing education units on campus, and oversees compliance with institutional continuing education policies and the government's ethics program for public employees.

Florida/Caribbean AIDS Education and Training Center

In 2002, the Puerto Rico AIDS Education and Training Center merged with the Florida AIDS Education and Training Center to become the Florida/Caribbean AIDS Education and Training Center. The Center offers continuing education activities to health professionals serving the HIV population, focusing on new treatments and advances in care. Over the years, the Center has developed an extensive network of community based organizations, migrant health centers, hospitals, correctional health facilities, and public health clinics with which it collaborates in bringing state-of-the-art training to health professionals in direct service to persons living with HIV.

Office of the Registrar

The Office of the Registrar of the Medical Sciences Campus is located on the second floor of the Deanship for Student Affairs and School of Pharmacy Building. The Registrar assures the accuracy and safety of student records and offers all services pertaining their creation, safekeeping, and management. Rules and regulations governing these processes are stated in the section Admissions, Registration, and Graduation Procedures of this Catalog. The Registrar's Manual may be accessed through the campus web address **http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**. Application forms concerning the registration process, readmission, study certificates or grades, transcripts of academic records, and graduation are available at **http://www.rcm.upr.edu/websis/Formularios.aspx**.

Institute for Humanistic Studies and Bioethics

In 1995, the Medical Sciences Campus Chancellor approved the creation of the Institute for Humanistic Studies and Bioethics in response to the need to formally address those areas. The Institute's main goals are: to develop and strengthen a humanistic perspective within the health professions, with emphasis on bioethics; to train health professionals in the comprehension, analysis, evaluation, and application of methods used in humanistic disciplines; and to collaborate with the academic faculties in promoting the development of ethical principles among students and health professionals.

The Institute sponsors lectures, workshops, continuing education activities, and other projects to advance its mission. Efforts are also directed to promoting changes in campus curricula to include humanities and bioethics contents.

Women's Health Center

The Women's Health Center was established in March 1996 to contribute to the well-being of women in Puerto Rico. It addresses, coordinates, and incorporates issues relevant to women and their health in existing health services. The Women's Health Center was designated a National Center of Excellence in Women's Health in 1998 and the designation was renewed in 2002 in recognition of its commitment to women's health. The main goal of its interdisciplinary approach is to promote the health and well-being of women in Puerto Rico through the study of the feminine gender in the sciences and in the health professions. The Center offers information, orientation, and educational services to the academic community and to the Puerto Rican community in general. It promotes research studies of multi and interdisciplinary nature and the development of integrated services sensitive to women's needs, and promotes the inclusion of issues relevant to women in the training of health professionals.

Institute for Health Sciences History

Created in 2003 with the participation of all campus schools, the Institute for Health Sciences History seeks to promote the study of the history of health sciences by sponsoring symposia, lectures, and multidisciplinary projects among campus faculty and guest researchers. The Deanship for Academic Affairs provides the common ground for all disciplines and the Institute's activities.

Research units under the Deanship for Academic Affairs are described in the Research Facilities and Programs section of this Catalog.

DEANSHIP OF ADMINISTRATION

The Deanship of Administration oversees all matters pertaining management of fiscal, human, and physical resources, as well as purchasing, maintenance, security, safety and health, and other administrative processes of the Medical Sciences Campus.

It is one of the three supporting deanships and, as such, seeks to facilitate the campus academic mission through sound administrative practices. The Deanship contributes to the optimal use of the Medical Sciences Campus resources and the constant quality improvement of its processes and services in order to satisfy its constituents' needs.

The Office of the Dean of Administration and the Offices of Human Capital Management and Fiscal Resources are located on the 7th floor of the main building. Other units are located throughout the campus.

DEANSHIP FOR STUDENT AFFAIRS

The Deanship for Student Affairs coordinates the student support services offered by the Institution, including, among others; financial aid, student health services, counseling, and cultural activities. Please refer to the Student Services section of this catalog for a detailed description of these services.

CLINICAL SETTINGS

School of Medicine

The educational programs offered at the Medical Sciences Campus use a variety of settings for the clinical practice of their students. These are located within the Puerto Rico Medical Center and include the University District Hospital, the Dr. Antonio Ortiz University Pediatric Hospital, the Rafael López Nussa San Juan City Hospital, and the Dr. Isaac González Martínez Oncology Hospital. Agreements also exist with the Veterans Administration Medical Center, the University Medical Services Corporation to perform clinical work at the University of Puerto Rico Hospital in Carolina, and the Diagnostic and Treatment Centers in the cities of Canóvanas and Trujillo Alto. Other clinical sites used include primary care settings in private hospitals and clinics.

Puerto Rico Medical Center

The Medical Sciences Campus is located within the Puerto Rico Medical Center. The institutional units that make up the Medical Center include the University District Hospital and the University Pediatric Hospital, which are owned by the Department of Health of the Commonwealth of Puerto Rico; the San Juan City Hospital, a public hospital owned by the Municipal Government of San Juan; the Industrial Hospital owned by the Commonwealth of Puerto Rico's State Insurance Fund Corporation; the government's Vocational Rehabilitation Center; the Puerto Rico and Caribbean Cardiovascular Center, which is government owned; the community Oncologic Hospital; the University of Puerto Rico Nuclear Medicine Laboratories; the Latin American Center for Sexually Transmitted Diseases; and a short-stay inpatient housing facility for patients undergoing clinical studies.

All units are located around a central building for common use in which multiple services are offered. These include: outpatient clinics, admissions office, emergency room, radiology, clinical laboratories, operating room, dental services, blood bank, pathology, anesthesiology, and other specialized medical services.

School of Dental Medicine

The School of Dental Medicine General Clinic is located on the first floor of the Medical Sciences Campus main building. It is equipped with 98 dental units and chairs, which are available for students to perform their clinical procedures. Fourth year students provide services as members of a dental team, following the Institutional

Policy of Comprehensive Patient Care. Third year students may serve on different rotations based on availability.

Other clinics at the periphery of the main clinic complete available services. These include: (1) Oral Surgery, (2) Oral Diagnosis, (3) Oral Roentgenology, and (4) Graduate Clinics.

Other Clinical Settings

Students at the School of Dental Medicine, the School of Pharmacy, the Graduate School of Public Health, the School of Health Professions, and the School of Nursing practice at numerous sites. The schools have established arrangements with centers for diagnosis and treatment, public and private schools, private hospitals and clinics, the Maternal and Infant Care Program, Head Start Program, family planning clinics, community pharmacies, homes for the elderly, and others.

MUSEUMS

Museum of Pharmacy and Medicinal Plants

To articulate the research, preservation and education activities of the Luis Torres Díaz Museum of Pharmacy, originally opened in 1954, with those of the School's former Medicinal and Poisonous Plants Garden, founded in 1936, the concept of a new Museum of Pharmacy and Medicinal Plants emerged in September 2007.

The mission of the Museum of Pharmacy and Medicinal Plants is to engage in research, preservation and education activities related to the living collection of medicinal plants of Puerto Rico and the Caribbean, and to the historic collection on pharmacy practice in the island, with the purpose of contributing to the enhancement of scientific knowledge about natural drug products, the discovery of new and better drugs, and the appreciation for pharmacy's heritage and social commitment.

The Dr. Luis Torres Díaz Hall exhibits a collection of historical pharmaceutical artifacts and a traditional end of the 19th century pharmacy in Puerto Rico. The Dr. Esteban Núñez Meléndez Medicinal Plants Garden, located at the University of Puerto Rico Botanical Garden in San Juan, exhibits the museum's collection of living medicinal plants.

For more information visit **http://farmacia.rcm.upr.edu.**

School of Dental Medicine Museum

The School of Dental Medicine of the Medical Sciences Campus, opened the first museum of dentistry in Puerto Rico on April 30, 2003. It is located on the first floor of the main campus building.

The museum exhibits documents, equipment, books, photos and other memorabilia of historical relevance for the dental profession. Of special interest are the 17.5 inch clamps, used during the 19th Century for extractions. The museum also features a dental chair, c.1840, that resembles a barber's chair. The museum of dentistry is the result of the effort of several members of the faculty, under the leadership of doctor Alván Vélez.

Library Faculty

Collazo-Díaz, María L.; Librarian IV; Historical Archives; Master (MS); University of Chicago (1987).

Corrada-Del Río, Francisca; Librarian IV; Chancellors Office and Library; Master (MLS); University of Puerto Rico, Río Piedras Campus (1986).

Del Valle-López, Pedro A.; Librarian III; Serials Publication Section; Master (MLS); University of Puerto Rico, Piedras Campus (1996).

Delgado-Aponte, Victoria; Librarian III; Reference Section; Master (MLS); University of Puerto Rico, Río Piedras Campus (1992).

Flores-Rivera, Efraín; Librarian II; Reference Section; Master (MLS); University of Puerto Rico, Río Piedras Campus (1999).

García-Soto, Zaida; Librarian III; Audiovisual Resources Center; Master (MLS); University of Puerto Rico, Río Piedras Campus (1988).

González-Pérez, Margarita; Librarian IV; Reference Section; Master (MLS); University of Puerto Rico, Río Piedras Campus(1987).

Parrilla-Díaz, Nilca; Librarian IV; Technical Services Section; Master (MS); Southern Illinois/University at Carbondale (1983).

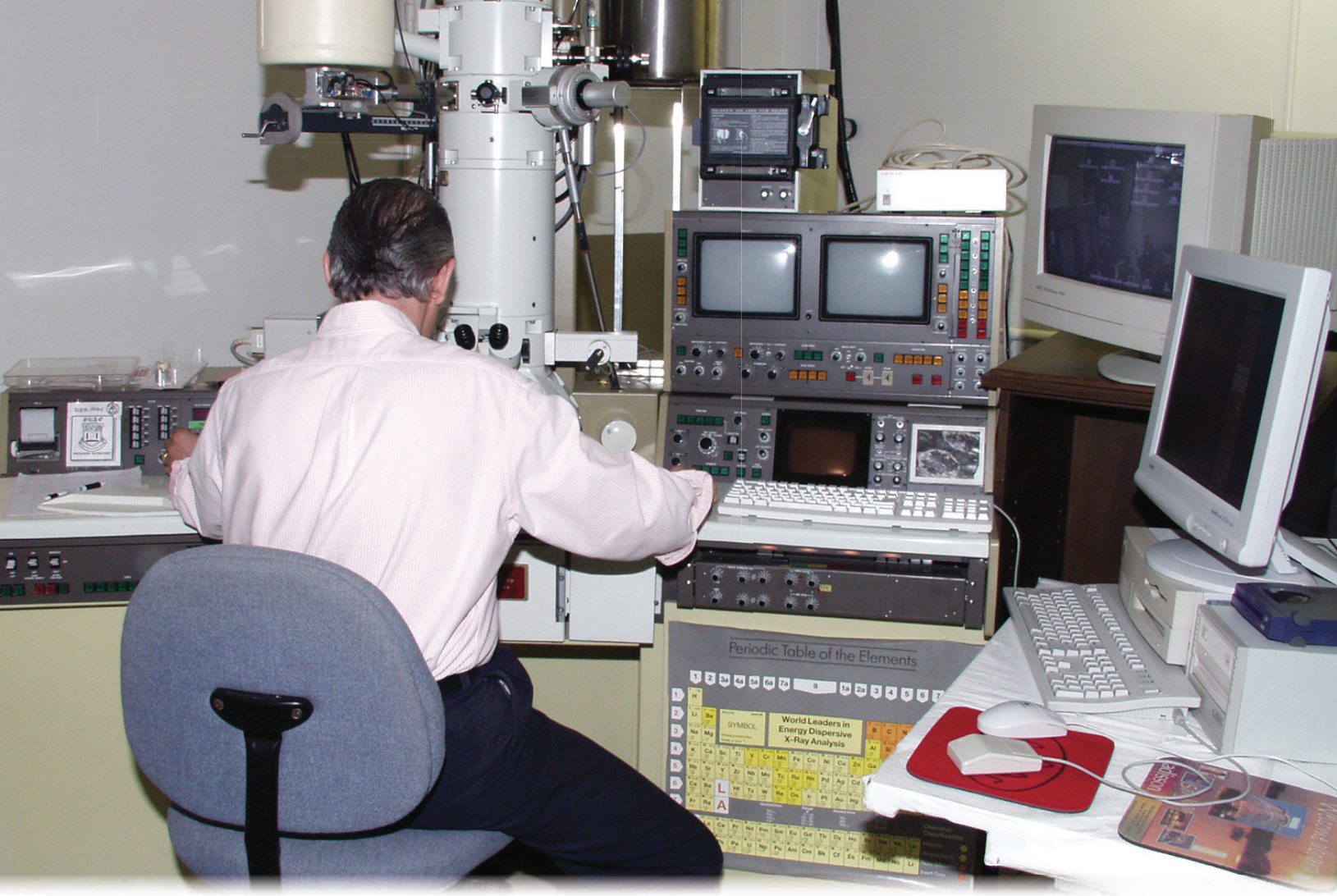
Quiñones-Maurás, Irma; Librarian II; Administrative Office; Doctorate(EdD); University of Puerto Rico, Río Piedras Campus (2008).

Santos-Corrada, Carmen; Librarian III; Special Collections Section; Master (MLS); University of Puerto Rico, Río Piedras Campus (1993).

Seguí-Caballero, Charles; Librarian I; Serial Publications Section; Master (MLS); University of Puerto Rico, Río Piedras Campus (2004).

Barrios-Llorens, Rossana, Librarian I; Administrative Office; Master (MIS); University of Puerto Rico, Río Piedras Campus (2004).

Amill-Quiles, Pedro; Librarian I; Reference Section; Master (MLS); University of Puerto Rico, Río Piedras Campus (2004).



Research Facilities and Programs

OFFICE OF THE CHANCELLOR

ANIMAL RESOURCES CENTER

The Animal Resources Center (ARC) is responsible for the daily care of all animals used for teaching and research at the Medical Sciences Campus. The animal facilities are fully accredited by the American Association for the Accreditation of Laboratory Animal Care (AAALAC). The research conducted focuses primarily on the use of laboratory animals as models of human disease.

The ARC is located on the 10th and 11th floors of the Main Building of the Medical Sciences Campus. Facilities on the 10th floor include temperature and light controlled rooms for the housing of rodents and lagomorphs, a Biolevel 2 area for non-human primates, isolation wards with laminar flow ventilation systems and hoods, procedure and treatment rooms, a necropsy room, and administrative offices. The 11th floor contains adequate space and cages for housing of larger species. There is an additional rodent housing room, and a Biolevel 2 non-human primate rooms. The 11th floor also contains a Biolevel 3 animal facility equipped to house up to 40 primates for use in biohazardous research. Ongoing research includes studies on SIV/HIV, axonal regeneration, hormone effects on behavior, addiction, FDA preclinical studies, fasciolasis, cardiology and airway physiology, among others.

CARIBBEAN PRIMATE RESEARCH CENTER

The Caribbean Primate Research Center (CPRC) consists of three facilities with close to 2,000 rhesus monkeys available for biomedical and behavioral research. The animal facilities are fully accredited by the American Association for the Accreditation of Laboratory Animal Care (AAALAC).

Cayo Santiago, a small island off the southeastern coast of Puerto Rico near Punta Santiago, was the first free-ranging colony of rhesus macaques established in the Americas. Since 1938, studies conducted on this population have provided the basis for researchers' knowledge of social organization in rhesus macaques. Furthermonre, studies from Cayo Santiago have largely contributed to our understanding of social and sexual behavior in old primates. The colony has been monitored continuously since 1956 by a team of trained observers responsible for maintenance of a daily census of the animals. The demographic database on the colony for the past 45 years is computerized. The population presently consists of about 1,115 monkeys divided into seven naturally-formed social groups. DNA fingerprinting is used to determine complete pedigrees as well as for research on paternity and maternity. This colony is ideally suited for studies on behavior and non-invasive biomedical research. The Center provides daily boat transportation to the island. Office, computer, and laboratory spaces are located in Punta Santiago.

The Sabana Seca Field Station is located on a 400 acre tract in Sabana Seca, about 12 miles west of downtown San Juan. This facility houses approximately 1,000 rhesus monkeys in outdoor enclosures. Ready access and differing cage configurations allow many types of behavioral and biomedical studies to be conducted at this facility.

At the CPRC Museum, the Center has the world's largest collection (over 2,500) of complete nonhuman primate skeletons for osteological research.

EXTRAMURAL RESEARCH DEVELOPMENT AWARD (EARDA)

The Extramural Research Development Award (EARDA) was created to:

- Exhance the research productivity of the faculty, and facilitate research experiences for students to reduce health disparities, and improve the health related quality of life of the Puerto Rican community.
- Encourage research excellence, integrity and interdisciplinary collaboration.

Services

- Sponsor mini pilot projects /yearly competition.
- Facilitate the communication between the funding agencies and the faculty.
- Coordinate/conduct workshops on grants writing, grants process, proposal development, and scientific publication.

- Disseminate information on funding opportunities.
- Assist PIs in finding funding appropriate to their research interests and developmental level.
- Assist PIs in the development of proposals with a focus on suitability of funding source and compliance with local and federal guidelines.
- Provide information on federal and institutional research regulations.
- Help orient faculty on IRB and IACUC Policies and Procedures for extrauniversity funding.
- Orientation on scientific misconduct, copyrights and patents, conflicts of interests, ect.
- Suggest sources for grant writing and editing assistance.

PARTNERSHIP FOR EXCELLENCE IN CANCER RESEARCH

Significant disparities in cancer incidence and outcomes exist among ethnic minority populations. The goal of the Partnership for Excellence in Cancer Research between The University of Puerto Rico Cancer Center and The University of Texas M. D. Anderson Cancer Center is to establish a comprehensive long-term mutually beneficial partnership aimed at understanding the reasons behind cancer disparities and their impact on minority populations.

Partnership benefits include, but are not limited to, opportunities for:

- Establishing working relationships between researchers and clinicians at both institutions.
- Funding projects to explore minority cancer-related health disparities.
- Providing undergraduate, graduate, medical and postdoctoral student mentored training experiences with clinical and research faculty in cancer research.

Collaboration Opportunities

Cancer Research:
Cancer research projects in any area of basic, clinical, prevention, control, behavioral or population research.

Cancer Training and Career Development:
Cancer training and career development programs with an emphasis on the training of minority scientists and on educating other trainees to appreciate the issues and problems associated with cancer disparities in minority populations.

Cancer Education:
Cancer education programs augmenting or creating new curricula that would apprise and culturally sensitize graduate and postdoctoral students in research, medicine and public health of the need to reduce disproportionate cancer burden in minority populations.

Cancer Outreach:
Cancer outreach programs that help minority communities to develop and manage their own culturally sensitive education programs on cancer risk, early detection, screening, prevention, and treatment. Through funding for collaborative projects, the partnership hopes to improve the competitiveness of clinicians and researchers from The University of Puerto Rico and M. D. Anderson to apply for other types of competitive funding.

Faculty and Trainee Opportunities

Early recruitment of underrepresented minorities to biomedical and health research training is essential to ensure that society's diversity is reflected in those professions. The Partnership helps to prepare underrepresented minorities to become independent clinical and basic cancer researchers.

Current Opportunities Available Include:
Rotations for Graduate Students, Postdoctoral Research Fellows, and Clinical Trainees. Two week to up to three month clinical and basic sciences rotations are available at each institution. These rotations enable trainees from The University of Puerto Rico to work with M. D. Anderson clinicians and researchers to gain hands-on cancer research experience. These rotations also enable M. D.

Anderson trainees to gain increased first-hand knowledge about cancer in ethnic minority populations and skills in culturally sensitive patient care. Both rotations also include didactics and special events.

Faculty Development

Seminars, workshops, and short visits to M. D. Anderson and the Puerto Rico Cancer Center and other special events for faculty development are offered through the Partnership on an ongoing basis.

M. D. Anderson Summer Research Program

The 10-week Summer Research Program offers college and medical students from The University of Puerto Rico an opportunity to explore biomedical research as it relates to cancer, to gain firsthand biomedical research experiences in the clinical or basic sciences, and to attend institutional lectures and seminars given by M. D. Anderson faculty.

For more information on the Partnership Opportunities listed above, please go to our website at **www.mdanderson.org/departments/prcc** or **www.md.rcm.upr.edu/ccpr/eng/**.

DEANSHIP FOR ACADEMIC AFFAIRS

INSTITUTE OF NEUROBIOLOGY

The Institute of Neurobiology of the University of Puerto Rico Medical Sciences Campus is an interdepartmental, interdisciplinary research facility. It is devoted to and equipped for the study of excitable cells and the neurobiology systems formed by them. In addition, the laboratory provides access to the rich fauna and flora which inhabit the littoral waters and the rain forests of Puerto Rico. All laboratory facilities are open to cellular neurobiologists and to research workers including physiologists, anatomists, biochemists, toxicologists, zoologists, and others, both from the University of Puerto Rico and visiting scientists from universities on the mainland and foreign countries.

Ongoing research includes studies of oscillating neuronal circuits in lobster ganglia, the interactions between neurons and glial cells in amphibians, excitation-contraction coupling in invertebrate muscle, establishment of synapses between identified neurons in insects, gene expression in individual identified pyloric neurons in lobsters calcium signaling in muscle, the nature and neural control of ligament stiffening of the joints of sea urchin spines, and the activity, synthesis and turnover of the sodium pump in vertebrates and invertebrates. Retinal projection pathways responsible for the transmission of color information in the visual system, and the morphology of retinal cells that preferentially respond to certain colors are also under investigation. Molluscs are used to investigate the roles of neuropeptides as signaling molecules in the mediation and modulation of behavior. The neurotoxic actions of compounds isolated from tropical marine organisms, some of which are implicated in the fish intoxication syndrome known as ciguatera, are also studied at the cellular level.

The Institute is housed in a building overlooking the Atlantic Ocean in Old San Juan. In addition to laboratories and equipment for experimental research in morphology, including electron microscopy and confocal microscopy, electrophysiology, tissue culture, imaging of intracellular ions by fluorescence methods, and neurochemistry. There are class and seminar rooms, staff offices, and workshops. Guest rooms and kitchen facilities are also available for visiting scientists.

BEHAVIORAL SCIENCES RESEARCH INSTITUTE

The Behavioral Sciences Research Institute is a scientific research program under the Deanship for Academic Affairs of the Medical Sciences Campus. Its main goals are to carry out studies of mental disorders, behavioral problems and their associated features in the adult, child, and adolescent population of Puerto Rico; to translate, adapt to the Puerto Rican culture, and test the psychometric properties of the various diagnostic instruments used in the research performed; to develop methodologies and theoretical models which are applicable to research with Hispanic and other minority populations within the United States; to promote collaborative research with other research centers and researchers within and outside the island, including European research centers; and to provide training to students in basic research skills, both within the University and outside, particularly in Latin America.

The Institute has been funded by various grants from the National Institute of Mental Health, National Institute

of Drug Abuse, World Health Organization, and the William T. Grant Foundation. Current projects include: Antisocial Behaviors in US and Island Puerto Rican Youth, Puerto Rico Neonatal Twin Registry, and Pediatric Asthma Disparities: Perceptions and Management.

Past research includes: Vulnerability of Drug Abuse in Puerto Rican Children, Service Use Need Outcomes in Puerto Rican Children, and Translation and Adaptation of the CAPA into Spanish.

RESEARCH CENTERS IN MINORITY INSTITUTIONS (RCMI) PROGRAM

The Research Centers in Minority Institutions (RCMI) Program in the National Center for Research Resources is a congressionally mandated program initiated by the National Institutes of Health (NIH) in 1985. The RCMI Program is a unique concept in the history of NIH to increase the participation of underrepresented minorities in biomedical research. This uniqueness is attributable to the program's focus on institutions rather than on individual investigators.

The University of Puerto Rico Medical Sciences Campus has participated in the RCMI Program since 1986, when the institution was awarded its first RCMI grant. The Program is currently in its fourth cycle of funding, 2001-2006. The goal of the RCMI Program is to continue the development of research at the Medical Sciences Campus, by focusing on the development of a strong infrastructure for conducting research related to health disparities in the Puerto Rican population. Research approaches to address this goal range from the molecular to the clinical level. The specific aims are to: (1) develop infrastructure and provide support services to facilitate the conduct of research related to health disparities; (2) target specific areas of research related to health disparities and provide a focal point for these research activities on campus; and (3) promote the professional development of research faculty and technical personnel working on this area. To achieve these objectives, the RCMI Program established the Health Disparities Research Program, which has three components. The Division of Research Resources, includes all activities that provide support services in the areas of molecular genetics, information architecture, and image analysis. The Division of Research Development supports research activities addressing health disparities in the population such as AIDS, women's health (breast cancer, osteoporosis), emerging infectious diseases, and blood disorders. The Division of Advancement in Research provides opportunities for strengthening research skills, obtaining specialized services on biostatistics, epidemiology and scientific editing, rewarding role models, protecting and marketing ideas, and accessing research-related databases. The continuous contribution of the RCMI Program to the research infrastructure of the Medical Sciences Campus is critical to the preservation of the progress made thus far and in permitting still greater levels of achievement by focusing on the health disparities that affect the Puerto Rican population.

CLINICAL RESEARCH CENTER

The goal of the Clinical Research Center is to develop the necessary infrastructure and support services to conduct clinical research activities and to stimulate the clinical research potential of the faculty. The Center has established the following goals:

- Provide opportunities for updating technical expertise and knowledge in clinical research methods.
- Facilitate the interaction between basic and clinical investigators on campus.
- Facilitate the interaction between Medical Sciences Campus clinical investigators and those of other institutions.

These goals are achieved through the center's three major components:

- The Clinical Research Workshops Program coordinates a series of clinical research workshops and seminars by local and external faculty.
- The Clinical Research Faculty Training Program provides opportunities for training to local clinical research faculty in other research institutions.
- The Visiting Faculty Program coordinates visits by established clinical researchers who collaborate and offer consultation in specific clinical research areas or projects.

MINORITY BIOMEDICAL RESEARCH SUPPORT (MBRS), SUPPORT OF CONTINUOUS RESEARCH EXCELLENCE (SCORE) , AND RESEARCH INITIATIVE FOR SCIENTIFIC ENHANCEMENT (RISE) PROGRAMS

The National Institute of General Medical Sciences (NIGMS) is dedicated to increasing the number of scientists who are members of minority groups currently underrepresented in biomedical research, including: Blacks, Hispanics, Native Americans, and Pacific Islanders. Towards this end, NIGMS sponsors minority research through the MBRS Program. The program awards grants to educational institutions with substantial minority enrollments in order to support research by faculty members, strengthen the institution's biomedical research capabilities, and provide opportunities for students to work as part of a research team. To be eligible for the program, schools must have either a fifty percent or more minority student enrollment or, if the minority student population is significant but less than fifty percent, a demonstrated commitment to the special encouragement and assistance of minority students and faculty. The Medical Sciences Campus of the University of Puerto Rico is currently a grantee institution.

The MBRS Program provides support for faculty research initiatives under the MBRS Support of Continuous Research Excellence (SCORE) Program. This program provides support for faculty to develop their own independent research leading to peer-reviewed publications, presentations at scientific meetings, and sufficient data for submission of competitive applications for independent research. The purpose of the MBRS Research Initiative for Scientific Enhancement (RISE) Program is to enhance the research environment at minority-serving institutions. Its overall goal is to increase the interest, skills, and competitiveness of students and faculty in pursuit of biomedical research careers. The RISE Program currently provides support for student development in externally-funded biomedical research projects.

The MBRS SCORE and MBRS RISE Programs fulfill the overall MBRS Program's mission of increasing the number of minority scientists engaged in biomedical research by awarding grants to enable faculty and students to participate in biomedical research. Awards are also made for activities such as attendance to scientific meetings and participation in research during the summer at off-campus laboratories. Monies are also allotted for equipment and laboratory improvements.

SCHOOL OF MEDICINE

THE HISPANIC CENTER OF EXCELLENCE PROGRAM

The Hispanic Center of Excellence Program of the University of Puerto Rico School of Medicine is a federally funded program administered through the Office of Disadvantaged Assistance, Bureau of Health Professions of the Public Health Service. Grants for Centers of Excellence are authorized under Section 782 of the Public Health Service Act. These are awarded to public or nonprofit private health professions schools to support programs of excellence in health professions education of minority individuals.

The Hispanic Center of Excellence Program of the University of Puerto Rico School of Medicine began on September 1, 1993. It contributes to the understanding of health issues affecting Hispanics, the development of instructional activities for health professionals serving mainly Hispanic populations, and the training of Hispanic physicians to deliver culturally sensitive health care and who will understand and contribute to the solutions of the health problems affecting these populations.

The Program is an important promoter of the training of generalist physicians and supports the development of research that is relevant to the health problems faced by Hispanics in Puerto Rico and the US mainland. The Community Oriented Primary Care model is promoted as an appropriate service delivery model upon which instructional activities and relevant research may be developed.

The Program conducts activities to strengthen and expand the existing institutional programs concerning student performance and recruitment, information resources, curriculum, faculty development and retention, and faculty and student research. Research is addressed by the following objectives:

- Faculty Research Objective

  To develop research in community oriented primary care, health services outcomes, and Hispanic health

problems that will result in publications and/or presentations by the faculty.

- Student Research Objective

  To provide students with a supervised research experience dealing with health issues that affect Hispanics on the island and on the mainland, the results of which will be presented at the Medical Sciences Campus Annual Research Forum or another appropriate professional or scientific forum.

In order to strengthen the program, the faculty training and faculty research components are being implemented in collaboration with the Tufts University School of Medicine and the University of Puerto Rico Graduate School of Public Health. In addition, the Program has joined efforts with the Division of Biomedical Sciences of the School of Medicine in order to enhance the research activities of school faculty and students.

TRANSFUSION MEDICINE PROGRAM

Transfusion Medicine is a multidisciplinary area concerned with the proper use or removal of blood and its components in the treatment or prevention of human disease states.

This program of the Department of Pathology and Laboratory Medicine was funded by a Transfusion Medicine Academic Award (TMAA) granted to the University of Puerto Rico, School of Medicine by the Division of Blood Diseases and Resources, National Heart, Lung and Blood Institute of the National Institutes of Health (NIH) in 1990.

The TMAA program began in 1983 and has since granted awards to prestigious medicine and veterinary schools. Among other goals, the program seeks to stimulate the development of multidisciplinary curricula in transfusion medicine and permit awarders to broaden their expertise in transfusion medicine so as to contribute more effectively to the teaching, research, and clinical needs of the discipline. Besides attracting students, physicians, and scientists to the field, the program encourages faculty to provide instruction in transfusion medicine. It also facilitates the exchange of information, education, and evaluation techniques among the research, medical, and service communities. The Program provides information related to Transfusion Medicine at its Information Center. It also offers elective courses on the subject to medical students, residents, and fellows. An exchange program exists with Latin American institutions in the field.

PUERTO RICO CANCER CENTER

The Puerto Rico Cancer Center comprises programs in basic research, clinical research, medical care, education, and community services. It also maintains the Islandwide Cancer Management System.

The Cancer Center seeks to establish programs in basic and clinical research which are of high scientific merit in accordance with the National Cancer Plan and which offer appropriate solutions to various cancer problems. The Center also strives to provide optimal care to cancer patients using a multidisciplinary approach in diagnosis, confirmation, evaluation, treatment, and rehabilitation by applying the best and most advanced diagnostic methods and treatment plans.

Among the Center's educational goals are educational programs for both professional and technical personnel, which meet the needs of the increasing cancer problem in Puerto Rico and abroad, and community educational programs to raise public awareness regarding the early and varied manifestations of cancer and the need to seek prompt and efficient care. The Center also provides an environment in which new basic findings in cancer research may be translated into medical practice and serves as a demonstration center for dissemination of these new therapeutic techniques.

The Center reaches community programs by establishing an effective collaboration between practicing health professionals institutions, and various agencies in Puerto Rico which participate in the Islandwide Cancer Management System.

The Puerto Rico Cancer Center has established relationships with other cancer centers on the mainland in order to exchange information, and share activities of mutual interest and resources Some of the services offered by the Center include: Clinical Immunobiology Laboratory, Leukapheresis Laboratory, Tumor Registry, Clinical Cancer Research Unit, seminars, symposia, and editorial services.

MATERNAL INFANT STUDY CENTER - CEMI

The Maternal-Infant Study Center, CEMI in spanish, is dedicated to scientific research, training of health

professionals and service to women who live with AIDS.

The program offers patients with a multidisciplinary team that provides medical, gynecologic-obstetrics, psychiatric, psychological and social work services. Also provides research clinics with new medicines related with HIV.

One of the most important achievements has been to reduce to zero the perinatal transmission of HIV in patients they have attended. None of the children born to the patients has acquired HIV.

WOMEN AND INFANTS TRANSMISSION STUDY (WITS)

The Women and Infants Transmission Study (WITS) is a multi-center longitudinal, natural history study of pregnant women with human immunodeficiency virus (HIV) infection and their offspring.

This study has had two major phases. WITS 1 enrolled three cohorts including HIV-infected pregnant women and the offspring of HIV-infected women from 1990 through 1993. WITS 2 recruited only HIV-infected pregnant women and their offspring and followed all postpartum women and their children from both WITS 1 and WITS 2 until the end of the study in 1998. The project is on its third phase (WITS 3) and is still recruiting pregnant women and their infants.

This prospective cohort study is designed to answer questions such as likelihood of HIV transmission, the effect of perinatally acquired HIV infection on the infant, and the most effective means for early diagnosis of HIV infection in the infant. Current research also seeks to determine risk factors for ante-partum vs. intra-partum transmission and the most useful predictors for HIV disease progression in postpartum.

There are six clinic sites participating in WITS 3, namely State University of New York (SUNY); the Boston Consortium of Hospitals including University of Massachusetts Medical Center, Worcester; Central Massachusetts Medical Center, Worcester; Boston City Hospital, Children's Hospital and Bringham and Women's Hospital; the University of Illinois, Chicago; Baylor University, Houston, Texas; Columbia Presbyterian, New York City; and the University of Puerto Rico, School of Medicine, San Juan. C-TASK serves as the Statistical and Coordinating Center. Four central laboratories are responsible for processing and analyzing specific WITS 3 laboratory specimens.

It is expected that the number of cases of pediatric AIDS will be eventually reduced by lowering the risks of transmission of the virus from mother to infant.

AIDS CLINICAL TRIAL UNIT FOR ADULTS

The AIDS Clinical Trial Unit of the Department of Medicine is part of a multicenter clinical research unit funded by NIAID and its AIDS Division. Its purpose is to offer experimental drug protocols approved by NIH and FDA to the population with HIV/AIDS. The unit has excellent physical facilities and services including clinical evaluation units and pharmacy, psychosocial evaluation, nursing, data management, and health education services. It is actively participating in sixteen clinical protocols and eight sub-studies. Since 1991, the Unit has participated in twenty-eight clinical protocols and fourteen sub-studies, with 546 volunteers.

VACCINE EVALUATION STUDIES OF REPLICATION-DEFECTIVE SIV

Under the sponsorship of a federal research grant, the BL3 Virology Laboratory of the Department of Microbiology and Medical Zoology of the School of Medicine is currently evaluating the vaccine potential of defective simian immunodeficiency virus (SIV) mutants.

Simian immunodeficiency virus mutants generated by the Virology Laboratory are characterized at the molecular level using recombinant DNA techniques. The immunogenicity of these replication-defective mutants is ascertained by the well defined SIV-rhesus macaque model. These studies should lead to a better understanding of SIV replication and of the correlates of protection against pathogenic lentiviruses, including HIV.

CLINICAL MICROBIOLOGY LABORATORY

The Clinical Microbiology Laboratory of the Department of Microbiology and Medical Zoology of the School of Medicine was established in 1983. It is a reference laboratory for Puerto Rico and the Caribbean which performs specialized procedures such as isolation of herpes simplex virus and chlamydia by tissue culture and monoclonal antibody techniques. The laboratory gives technical and scientific support to both clinical and basic research projects that require PCR procedures for

the detection of viral genome sequences such as HIV and HPV in human specimens.

SCHOOL OF DENTAL MEDICINE

SCHOOL OF DENTAL MEDICINE RESEARCH CENTER

The School of Dental Medicine Research Center is headed by the School of Dental Medicine's Assistant Dean. The Center has four major components: 1) Project RIPCOHD, to develop its infrastructure and conduct research in oral health disparities with emphasis in dental caries; 2) Project RAAHP, a collaborative effort with New York University to study oral cancer in minorities; 3) an Undergraduate Summer Research Program that places undergraduate students (6-8 weeks) in research intensive universities in the U.S.A.; and 4 thesis) research component for students pursuing a Master of Dental Sciences.

The Center's staff offers pre-doctoral dental students, as well as, residents in dental specialties courses in research methods, statistics, and epidemiology.

The School of Dental Medicine Research Center has conducted or supported several faculty research projects, among them: 1) an investigation of caries, fluorosis and other oral health conditions in a national (PR) stratified random sample of 12-year olds; 2) two oral health studies in the elderly in Puerto Rico; and 3) clinical trials of iodine and fluoride varnish interventions to minimize ECC prevalence. In addition, several corporate sponsored clinical trials to evaluate the effect of various therapeutics in toothpaste have been conducted.

SCHOOL OF PHARMACY

CENTER FOR PHARMACEUTICAL PROCESSING RESEARCH (CPPR-UPR)

The Center for Pharmaceutical Processing Research, established in 1995, is one of over 50 such Centers established by the National Science Foundation, and the only one devoted to pharmaceutical processing research. CPPR is a multi-university center comprised by the University of Purdue, the University of Connecticut, and the University of Puerto Rico. The mission of the CPPR is to foster an interdisciplinary approach to pharmaceutical processing–related research, to catalyze interaction between industrial and academic scientists, and to make the application of a basic science approach to formulation and manufacture of drug products an integral part of graduate pharmaceutical education. Pharmaceuticals are foremost in the Puerto Rican industrial field. This industry is geared to the manufacturing and processing of both active ingredient and finished dosage forms, which is in line with the research focus of CPPR. In agreement with its mission, the CPPR's main goal is to establish an effective research program to support the pharmaceutical industry in Puerto Rico in the solution of manufacturing and processing problems. This goal is attained through the active participation of industry, and UPR faculty, and students in the submission of research proposals. CPPR has also established a collaboration alliance with INDUNIV (University/Industry Research Consortium) to facilitate the interaction between industry and UPR researchers, and to identify areas of research interest and opportunities within the pharmaceutical industry.

NATURAL PRODUCTS LABORATORY

The Natural Products Laboratory screens natural products for potential anti-HIV, anti-cancer, and anti-malarial bioactives. Through the National Institutes of Health Research Centers for Minority Institutions grant, an AIDS Screening Laboratory was established in-house, being the only one of its kind in the Caribbean and Latin America. The laboratory is one of the few in the world dedicated to the broad screening of potential anti-HIV bioactives. Strong collaborative research links have been established with the College of Pharmacy, University of Illinois, Chicago; the Walter Reed Army Institute of Research; and the AIDS Center at Purdue University.

DRUG DISCOVERY LABORATORY

New drugs are discovered from two main sources: natural products and laboratory synthesis of compounds. The research performed in the Drug Discovery Laboratory involves the screening of local flora for potential biological activity that could be useful in combating disease. The other research performed this laboratory is in the area of chemical synthesis as to generate compounds with

biological activity. Two examples are: (1) synthesis of cyclic disulfides as inhibitors of enzymes with active-site cysteines and (2) novel Rac inhibitors as therapeutic agents for breast cancer metastasis.

PHARMACEUTICAL RESEARCH, DEVELOPMENT & PROCESSING LABORATORY

Research in the design and development of novel drug products from preformulation, formulation, up to production including stability, quality and in-vitro in-vivo correlation is performed. Solids, liquids and semisolids dosage form technology; pharmaceutical material characterization and performance; process analytical technology (PAT); controlled release and novel delivery systems such as nanotechnology, microspheres, liposomes, implants, microcapsules and mucoadhesives are studied.

PHARMACOLOGY/MOLECULAR BIOLOGY LABORATORY

Research conducted in this laboratory focuses in two areas.

Cancer

Research is conducted to understand the biological principles underlying tumor development and the study of in vitro cancer cell systems to determine the signaling pathways involved in the cellular responses to novel cancer therapeutic treatments. Emphasis is given to study the role of neuregulins in the regulation of the epidermal growth factor receptor gene. The ultimate aim is to contribute in providing novel treatment alternatives to cancer patients.

Diabetes and Cardiovascular Diseases

The insulin receptor (IR) pathway controls several important biological functions, such as regulation of glucose metabolism, stimulation of lipogenesis, inhibition of lipolysis, and stimulation of amino acid transport into cells, growth, DNA synthesis, and cell replications. The molecular basis for these effects remains poorly understood. Studies in this laboratory are designed to investigate the intracellular interactions and dynamics of the insulin receptor signaling pathway affected by the serious medical conditions observed in Type 2 diabetes.

DRUG ANALYSIS/PHARMACOKINETICS

Current research goals encompass the areas of clinical trial simulations and population pharmacokinetic data analysis, and modeling of high-dose intravenous vitamin therapy in healthy volunteers and cancer patients in order to improve drug efficacy. Another area of interest is in pharmacogenomics translational research as to better understand the genetic basis of the observed variability in the response to medications in Puerto Ricans, including adverse and desired effects, as well as drug metabolism.

PHARMACEUTICAL SCIENCES RESEARCH SUPPORT UNIT

The Pharmaceutical Sciences Research Support Unit responds directly to the Chair of the Pharmaceutical Sciences Department. Its mission is to promote research by making available to our investigators instruments such as HPLCs, GC-MSs, NMR, among others and facilitating physical complementary spaces. These areas include a fully equipped laboratory dedicated to chemical and biological research, graduate student offices, a small conference room, and a general documentation and administration room.

GRADUATE SCHOOL OF PUBLIC HEALTH

CENTER FOR HEALTH CARE SYSTEMS EVALUATION AND SOCIOMEDICAL RESEARCH

The goal of the Center for Health Care Systems Evaluation and Sociomedical Research of the Graduate School of Public Health is to promote and conduct research aimed at examining the main health problems that impact Latinos. The research generated by the Center is geared at improving the health conditions and quality of life of the Latino population. The experience in field studies undertaken by the Center during the past fifteen years has been of great help in obtaining successful grant applications from the National Institutes

of Health, Center for Disease Control and Prevention, and in establishing various collaborative studies with other institutions. In addition to its publications, the Center disseminates information through workshops on evaluation research, methodology, and development of measurement instruments.

The research team brings a broad range of skills and experiences in the field of sociomedical research. It includes psychologists, sociologists, physicians, statisticians, health economists, and epidemiologists, among others. Researchers from other institutions serve as consultants. The Center also has trained interviewers, personnel skilled in coding and computer operations, and consultants in multivariate statistical analysis and in the construction of measurement instruments.

CENSUS DATA CENTER

The Graduate School of Public Health, in agreement with the U.S. Bureau of the Census and the Puerto Rico Planning Board, established the Census Data Center. The Center's main objective is to disseminate census and health data to the University community and the general public. According to the agreement, the Center makes census information available to the public, while the Bureau of the Census (through the Planning Board) provides the Center with all publications, tapes, and disks it produces.

Operated by the School's Demography Program, the Center has one of the largest collections of reports of all the censuses undertaken by the U.S. Bureau of the Census in the Island. The collection also includes data from censuses taken under the Spanish Regime. The Puerto Rico Vital Statistics Annual Report, as well as death and marriage survey tapes from the Department of Health, are part of the data inventory. Reports from other public agencies, such as the Department of Labor, are also available.

The Center conducts activities such as lectures, workshops, and technical assistance in accessing, interpreting, and using computerized and published data for research. Center staff produces a biannual publication called "Noticenso" which informs the community regarding census data and results of research work conducted by the faculty of the Demography Program and other researchers.

SCHOOL OF NURSING

NURSING RESEARCH CENTER ON HIV/AIDS HEALTH DISPARITIES

The Nursing Research Center on HIV/AIDS Health Disparities was created in 2002 with a five year grant received from the National Institutes of Health (NIH) to address the need for nursing research on HIV/AIDS health disparities in Puerto Rico. The Center´s goal is to improve health outcomes for people living with and affected by HIV/AIDS by enhancing the knowledge base for HIV/AIDS care. The Center´s area of emphasis includes: self-care and symptom management, adherence, sexual and reproductive issues in women with HIV/AIDS, functional health literacy, and information dissemination. The Center has strong partnerships with local programs conducting research and provideing ambulatory HIV health services, with community based programs, other health care providers, and with the UCSF International HIV/AIDS Nursing Research Network and nurse scientists from around the world. Graduate and undergraduate students are involved in research projects, receives mentoring to increase their interest in how to conduct research on chronic disease such as HIV/AIDS, and facilitate the interaction with faculty conducting research with clinical relevance.

Nursing Center

The goal of the Nursing Center is to support research endeavors through strengthening research culture and further supporting the implementation of sponsored and not sponsored research projects. Center promotes the collaborative research with other Schools at the Medical Sciences Campus.



Service Programs

DEANSHIP FOR ACADEMIC AFFAIRS

FLORIDA CARIBBEAN AIDS EDUCATION AND TRAINING CENTER (PRAETC)

On July 1, 2002 the Puerto Rico AIDS Education and Training Center (PRAETC) becomes a partner with the Florida AIDS Education and Training Center to form together with the US Virgin Islands, the Florida / Caribbean AIDS Education and Training Center (AETC). The geographic region served encompasses the state of Florida, the Commonwealth of Puerto Rico, and the US Virgin Islands. The mission is to ensure that physicians, nurses, dentists, pharmacists, and other health professionals receive state-of-the-art information, training, and consultation on prevention and treatments for HIV and AIDS.

In Puerto Rico, the Florida/Caribbean AETC (F/C AETC) is under the Deanship for Academic Affairs of the Medical Sciences Campus (MSC), University of Puerto Rico (UPR) who is the lead agency. Training activities are offered island-wide in order to make them accessible to all health care providers.

The F/C AETC at UPR/MSC disseminates new treatment information and offers education in a variety of formats including workshops, hands-on supervised clinical training, clinical consultations, distance learning, and specialty conferences. The educational program is based on a wide-ranging needs assessment that includes surveys of health professionals who provide services to HIV/AIDS population. The educational programs are developed and provided by professionals with expertise on HIV/AIDS.

Special emphasis is placed on training providers who offer services to HIV/AIDS population, and those who are located in community-based organizations, including rural hospitals, community and migrants health centers, public health clinics, AIDS services organizations, correctional facilities, and other non-profit organizations. Since year 2002 to 2009 over 8,000 health providers have been trained in over 700 educational activities.

Some of the educational programs the F/C AETC at UPR/MSC has developed are: charts review the mini-residency and preceptorship, which provides extensive clinical training and supervised experience in health care setting, and the clinical consultation (by phone or on site) in which the professionals can receive advice and support in the use of antiretroviral treatment and other issues related to HIV/AIDS clinical care.

SCHOOL OF MEDICINE

HEREDITARY DISEASE PROGRAM

The Hereditary Disease Program (HDP) of the School of Medicine is a special multidisciplinary clinical unit which provides comprehensive health services, education, and research activities related to genetic diseases common in the Puerto Rican community. Its goal is to reduce the prevalence, morbidity, and mortality of hereditary diseases that affect relatively large segments of the population. It is part of the Hematology-Oncology Section of the Department of Pediatrics and is located at the University Pediatric Hospital.

The Hereditary Disease Program specialized services include the Newborn Screening Program (for hemoglobinopathies, hypothyroidism, phenylketonuria, and galactosemia), the Pediatric Comprehensive Hemophilia Program, the Sickle Cell Treatment Program, and the Primary Genetics Program.

Besides screening, diagnostic, and comprehensive services, the HDP conducts multiple clinical and educational activities, and conducts clinical and epidemiologic studies on genetic diseases. Basic research on genetic mutations of hemoglobin S and hemophilia is in progress.

The program has made a significant impact on the delivery of quality health care to patients with genetic diseases and has helped to advance education and research on genetics in Puerto Rico during the past fourteen years.

HEMOGLOBINOPATHY TREATMENT AND RESEARCH PROGRAM

The Hemoglobinopathy Program is an island-wide service conducted by the Hematology- Oncology Section of the Department of Pediatrics of the University of Puerto Rico School of Medicine. The objectives of this program are to improve awareness and education about sickle cell disease, to decrease the prevalence of hemoglobinopathies in Puerto Rico, and to decrease

the morbidity and mortality of sickle cell disease in the island.

This health delivery program provides island-wide newborn screening for abnormal hemoglobins, and education and genetic counseling for individuals with sickle cell disease and traits of abnormal hemoglobin. It also delivers comprehensive health care to patients with symptomatic hemoglobinopathies.

Approximately 96% of all infants born in Puerto Rico are tested for abnormal hemoglobins. Positive cases are recalled for confirmatory testing and genetic counseling. Over 60% of all individuals identified with traits are advised regarding the meaning of this heterozygous condition. An average of sixteen (16) new patients with symptomatic hemoglobinopathies are diagnosed annually. Practically 100% of patients with symptomatic hemoglobinopathies, mostly sickle cell disease, are admitted to a comprehensive clinic, where education, genetic counseling, psychosocial services, and continuous health care are provided.

Clinical and basic science research on hemoglobin S is also being conducted. The main objective of this research is to correlate clinical manifestations of sickle cell patients with hemoglobin F levels, and hemoglobin S haplotypes.

The hemoglobinopathy program has had a strong positive impact on the quality of health care given to sickle cell patients in Puerto Rico.

PUERTO RICO GERIATRIC EDUCATION CENTER (EVENING PROGRAM)

The Puerto Rico Geriatric Education Center (P.R.G.E.C.) is located at the Medical Sciences Campus of the University of Puerto Rico, under the Department of Internal Medicine, School of Medicine. It is one of the 47 Geriatric Centers funded since 1985 by the Bureau of Health Professions, Health Resources and Services Administration, dedicated to the advancement of geriatric education in the United States.

The Geriatric Education Center's ultimate goal is to improve the quality of health care services for the elderly population islandwide. Adequate and humane treatment of the elderly, responding to their diverse needs is promoted by the Center.

To achieve the fulfillment of this goal, the training program is addressed to:

- academic and clinical faculty in health and behavioral sciences, in both the private and public university systems.
- health professionals and direct service providers working with the elderly population.
- practitioners and students of related disciplines, such as: Medicine, Dentistry, Public Health Professions, Pharmacy, Nursing, Social Work, and others.

Objectives

- To train academic and clinical faculty in the health professions, practitioners, and students in geriatrics, in order to promote and improve health and social services to the elderly.
- To promote and assist the faculty of selected public and private higher education institutions in the incorporation of geriatric content into the existing curricula.
- To provide train-the-trainer instruction to enable faculty participants to develop and implement a health promotion program for older adults in a community setting.
- To collect and disseminate educational information in geriatric and gerontology to sustain training activities in those fields. Offer technical assistance when requested.
- To collaborate with state agencies and professional groups to improve communication and coordination for better utilization of resources available in their sites.
- To establish collaborative agreements with academic institutions to develop and implement health promotion models for older adults.

Training Activities

The University of Puerto Rico Geriatric Education Center offers:
Two Certificates on:

- Basic Aspects in Geriatrics
- Health Promotion and Maintenance for Older Adults

SCHOOL OF DENTAL MEDICINE

EXTRAMURAL TEAM PROGRAM

The Extramural Team Program of the School of Dental Medicine coordinates rotations for senior dental students designed to help them develop awareness and better understanding of dental health problems in Puerto Rico, as well as to develop positive attitudes and willingness to contribute to the solution of such problems.

Students offer services and apply the experiences gained, in order to refine, integrate, and enhance the knowledge, skills, and attitudes necessary to deliver comprehensive patient care.

The extramural clinical experience for senior dental students consists of planning and developing sound preventive and restorative services in dental clinic settings. Students rotate during a 5 week period at clinical sites in Mayagüez, Loíza, Río Piedras, Bayamón, Barceloneta, and Caguas. The rotations are designed to expose them to a variety of relevant health care experiences besides those available in the dental school environment. Is also provides didactic background and fundamental skills necessary in the delivery of health care to the population served by the program. Students not only acquire understanding and appreciation of dental techniques, but they also gain insight into the health needs of the community.

Students are exposed to an interdisciplinary experience in which they work as members of the health team in promoting the health of the individual, the family, and society.

INTRAMURAL FACULTY CLINIC

The Intramural Faculty Clinic offers dental services as a multidisciplinary faculty group. Difficult dental cases and patients requiring special treatments are seen at this clinic by School of Dental Medicine Faculty.

COMMUNITY ORAL HEALTH PROGRAM

The School of Dental Medicine Community Oral Health Program conducts a preventive oral health program in the community that seeks to increase the dental student's awareness of oral health needs of special groups. Among the groups served are substance abusers, inmates, children with disabilities, and the elderly.

Besides offering lectures and talks on oral health, the project sponsors a clinic at the San Gabriel School for the Deaf where fourth year students and pediatric dentistry residents offer preventive and restorative services. All activities are coordinated and supervised by faculty in the area of preventive dentistry.

SCHOOL OF PHARMACY

CENTER FOR DRUG INFORMATION AND RESEARCH

In 2009, as a response to the increased access to drug information throughout mass media services, and as a need to operationalize research activities already provided by its faculty, the University of Puerto Rico, School of Pharmacy, decided to expand the scope of the services provided by Sschool of Pharmacy's Drug Information Center (DIC). As a result, the center for drug information and research (CDIR) was created.

The CDIR serves as the focal point for drug information, research, education, and service within the University of Puerto Rico School of Pharmacy. The CDIR is the first academic-based research center in Puerto Rico solely dedicated to answer drug related information inquiries, provide health service research support consultations, and development, implementation and evaluation of pharmacy educational programs. The mission of the CDIR is to improve drug therapy in Puerto Rico through drug information services, and educational, clinical and novel research initiatives.

The CDIR replaces the School of Pharmacy's Drug Information Center, founded in 1973. The CDIR continues to offer the drug information services provided by the DIC since its inception, which consists of providing up-to-date drug information to health care professionals and students in Puerto Rico and abroad. However, the CDIR expands its drug information services spectrum by providing specialized talks to the community in Puerto Rico. In addition to the drug information services, the CDIR pursues its mission by implementing educational, clinical and novel research initiatives.

The educational initiatives offered by the Center seek to provide students, practitioners and patients with up-to-

date and accessible information on the best practices in pharmacotherapy. The clinical initiatives strengthen the ties between educations and practice by giving faculty and pharmacy students the opportunity to apply principles of pharmaceutical care to patients in various settings, and the research initiatives focus on generating new scientific knowledge with practical application in improving access to and outcomes of pharmaceutical care for patients in Puerto Rico.

The CDIR is located at the 5th floor of the Conrado Asenjo Medical Sciences Campus Library, University of Puerto Rico. For additional information, please contact:

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CONTINUING EDUCATION AND PROFESSIONAL STUDIES DIVISION (DECEP-FARMACIA)

Created in 1979 to foster the continuing development of pharmacists and pharmacy technicians, the University of Puerto Rico School of Pharmacy Continuing Education and Professional Studies Division (DECEP-Farmacia) plans, organizes, sponsors, and coordinates continuing education activities addressing current pharmacy topics and health related issues and problems. DECEP is acknowledged by the Health Professionals Examining Boards of Puerto Rico as a continuing education provider for the majority of health professionals in the Island. The University of Puerto Rico School of Pharmacy is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of continuing pharmacy education. For additional information, please contact:

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GRADUATE SCHOOL OF PUBLIC HEALTH

INSTITUTE ON DEVELOPMENTAL DISABILITIES

The Institute on Developmental Disabilities of the Graduate School of Public Health was established in 1991 under Public Law 101-496, amended in 1996 as 104-183. The program promotes the independence, productivity, integration and inclusion of individuals with developmental disabilities in society.

The Institute fulfills its role by addressing the needs of individuals with developmental disabilities through the core functions of bringing together the expertise of a higher education institution with service delivery systems. This is accomplished through interdisciplinary training and community-based services to individuals with disabilities and their families, in order to promote state-of-the-art experiences for students in the field, and consequently, offering more meaningful training. The Institute also develops alliances with the community, agencies and groups, educates professionals, paraprofessionals, consumers and families, provides technical assistance and disseminates information and research findings. The Institute's main projects and programs include: The Graduate Certificate in Developmental Disabilities-Early Intervention Program, a course on Aging and Developmental Disabilities, a Core Course on Developmental Disabilities, the Child Development Day Care Center, the Transition from School to Work Project, the project on Community-Based Employment Readiness and Development of Self-Advocacy Skills of Youngsters with Severe Disabilities, and the Training Initiative Project on Aging and Developmental Disabilities. The Institute also has a collaborative agreement with the Puerto Rico Department of Health to jointly implement Part C of the individuals with Disabilities Education Act (IDEA, 1996), and has been designated lead agency for the Comprehensive System for Personnel Development (CSPD).

TITLE X FAMILY PLANNING PROGRAM

The Title X Family Planning Program provides comprehensive health services to women and men of reproductive age throughout Puerto Rico. The Graduate

School of Public Health has been a Title X grantee since July 1969. In 1982, it was designated the sole Title X grantee within the Commonwealth of Puerto Rico. The Program receives, distributes, and monitors the utilization of Title X funds by contracted service in the Delegate Agencies. These Delegate Agencies provide comprehensive sex education and reproductive health services primarily to medically indigent patients in clinical sites serving 25 municipalities in Puerto Rico. Patients request the services on a voluntary basis. Their privacy and religious beliefs are fully respected.

Comprehensive family planning services include medical care, nursing, and health education, with emphasis on prevention and counseling. The Program's primary goal is to reduce the incidence of unintended pregnancies, especially among women and adolescents of low socio-economic means. By reducing the number of unintended pregnancies, the Program also aims to improve maternal and child health by reducing the low birth weight and infant morbidity and mortality, risk factors often associated with adolescent pregnancies or short interbirth intervals.

The Title X staff offers information on the use of contraceptive devices and female and male sterilizations. It also offers education, training, and technical assistance to health professionals in and outside the University setting.

Program goals include, among others, educating the Puerto Rican population on available family planning methods, aiding patients in the family planning decision-making process in tune with their beliefs and life styles, and extending the support offered to patients and their families in an attempt to deliver truly integrated and effective family planning services.

SCHOOL OF HEALTH PROFESSIONS

PROJECT OF EXCELLENCE IN INTERDISCIPLINARY SERVICES

The Project of Excellence in Interdisciplinary Services (PEIS), provides evaluation, treatment, consultation, and technical assistance to children and youth with special needs. Services are offered in an interdisciplinary manner.

The Project's philosophy promotes a holistic view of the child, with emphasis in his/her strengths and addressing his/her needs for educational and health services.

The PEIS has three main components. These are: a collaborative teamwork with teachers, parents, and health care providers in public schools; direct services at Project facilities; and a training institute for teachers, parents and health care providers.

RESEARCH INSTITUTE FOR GLOBAL HEALTH PROMOTION AND HEALTH EDUCATION

The Research Institute for Global Health Promotion and Health Education is based on the concept of Global Health Promotion. It was established for the development of interdisciplinary research and collaborations, recognizing that an interdisciplinary nature strengthens the exchange of knowledge between professionals, in health and other areas. The main objective of the Research Institute is to work with multiple risk behaviors, as defined by the Centers for Disease Control and Prevention (CDC): intentional and non-intentional injuries, alcohol and other drug use, smoking, sexual activity, nutrition, and lack of physical activity. The Institute is recognized as an initiative for new research in health promotion and education, and was recognized in June 2000 by the Inter-American Consortium of Universities and Training Centers in Health Promotion and Health Education, of the Pan-American Health Organization.

INTRAMURAL PRACTICE PLAN

Faculty members provide health services to the community in the Intramural Practice Plan. These services are available to the general public, to private, and public institutions. Students are exposed to an efficient, ethical, modern, and high quality model of professional practice.

Audiology clinics and Medical Review Officer (MRO) services are offered to the community. MRO services are intended to revise the results of detection tests for controlled substances. Nutrition and Speech-Language Pathology services are available since academic year 2003-2004.

SAN GABRIEL SCHOOL FOR THE DEAF PROJECT

The Speech-Language Pathology Program of the School of Health Professions has established arrangements with the San Gabriel School for the Deaf for the clinical practice of its students. Students are involved in assessment and intervention activities that help them develop skills in monitoring, evaluating, and utilizing amplification systems, orienting and advising teachers and parents of deaf children, and in collaborating in early intervention programs for the deaf.

COMMUNICATION FOR ADULTS PROJECT

The Communication for Adults Project of the Speech-Language Pathology/Program of the School of Health Professions, serves individuals eighteen years or older suffering from communication problems arising from stroke, trauma, dementia, and neuromuscular diseases.

The Project's activities are geared to promoting socially functional communication skills and helping patients retain their communication skills as long as possible.

SCHOOL OF NURSING

COMMUNITY CENTERS

The faculty of the School of Nursing coordinates rotations for baccalaureate and master's students in community settings. The community centers are geared to health promotion and illness prevention in the community. Interdisciplinary assessment and intervention activities are provided in an effort to find solutions to the health needs of the community.

CENTER FOR INTEGRAL HEALTH PROMOTION AND MAINTENANCE OF MANUAL A. PÉREZ

This Center provides health promotion, clinical services and has created innovative projects to address community health issues. One of the assets of this Center is the interdisciplinary interventions with students and faculty members of other Deanships and Governmental and Non-Governmental entities.

SIGMA THETA TAU INTERNATIONAL SOCIETY-CHAPTER EPSILON LAMBDA

Inception at the School of Nursing, Medical Sciences Campus, was celebrated on May 2, 2008. The honor society recognizes the values of scholarship and excellence in nursing practice. The Honor society supports these values through its professional development activities and services that focus on the core areas of education, leadership, career development, evidence-based nursing, research and scholarship. Joining the honor society signifies the commitment to excellence in the profession and acknowledges the academic and professional achievements. Students are invited based on grades during initial or graduate nursing preparation.



Admissions, Registration, and Graduation Procedures

ADMISSIONS

The Medical Sciences Campus encourages all applicants to seek the broadest intellectual and cultural formation prior to their training in the health professions. Candidates are admitted on a competitive basis. Therefore, applicants must present evidence of successful completion of all admission requirements for the program in which they are interested. In most programs, an admissions committee will also consider nonacademic factors as additional criteria in screening applicants. An application fee has been established for each academic program.

Applicants should submit their electronic application available in our web page: **http://sistemas.rcm.upr.edu/solicituduniforme** or **http://www.rcm.upr.edu/rcm/**.

Documents required upon submission of the application must be sent to:

UPR-Medical Sciences Campus
Central Office of Admissions
P.O. Box 365067
San Juan, Puerto Rico 00936-5067

TRANSFERS

A student from another institution of higher learning who applies for admission to the University of Puerto Rico, or a student who has previously been enrolled as a transient student and meets the admission requirement for a given program, will be considered a transfer student. The student who transfers from any other university to the University of Puerto Rico and who has completed less than 30 credits, will also be considered a transfer student if he/she wishes to apply to a campus of the University of Puerto Rico System.

The Office of Admissions will process applications of transfer students. Applicants must have satisfactorily completed the requirements established by the program they are applying to.

Applicants should submit their electronic application available in our web page: **http://sistemas.rcm.upr.edu/solicituduniforme** or **http://www.rcm.upr.edu**

INTERNAL TRANSFERS

Internal transfers or in-transfers refer to those students who transfer from one unit of the University of Puerto Rico System to another.

All programs leading to an associate or bachelor's degree accept most students as in-transfers. Students take introductory courses at various units of the University of Puerto Rico System and then transfer to the Medical Sciences Campus to pursue their professional education. The School of Health Professions and the School of Nursing accept in-transfer students. For specific information please refer to the Admissions section of each program.

The selection of students from the University System who apply for transfers is made based on an academic average formula determined by the program. All applicants must comply with application deadlines and meet the following requirements:

- File an application at the Office of the Registrar of their unit of origin, which will submit the application to the registrar of the appropriate unit. Applications sent directly by students will not be considered.
- Have approved the minimum number of credits required by the specific program. Meet the general academic index requirements of the unit to which transfer is being requested, as well as other requirements of the unit, college, or department.
- Pay a nonrefundable $20.00 fee plus 5.40 for the cost of transcripts, $30.00 plus 5.40 for late applications, $33.00 plus 2.70 for readmission-transfer of inactive students, and $49.50 plus 2.70 for late readmission-transfer of inactive students.

Applications for transfer will be considered only for the first term of each academic year unless otherwise announced for a particular degree program.

Transfer regulations are established in Certification No. 115, 1996-97 of the Board of Trustees.

READMISSIONS

Students who interrupt their studies may apply for readmission by filing an application for readmission at the Office of the Registrar before the deadline set for the academic term. The Office of the Registrar will send

the application to the corresponding school or division for the Dean's consideration. The Dean will make a decision considering, among other things, previously established time limits for each program. The Registrar will be notified of the decision within thirty days prior to the academic session for which readmission is being sought.

The School will notify the student of the decision made by the Dean or Program Director. Readmission of candidates will be governed by the following regulations:

- First-year students who interrupt their studies before the end of the first academic session must comply with the admission requirements in effect during the year in which they apply for readmission.
- First-year students who complete the first academic session but who do not register for the second one, or who have withdrawn their registration before completing the session, must comply with the minimum grade point average required of first year students at the end of the academic year. If this requirement is not fulfilled, readmission, if granted, will be provisional.
- Students who satisfactorily complete their first year of studies or more, and graduate students who interrupt their studies voluntarily, may apply for readmission to any academic session subject to all general regulations.
- Students suspended for disciplinary reasons may apply for readmission for the academic session following the end of the suspension period. The Dean of their school, upon recommendation of the Dean of Students, will decide as to the student's readmission.
- Readmission may not be granted if the student has violated institutional regulations during the period in which he/she has been suspended.
- Students from other accredited institutions who have previously been admitted as transient students may only apply for readmission as special students. They must submit authorization letters from the Dean of their school and the Registrar of their institution of origin. They should also submit official academic transcripts from all university level institutions they have attended. The Dean of the school will decide as to readmission in these cases. Students who wish to be classified as regular students must meet all requirements for admission by transfer and submit their admission application form to the program selected.
- Students who have been suspended for poor scholastic standing may apply for readmission after the minimum waiting period established by the department. The Dean of the school will decide as to readmission in those cases.
- The Registrar (or the Director of Admissions in some cases) will be responsible for compliance with the rules hereby established.

NORMS FOR COURSE VALIDATION, SUBSTITUTION AND EXEMPTION OF COURSES:

Section VIII-I of the MSC Registrar Manual describes the established norms for the validation of courses taken at other universities (**http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**). It is important to consult this manual for specific information on the norms, process and procedures applicable to validation of courses. Criteria for validation of courses, as established by the UPR System are: level, content and duration of the course. In order to graduate from the MSC Campus, all transfer students are required to complete at least the last year before graduation as regular student at the MSC. The analysis and determination of which courses are validated, is performed at faculty level. This process should be completed at the beginning of the first academic section in which the student is enrolled. All validation cases should be processed by the Registrar Office, and sent to this office through the Program Director, with the approval of the faculty Associate Dean on Academic Affairs.

Substitution of courses norms and procedures apply to courses taken in other units of the UPR system. Section VIII-J of the MSC Registrar Manual describes the specific established norms for substitution of courses (**http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**). Criteria for validation of courses, as established by the UPR System are: level, content and duration of the course. At undergraduate, first professional level and graduate level, a minimum grade has been established in order to be considered for substitution of a course. The Associate Dean on Academic Affairs of the faculty authorizes, in consultation with the Department or the Program Director, the substitution of courses before the student begins studies in the program

to which he/she has been admitted. All validation cases should be processed by the Registrar Office, and sent to this office through the Program Director, with the approval of the faculty Associate Dean on Academic Affairs.

Exemption to take a course can be accepted when the student provides evidence of having approved the content as part of a previous degree of the same level, obtained at the UPR System or other accredited institution of higher education. In exemption cases, the student must replace the course credits with another course or courses that the Program or Department Director determines is appropriate to strengthen or supplement his/her education. The specific norms regarding grade requirement, grade point average calculation and others, are available in Section VIII-L of the MSC Registrar Manual (**http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**).

Norms regarding the acceptance of courses when the student has approved the course as part of a previous degree of the same level, obtained at the UPR System, are available in Section VIII-K of the MSC Registrar Manual (**http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**). The student must replace the course credits with another course or courses that the Program or Department Director determines is appropriate to strengthen or supplement his/her education. Courses approved through this mechanism are registered in the student academic record, taken into account for the calculation of the cumulative general grade point average but not considered for the graduation index. Particular norms have been established for students of Doctoral Program in Dental Medicine; please refer to those in the MSC Registrar Manual, Section VIII-M (**http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**).

REGISTRATION

The following rules govern registration procedures:

- The Registrar is responsible for the enforcement and implementation of all rules and procedures which govern the registration process.
- Class programs will only be validated by the Registrar.
- Students must comply with the registration deadlines established for the academic year.
- The Registrar may allow a person authorized by the student to process his/her registration. The person will present written authorization from the student and personal identification. In such cases, the student identification card will be validated after registration is completed.
- Late registration carries a penalty of $13.00.
- The student is responsible for completing all the required registration forms.
- Registration will not be complete until all tuition, special fees, and deposits are paid.
- In order to be eligible for registration, the student must pay all debts previously contracted with the University.
- Late registration must be recommended to the Registrar by the Dean of the particular faculty or college to which the student belongs.

TUITION AND FEES

Tuition, fees, and other charges applicable to programs in the Medical Sciences Campus are described as approved by the Board of Trustees at the date of publication of this Bulletin. Additional expenses may be incurred, depending on the program. All amounts and fees are subject to change. Tuition and fees are to be paid by the student at the time of registration.

Students with honor registration, University employees, and the children and spouses of permanent University employees do not pay tuition fees.

TUITION FEES FOR NEW STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2009-2010

(US Citizens Residents of Puerto Rico)	
School of Medicine	$8,091.00/year
School of Dental Medicine	$8,091.00/year
Doctor of Pharmacy	
First Year	$4,259.00/year
Second Year	$4,635.00/year
Third and Fourth Year	$4,384.00/year
Doctor in Audiology	$150.00/credit

Graduate Programs and Graduate Certificates	
Semester Courses	$122.00/credit
Trimester Courses	$82.00/credit (daytime programs)
	$98.00/credit (vespertine programs)
Master of Science in Pharmacy	$141.00/ credit
Post-Baccalaureate	
Certificate Programs	$1,556.00/ year
Baccalaureate Programs	$49.00/credit[1]
Associate Degree Programs	$49.00/credit[1]
Building Fees	$141.00/academic year
Laboratory Fees	$33.00/laboratory
Technology Fees	$75.00/year
	$25.00/sem
	$21.00/first trim
	$18.00/other
Diploma	$27.00
Identification Card	$5.00
Duplicates of payment card or enrollment card	$1.35
Internal transfers	$20.00
Study certificates or grades	$1.35
Admission Fee	$20.00
Readmission Fee	$33.00
Transfer from other universities	$33.00
Academic Unit transfers	$20.00
Audit fee (Baccalaureate)	$25.00
Audit fee (Graduate)	$50.00
Late registration fee	$13.00[2]
Official transcript of academic record	$1.35
Duplicate of the admission letter or class program	$1.35
Identification Card duplicate	$5.00
Medical Services - May vary on an annual basis according to negotiations with insurance companies and type of coverage.	

[1] Semester credit.

[2]Must be paid by all students who register after established deadlines.

NONRESIDENT STUDENTS: U.S. CITIZENS

Nonresident students who are U.S. citizens pay fees equal to the amount they would pay at their home state university.

NONRESIDENT STUDENTS: FOREIGN CITIZENS

Nonresident students who are foreign citizens pay $3,884.00 per year as undergraduates, $5,664.00 per year as graduate students, and $16,991.00 per year as medical and dental students.

HONOR REGISTRATION

Honor registration is a special tuition exemption granted by the Board of Trustees to students who have demonstrated academic excellence. The following rules govern honor registration:

- Regular students, except first year undergraduate and first year graduate students, may benefit from tuition exemption if they are in the upper 5% of their class and their grade point average is 3.50 or higher.
- Students with full-time programs who have completed a minimum of two semesters or the trimester equivalent, who have a grade point average of 3.50 or higher, and who are within the upper 5% of their class, are eligible for exemption from tuition payments.
- Students who reenter the University after having interrupted their studies for one academic session or more, who have maintained their status as regular students at the institution, who have a grade point average of 3.50 or higher, and who are within the upper 5% of their class, are eligible for exemption from tuition payments.

STUDENT CLASSIFICATION

Students are classified as follows:

- Full-time Student

  One who has fulfilled admission requirements, has the express authorization from the Dean, and is registered in any of the regular academic programs of the Medical Sciences Campus for at least the number of credits established as full-time load for the particular program. The student may be a candidate for a degree, diploma, or certificate as long as he/she maintains the retention index established by the school or division.

- Part-time Student
  One who has fulfilled admission requirements, is a candidate for a degree, diploma, or certificate, and carries less than the number of credits established as full-time load for the particular program.
- Transient Student (Special Permit)
  One who is a student from another accredited university or college, who applies for the first time, and who takes courses with the intention of transferring the credits to his/her institution.
- Visiting Student (Audit)
  One who has not fulfilled admission requirements and is not a candidate for a degree, diploma, or certificate. A visiting student audits classes with the consent of the Department Director and pays applicable fees, but may not receive a grade for the course.
- Special Student
  One who has already received a degree and is enrolled in a course of his/her interest.
- Exchange Student
  A student who comes from another institution which maintains formal student exchange arrangements with programs on campus. Exchange students pursue studies for a preestablished period of time.

GRADING SYSTEM

Unit of Instruction

One credit is equal to twelve (12) hours of instruction in the trimester calendar and eighteen (18) hours of instruction in the semester calendar. Some programs do not grant credits because they operate in blocks, hours, rotations, or other time units.

Attendance and Evaluation Procedures

Professors are responsible for implementing the necessary mechanisms to verify the attendance of students and how this is to be taken into consideration for the final grade.

Written final examinations must be given in all courses unless other evaluation instruments are designed for the course. Professors must evaluate the work rendered by the student using the method they deem most appropriate, provided their objectivity in determining grades may be demonstrated.

Grades

The Medical Sciences Campus programs use the University of Puerto Rico grading system as follows:

A	Excellent
B	Good
C	Fair
D	Deficient
F	Failed
P	Passing but not considered in computing the grade point average
W	Withdrawal
I	Incomplete
EP	In progress
NP	Not passed
NR	No grade reported

The grade point average is calculated on a 0 to 4 scale in which A = 4.

Incomplete

A student may receive an incomplete when the professor considers there has been a justifiable reason for the student's failure to comply with all course requirements. If the student does not make up the deficiency before the end of the following academic session, or after special arrangements are made in programs operating in other time units, an F will be recorded.

Grade Point Average

The grade point average is the measure of the student's academic achievement. It is computed by dividing the total number of honor points by the total number of credit units in those courses in which the student has received a final grade. When computing the graduation average,

only required and elective courses in a program of study will be considered. Honor points for each grade are as follows: A=4, B=3, C=2, D=1, and F=0.

Courses marked W, NP, EP, I, or NR are not counted. Grades for the summer session are considered for the grade point average of the following year.

WITHDRAWALS

Students may withdraw from courses during the period established by the Registrar after officially notifying the professor and obtaining permission from the Department Director and the Dean. The Registrar will post a "W" on the student's permanent record and no grade will be given for any work performed in the course.

A student may totally withdraw from the University of Puerto Rico at any time up to the last day of classes. He/she must obtain written permission from the Dean. The Registrar will post a "W" on all courses for that session.

Policies on registration cancellation and refund are available on pages 50-52 of the Registrar Manual at the following electronic address: **http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**

Refund Regulations

Criteria for refund of registration fees are described in Section VII 8b-3 of the MSC Registrar Manual (**http://eps.rcm.upr.edu/daa/pdf/Manual%20del%20Registrador%202005.pdf**). It is important to consult this manual for specific information on partial and full withdrawal processes including cancellation of registration. Students are entitled to a refund of 100%, 50% or 25% of basic registration fee (except for other regular and special charges) depending on the date of withdrawal. Specific dates for each amount of refund are published in the Academic Calendar.

STUDENT PROMOTION

The Promotions Committee of each school, or any other body charged with this responsibility at the particular school, evaluates the student's academic performance. Students who meet all criteria and requirements stated in the promotions rules and regulations for that school will be promoted.

If the student does not meet the established criteria and/or requirements, the Committee will make specific recommendations to the Dean. These may include a probationary period, retaking courses, or suspension due to academic deficiencies.

Study benefits for veterans will cease once the student completes the minimum number of required credits.

GRADUATION

The University of Puerto Rico reserves the right to make changes in program and degree requirements. As a rule, a student is entitled to graduate when he/she meets the curriculum requirements in effect at the time of his/her admission to the institution. Students who do not satisfy the graduation requirements within the period of time established for their program of study and students who reenroll after a period of absence, will be governed by the requirements applicable to the class with which they graduate.

In order to receive a degree, diploma, or certificate from the University of Puerto Rico, candidates must satisfy the following general requirements:

- Candidates must have completed the program of study with the minimum grade point average established for the particular program.
- Remedial courses are not considered regular courses of a program and are not considered towards earning a degree.
- Undergraduate students and students from the School of Dental Medicine, Medicine, and Doctor of Pharmacy with a grade point average of 3.30 to 3.49 inclusive, graduate "Cum Laude", with 3.50 to 3.99 they graduate "Magna Cum Laude", and those with a grade point average of 4.00 graduate "Summa Cum Laude". Only courses required for graduation at the Medical Sciences Campus will be considered in computing the grade point average.
- Candidates must have taken the final 28 credits for the degree, diploma, or certificate at the University of Puerto Rico, with the understanding that these credits are required for the last phase of their program of studies. In exceptional cases, this requirement may be waived by authorization of a committee composed of the Dean of the school

or division, the Dean for Academic Affairs, and the Registrar.

- Studies towards the degree, diploma, or certificate must be completed within the maximum time limit established by the particular program. If the student exceeds these limits, the University may require him/her to retake those courses which, according to his/her Dean, require reviewing. In these cases, the student must obtain a written authorization from the Dean that shall include the list of courses which are to be retaken, this must be confirm by the Registrar.
- Graduating students must have satisfied all financial obligations with the University of Puerto Rico.
- An application for a degree, diploma, or certificate must be filed at the Office of the Registrar during the registration period of the session in which academic requirements are to be completed and in no case later than the date established in the academic calendar. This also applies to summer session candidates. The application will only be valid if the student has paid diploma fees to the Bursar's Office.
- Students must be recommended for the degree, diploma, or certificate by the Dean of the school.
- The student will receive the degree during the academic year in which the requirements are completed and graduation is requested.

ALL RULES AND REGULATIONS OF THE OFFICE OF THE REGISTRAR MAY BE EVALUATED BY THE ACADEMIC SENATE AND ARE SUBJECT TO CHANGE. UNIVERSITY OF PUERTO RICO - MEDICAL SCIENCES CAMPUS



Student Services

DEANSHIP FOR STUDENT AFFAIRS

The Deanship of Students has the responsibility to oversee the activities and support services offered to the student community. The Deanship comprises the following offices: Admissions, Student Center for Counseling and Psychological Services, Financial Aid, Student Health Services, Quality of Life, Promotions and Student Recruitment Program and Extracurricular Activities. Specifically, the Deanship for Students provides, coordinates and supervises the following:

- Admission processes and procedures to the Campus academic programs
- Student financial aid programs
- Student Health Services
- Student Counseling and Psychological services
- Promotion of the Medical Sciences Campus academic offerings among potential students, faculty and counselors of public and private universities, high schools and colleges throughout the island, for recruitment and retention purposes
- Quality of Life activities
- Election processes of student bodies, such as student councils, student representatives to the University and Administrative Boards and to the Academic Senate.Official recognition and support services to the various student organizations
- Promotion of student exchange programs with other institutions.
- Social, cultural, and sports activities
- The AIDS Prevention Program
- Compliance with the Student Rules and Regulations and Institutional Policies, such as the Alcohol and Drug Abuse, Student Right to Know and the Jeanne Clery Security Act, among others

After hour services at the Dean of Students Office, Admissions, Financial Aid, Student Health Services, Registrar Office and the Campus Bursar may be offered on alternate schedules during specific periods of the academic year, if required.

STUDENTS RIGHTS AND RESPONSABILITIES

The Medical Sciences Campus and University of Puerto Rico policies in students rights and responsabilities are availabe online under section "Policies at the following electronic address http://www.rcm.upr.edu/estudiantes/Documentos.htm.

OFFICE OF ADMISSIONS

The main responsibility of the Central Office of Admissions is to offer information regarding admission requirements and procedures, collect admissions applications, pre-screen completed applications and refer them to the school´s admissions committees for consideration. The admissions officers give individual attention to applicants for the six campus schools in order to facilitate the process.

The Central Office of Admissiions is located on the second floor of the Pharmacy and Students Deanships Building. Office hours: Monday to Friday from 7:30 am to 4:00 pm. For more information please call: (787) 758-2525 extensions 5215/5231.

For details on admissions procedures, refer to the Admissions, Registration, and Graduation Procedures section in this catalog.

FINANCIAL AID OFFICE

The Financial Aid Office is in charge of providing financial aid to qualified students whose financial resources are not sufficient to cover their educational expenses.

There are three types of financial aid programs available to Medical Sciences Campus students: scholarships, work-study, and loans. Scholarships provide students financial aid and requires no repayment. In the work-study program, students work at available jobs on or off-campus, receiving payment for the services rendered. Students who receive loans must repay all the monies received, although favorable repayment conditions are available. Some of the financial aid programs are:

Financial Aid Programs for Undergraduate Students

- Federal Pell Grants
- Federal Supplemental Educational Opportunity Grants (SEOG)
- State Supplemental Incentive Grants (SSIG)
- Legislative Scholarships
- Scholarship for Disadvantaged Students in Nursing

- Subsidized and Unsubsidized Federal Stafford Loans
- College-Work Study Program

Financial Aid Programs for Graduate Students

- Legislative Scholarship/Loans for Medical, Dentistry, and Veterinary Students
- Scholarships for Disadvantaged Students in Medicine, Master of Public Health, Dentistry, Registered Dietician, Pharmacy and Occupational Therapy, Information regarding the availability of these programs must be obtained directly from the Assistant Dean for Student Affairs of each participating school.
- Private Scholarships, and Grants
- Subsidized and Unsubsidized Federal Stafford Loans

The Financil Aid Office is located on the second fllor of the Pharmacy and Students Deanships Building. Office hours: Monday to Friday from 7:00 am to 4:00 pm. For moreinformation please call: (787) 758-2525 extensions 5205/5206.

STUDENT CENTER FOR COUNSELING AND PSYCHOLOGICAL SERVICE (CECSI, FOR ITS SPANISH ANACROISM)

Counseling and Psychological Services contributes to the physical, mental, social, and emotional development of students. Services are directed to support students´adaptatiion to campus life and help them define personal and professional goals, to promote self-knowledge and healthy life styles.

The Center compromises professional counselors and a psychologist, who offer a variety of services, such as: individual and group counseling, career counseling and interest inentories, meetings and workshops on different topics related to student and community interest, and on line services at **www.rcm.upr.edu/estudiantes/preguntame**. Psychological counseling and offered in the Center to all active students who request or are referred for these services. Interviews with this professional may be accessed directly in the office by the student, or by referral from professional counselors, professors or other staff or students from the campus.

The Center serves as liaison with theStudent Affairs Office of the six Medical Science Campus Schools, which also include counseling staff. The Center coordinates orientation sessions to incoming students, job fairs and other activities to serve the student population or a specific need of a student group. A job fair is coordinated by the Center on an annual basis. Information and guidance on graduate and undergraduate studies, workshops to develop job search strategies, interviewing skills and resume preparation, are also provided. Also, support services for job placement aspects are offered. Other services available are: International student´s interships and services, other interships, compiled list of boarding houses iin the vicinity and child care referrals. All above services are available upon request.

The Student Center for Counseling and Psychological Services is located on the second floor of the Pharmacy and Students Deanships Building. Office hours: Monday to Friday from 7:30 am to 4:30 pm. For more information please call: (787) 758-2525 extensions 5209/5210.

STUDENT HEALTH SERVICES

Health care services are provided to all students in the Student Health Services of the Deanship of Students. The office provides a “walk-in”, out patient service, and no previous appointment is required. Medical care is provided by a Family Physician, with the assistance of a Registered Nurse, offering medical evaluation, first aid assistance including medications, medical orders for laboratory test, X rays, diagnostic studies, short-term rest and observation. After regular office hours, student may seek service at affiliated hospitals or near community health services.

Students requiring urgent or emergency care can be transferred to the General Emergency Room of the Puerto Rico Medical Center or to any of the urgent care units in the affiliated hospitals, considering the level of care required.

Every student admitted is required to have a medical insurance to cover for any hospitalization. The insurance may be a private carrier, state sponsored (“Reforma”) or the UPR system medical insurance, offered upon registration. This medical insurance provides basic service including cancer, AIDS and mental health care. Dental care, pharmacy and major medical coverage may be obtained for an additional fee.

Health maintenance and preventive services are strongly emphasized through the immunization protocols, universal precautions, promotion and surveillance of blood pathogens occupational exposure protocols. Hepatitis B vaccine is offered at an affordable cost. Evidence of immunization is confirmed by means of seroconversion antibodies titers. Antiviral medication and laboratory work up are given free to those in HIV occupational exposure protocol.

Upon admission to the Medical Sciences Campus, every student is required to present evidence of immunization status at the Student Medical Services Office, to be kept at his (her) medical record.

The facilities are located in the third floor of the main building, offering care in convenient services hours: Monday to Thursday 7:30 a.m. to 4:00 p.m. Fridays 7:00 a.m. to 3:00 p.m. For more information please call: (787) 758-2525 extensions 1215/1216.

PROMOTIONS AND STUDENT RECRUITMENT PROGRAM

This program plans, coordinates and develops activities designed to promote the academic offerings and student services of our Campus. Its main objectives are: the recruitment of top qualified students, thus increasing the number of applications to the different programs, and student retention, allowing a long-term association with the students. The program designs recruitment strategies that target university students as well as high school and younger students of both public and private institutions. Candidates receive orientation about the academic offerings, admission requirements, student aid and academic programs costs. At the same time, teachers and counselors receive valuable information for their orientation and counseling activities.

The Promotions and Student Recruitment Program promotes the socialization between the student population and the former students through cultural, musical and artistic activities, as well as spaces for art exhibits, conferences and art appreciation activities. Support for the coordination of cultural and social activities is also provided to the different student organizations.

The office is located on the second floor of the Pharmacy and Students Affair building. Office hours: Monday to Friday from 8:00 AM to 4:30 PM. For more information please call (787) 758-2525, ext. 5217.

QUALITY OF LIFE OFFICE

The Deanship of Students promotes quality of life and wellness among students as part of the services in benefit of our university community. Most of these initiatives are coordinated by the Quality of Life Office, designated to encourage healthy life styles and secure environments in the Campus. Educational and extracurricular activities coordinated during the academic year are: workshops, special interest conferences, participatory training, quality of life fairs, self-defense, aerobic and dancing sessions, among other educational and social activities and services. All of them are oriented to promote a balanced life style.

The Quality of Life Office also runs a federal Program known as FIESTA XIV, in collaboration with the Puerto Rico Traffic Safety Commission. FIESTA's main objective is to prevent the use of alcohol among our university drivers and to promote secure and responsible behavior in our roads. Services and activities programmed by the Quality of Life Office are all offered free of charge to the campus' student community.

The Quality of Life Office is also responsible for promoting the accomplishment of the University Politics related to prevention of the use of drugs and alcohol in the Campus, security, violence, sexual assault and sexual harassment. It collaborates actively to ensure compliance with Federal Regulations such as the Drug Free School and Campuses Act, the Campus Security act, known actually as the Jeanne Clery Act, and the Sexual Assault Program of the U.S. Department of Education. Also, a collaborative approach with the Security Department integrates services in benefit of prevention and the student's security.

The facilities are located in the third floor of the main building. Services are offered Monday through Friday between 8:00 a.m. and 4:30 p.m., although service hours may be extended as needed. For more information please call: (787) 758-2525 extension 2014/2016.

CULTURAL ACTIVITIES OFFICE

The Cultural Activities Office of the Deanship for Student Affairs provides activities for the cultural development of students and the campus community. These include concerts, conferences, dances, lectures, films, variety shows, and plays offered throughout the academic year.

Art exhibits are displayed at the main building. Leading local painters and sculptors have exhibited their work on campus.

OTHER SERVICES AND ACTIVITIES

Medical Sciences Campus Choir

The Medical Sciences Campus Choir brings together members of the academic community, professors, students, and staff. The choir participates in official institutional activities on and off-campus and in the community.

ATHLETIC AND EXTRACURRICULAR ACTIVITIES OFFICE

The Athletic and Extracurricular Activities Office organizes volleyball, basketball, indoor soccer and baseball tournaments throughout the academic year, as well as yearly marathons and other competitions. This office also oversees the facilities of the Student Center and acts as liaison between the Student Councils and the Dean's Office.

The facilities are located on the second floor of the Pharmacy and Students Deanships Building. Services are offered Monday through Friday, according to scheduled activities and tournaments. For more information please call: (787) 758-2525 extension 2005.

Gymnasium

The campus gymnasium is located on the second floor of the School of Pharmacy and Deanship for Student Affairs Building. It has facilities for intramural sports, workout area, locker rooms, and a capacity for 1,000 persons. Students must apply directly to the Athletic Activities Coordinator for use of the facilities. The office is located on the second floor of the Student Center.

Quality of Life Office

The Deanship of Student Affairs promotes quality of life and wellness among students through various activities, most of which are coordinated by the Quality of Life Office. These include, but are not limited to, fitness and aerobic classes, psychological counseling, workshops, special interest conferences, and participatory training, according to the students' identified needs during each academic year. All activities are offered free of charge to the campus community.

The Quality of Life Office promotes wellness, drug and alcohol prevention, crime and violence prevention, and prevention of sexual assault and sexual harassment. The office also collaborates actively to ensure MSC compliance with federal regulations such as the Drug Free Schools and Campuses Act, the Campus Security Act, and the Sexual Assault Program of the U.S. Department of Education.

Services are usually offered Monday through Friday between 8:00 am and 4:30 pm, although service hours may be extended as needed. Psychological counseling is available Monday through Friday from 8:00 am to 4:00 pm. Students are usually seen by appointment, but exceptions are made as needed.

The Athletic Activities Coordinator Office organizes volleyball, basketball, and baseball tournaments throughout the academic year, as well as yearly marathons and other competitions. This Office also oversees the facilities of the Student Center and acts as liaison between the student councils and the Dean's Office.

Student Center

The Student Center is located on the upper level of the parking building adjacent to the campus main building. The Schools' Student Councils and the General Student Council have offices on the second floor of the center. There is a multipurpose area that is used as a relaxation and study area, and for social and religious activities, among others.

Fitness Center

The Fitness Center is an exclusive service for the community members of the Medical Sciences Campus, available through a voluntary nominal monthly fee. It provides a specialized workout setting to achieve individual fitness goals. The Fitness Center has certified trainers available at all times. Trainers evaluate the costumer's fitness condition and design personal exercise routines. This service is available by previous appointment. The facilities are on the second floor of Deanship of Student and Pharmacy building. Its' convenient operation hours are Monday to Thursday, 5:30 am to 9:00 pm and Friday 5:30 am to 7:00 pm.

CAMPUS GOVERNMENT AND STUDENT REPRESENTATION

Each year, Medical Sciences Campus students meet for the purpose of electing class boards, school student councils, and the General Student Council, as well as for appointing representatives to institutional bodies.

- Class Boards
  Students elect class boards to serve as liaisons between the students and the administration. They also organize social, athletic, and other activities.
- School Student Councils
  Student councils are elected by the students of each school. Their members are the official student representatives and spokespersons.
- General Student Council
  The General Student Council is composed of its President, two members from each school student council, the student representatives to the Academic Senate, and the student representative to the University Board.
- Disciplinary Board
  Students select two representatives to the Disciplinary Board through the General Student Council, thus insuring student representation in disciplinary actions.
- Faculty Meetings
  Students in each school have the right to elect a number of students that may be present during faculty meetings. This number may not exceed 10 percent of the total number of faculty members at the school.
- Faculty Standing Committees
  There are some standing committees in which students have representation, including curriculum, admissions, and books and instruments. Representation may vary at each school depending on existing committees.
- Academic Senate
  Students from each school elect one student who represents them in the Academic Senate. The President of the General Student Council is also a student representative to this body.
- Administrative Board
  Students elect a representative to the Administrative Board through the General Student Council.
- University Board
  Students of the Medical Sciences Campus elect one student representative to the University Board.

STUDENT MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

American Medical Student Association (AMSA)

The American Medical Student Association is affiliated to the American Medical Association. Its activities include an annual convention, freshmen orientation, open houses, and scientific as well as social, cultural, sports, and community health programs.

American Medical Association (AMA) Puerto Rico Chapter-Student Section

The student section of the American Medical Association participates in educational activities and conventions. Members also receive educational materials and publications.

Family Medicine Interest Group

The Family Medicine Interest Group is affiliated with the American Academy of Family Physicians (AAFP). The group promotes activities directed toward increasing student and community knowledge about family medicine and primary care. Activities regularly sponsored include freshmen orientation, community education and service activities, and visits to settings in which family physicians practice.

American Student Dental Association

The objective of the American Student Dental Association is to promote the dissemination of dental knowledge among its members, to foster an appreciation of the benefits of dental organizations in the profession, and to sustain and improve the professional character and education of dental students. Membership is voluntary and open to all dental students, including those in graduate programs.

International Association of Dental Students (I.A.D.S.)

The International Association of Dental Students promotes student exchange programs with numerous countries. It reviews and compares dental education worldwide. It represents dental students in health organizations and promotes and develops voluntary programs in underdeveloped nations. Membership is paid by the School of Dental Medicine, so each student is automatically a full member.

American Pharmaceutical Association Academy of Students of Pharmacy

The American Pharmaceutical Association's (APhA) Academy of Students of Pharmacy (ASP) represents student members in chapters in every school and college of pharmacy throughout the United States and Puerto Rico. Its mission is to promote the interests of pharmacy students and the profession of pharmacy, as well as provide them services and information concerning pertinent issues faced by APhA and the profession. Membership in the local chapter is voluntary and open to all pharmacy students.

As members of APhA-ASP, students receive monthly copies of the Journal of the American Pharmaceutical Association and quarterly issues of Pharmacy Student, discounts on professional books and educational materials, discounts on insurance coverage, and financial services programs. They also have the opportunity to participate in professional and policy-making activities, such as the annual Patient Counseling Competition, regional meetings, and national conventions. For additional information, please contact Dr. Denisse Figueroa (**denisse.figueroa2@upr.edu**) at (787) 758-2525, ext. 5307.

Puerto Rico Association of Speech Pathology and Audiology - Student Chapter (OPPHLA)

The Student Chapter of the Puerto Rico Association of Speech Pathology and Audiology (Organización Puertorriqueña de Patología del Habla y Audiología) seeks to develop leadership among its members, expose them to the latest trends in the profession, and broaden their curricular experiences.

National Student Nurses Association

The National Student Nurses Association is a pre-professional association for nursing students which prepares students for involvement in professional associations upon graduation. It represents and mentors students preparing for initial licensure as registered nurses, as well as those nurses enrolled in baccalaureate completion programs.

PROFESSIONAL FRATERNAL ORGANIZATIONS

Alpha Omega Alpha (AOA)

The Puerto Rico Chapter of Alpha Omega Alpha was established at the School of Medicine in 1956. Alpha Omega Alpha is a medical honor society and election to it is based on peer evaluation in the areas of leadership and participation of the nominees in student affairs. Approximately 10% of the senior class is elected to AOA, either late in the third year or early in the fourth year of studies. The Puerto Rico Chapter sponsors lectures and other activities for AOA faculty and students.

Omicron Kappa Upsilon

The Beta Gamma Chapter of the honorary dental professional fraternity Omicron Kappa Upsilon was established at the School of Dental Medicine in 1961. Membership is one of the highest honors that the profession of dentistry bestows on a graduating senior. Active members of the fraternity confer this honor to those students who have demonstrated superior achievement during their four years of study in dental school.

Phi Lambda Sigma

The Beta Theta Chapter of the national pharmacy leadership society Phi Lambda Sigma was installed at the School of Pharmacy in 1994. The society promotes the development of leadership qualities among pharmacy students. Through peer recognition, it fosters and enhances self-confidence among its members and promotes the advancement of pharmacy. Prospective members are nominated on the basis of their dedication, service, and leadership in the advancement of the profession. The local chapter collaborates with the school in planning an

annual leadership workshop for pharmacy students. The society has its annual convention during the American Pharmaceutical Association Annual Meeting. For additional information, please contact Dr. Jennifer Guzmán (**jennifer.guzman@upr.edu**) at (787) 758-2525, ext. 5314.

Rho Chi Society

The Gamma Eta Chapter of the Rho Chi Society was established at the School of Pharmacy in 1986. Membership represents an honor bestowed on junior and senior pharmacy students. The organization promotes scholarship, friendship, and accomplishments in the Pharmacy profession. For additional information, please contact Dr. Sacha Rivera (**sacha.rivera1@upr.edu**) at (787) 758-2525, ext. 5408.

SIGMA THETA TAU INTERNATIONAL SOCIETY-CHAPTER EPSILON LAMBDA

The honor society recognizes the values of scholarship and excellence in nursing practice. It supports these values through its professional development activities and services that focus on the core areas of education, leadership, career development, evidence-based nursing, research and scholarship. Joining the honor society signifies the commitment to excellence in the profession and acknowledges the academic and professional achievements. Students are invited based on grades during initial or graduate nursing preparation. For additional information please contact Dr. Yadira Regueira (**yadira.regueira1@upr.edu**).

OTHER ORGANIZATIONS

Catholic Student Association

The Catholic Student Association promotes the spiritual and intellectual formation of the Catholic faith among students and other members of the academic community. The association sponsors a weekly mass on campus. For additional information, please contact Dorlizca Irizarry, R.Ph. at (787) 758-2525, ext. 1012.

Christian Interdenominational Fraternity

This association offers spiritual and emotional support for those in need. It promotes spiritual growth and a harmonious environment among students. For additional information, please contact Dr. Elsa Pedro (**elsa.pedro@upr.edu**) at (787) 758-2525, ext. 5307.

Student Counselers Association

This association helps new students in their integration to the School of Pharmacy. It promotes the academic, ethical and social principles of the profession of pharmacy. It sponsors an orientation week on an annual basis. For additional information, please contact Prof. Zayra M. Reyes, MRC (**zayra.reyes@upr.edu**) at (787) 758-2525, ext. 5424.

American Dental Education Association (ADEA)

The objective of the American Dental Education Association (ADEA) is to work and protect the rights, interests and wellbeing of the students of the Dental Medicine School and to institute and organize the future members of the American Dental Association (ADA). Also, the ADEA promotes and encourages the academic excellence, community support and the socialization between members and faculty.

Epidemiology and Biostatistics Students Association (AEEB)

The Epidemiology and Biostatistics Students Association (AEEB) promotes the Epidemiology and Biostatistics discipline in and out of the Medical Sciences Campus (MSC), the relationships with others disciplines, exchange of knowledge between student and faculty, studies about Epidemiology and Biostatistics performed at the Graduate School of Public Health and stimulates the effective participation of all the students of the Graduate School of Public Health in the AEEB activities. In addition, the AEEB promotes the cooperation between students' associations and others RCM organizations to inform the Graduate School of Public Health about achievements and activities.

Demography and Population Study Association (AEDEP)

The intention of this association is to present the Demography discipline and its interrelation with other related disciplines in and out the Medical Sciences Campus. Also, the association promotes population studies in the different disciplines that comprise the association, in and out the MSC, knowledge that may be obtained through conferences or other activities at local and worldwide level. The association contributes, in a satisfactory way, to population studies by means of investigations that promote the individual and collective enrichment of the students.

Environmental Health Students Association

The Environmental Health Students Association of the Graduate School of Public Health is a student organization that recognizes students' concerns regarding environmental health sciences. In response to these concerns, the association promotes communication on improvement and environmental conservation through active participation in research and dissemination activities that contribute to the members' intellectual improvement. The goal of the association is not only to guide the education of the student community regarding environmental issues, but also to create awareness on the importance of finding viable alternatives to prevent deterioration of the environment and its resources.

Graduate Student Association (AEG)

The Biomedical Sciences Graduate Students Association is a forum to discuss and work situations concerning the academic interests of the graduate students in the aforementioned Deanship. The principal objectives are: to promote scientific research in our institution in the undergraduate, graduate and post-graduate levels, to guide and teach the student community and health-related professionals about the latest technologies and methodologies in the biomedical sciences and to expand intellectual and professional development of students and faculty committed to the biomedical sciences area, not discriminating on political reasons, religion, age, civil status, race, sex, ethnicity, economical or national status, physical or mental disability. Also, as a student association, it represents and defends the rights of the graduate students of the Associate Deanship for Biomedical Sciences of the School of Medicine of the MSC and the Inter-Campus Program between the MSC and the Rio Piedras Campus of the University of Puerto Rico.

Emergency Medicine Interest Group (EMIG)

The objective of the group is to provide a forum for medical students interested in specializing in Emergency Medicine field. The group provides resources for developing skills and knowledge related to the preparation in Emergency Medicine, with strategies such as lectures, workshops and practical activities. EMIG has the vision to offer medical students the opportunity to learn and gain further experience in Emergency Medicine.

Student Interest Group in Neurology (SING)

The objective of the Student Interest Group in Neurology is to make medical students aware of the opportunities available in the field of Neurology and to further neurologic knowledge of medical students. Furthermore, it provides medical students opportunities in Neurology including: discussions by Neurologists, patient presentations, seminars, Journal Clubs, learning materials and shadowing arrangements with Neurologists in the workplace.

Health Through Education (HEALED)

The purpose of the organization is to educate the communities about different health topics.

Equinnox Prevention Group

The Equinnox Prevention Group seeks to work in the prevention and education to peers concerning the institutional polices on the use of Alcohol, Drugs and Illicit Substance, Physical Security on Campus and sexual harassment in the academic environment. The group promotes the integral well being of the student body, among other programmatic areas of the Quality of Life Office.



General and Academic Policies

GENERAL AND ACADEMIC POLICIES

General Bylaws of the University of Puerto Rico

This document was amended on February 16, 2002 (Certification of the UPR Board of Trustees No. 90; 2001-2002). It establishes the rules and regulations applicable to the University System governance and organization, necessary for the best compliance with the goals of the University of Puerto Rico. It includes general provisions about the composition and governance of the system and its components and functions at central, unit and faculty levels, as well as university staff regulations. Copy of the General Bylaws of the UPR is available in the Board of Trustees website **http://www.upr.edu/sindicos/regl-pol-norm.htm**.

University of Puerto Rico Students General Bylaws

This document was amended on August 29, 2009 and approved by the Board of Trustees on September of the same year (Certification of the UPR Board of Trustees No. 13; 2009-2010). It sets out the rights and duties of students as members of the academic community. It also establishes structures and rules to foster students' responsible participation in the academic life and those needed to sustain daily coexistence among students and between students, faculty, and all members of the academic community. The University of Puerto Rico Students General Bylaws also includes the rights and duties of students as they refer to academic matters. This document is available in the Deanship for Students Affairs webpage Medical Sciences Campus Students General Bylaws **http://www.rcm.upr.edu/estudiantes/Documentos.htm**.

Medical Sciences Campus Students General Bylaws

This document establishes the rights and responsibilities of the MSC students. As the University of Puerto Rico Students General Bylaws has been recently modified, the bylaws at campus level are under revision to assure its adherence to the systemic policy. The University of Puerto Rico Students General Bylaws supersedes the bylaws established by the units. The Medical Sciences Campus Students General Bylaws is available in the Deanship for Students Affairs webpage **http://www.rcm.upr.edu/estudiantes/Documentos.htm**.

Language of instruction

Spanish is the language of instruction in most courses; students are required to have a working knowledge of English as well.

Equality of opportunity

The Medical Sciences Campus abides to the University of Puerto Rico non-discrimination policy as it does not exclude from participation, or deny benefits to, or discriminate against any person for reasons of sex, race, color, place of birth, age, physical or mental handicap, origin or social condition, political or religious believes, sexual preference, gender, ethnicity, been a veteran of the Armed Forces or for been or been perceived as victim of domestic violence sexual assault or stalking. The University of Puerto Rico non-discrimination policy is established through Certification of the Board of Trustees No. 58; 2004-2005. (**http://www.uprm.edu/politicas/cert58.pdf**) and the University of Puerto Rico Students General Bylaws.

Applicants for academic admission or employment, or students or employees, who feel they have been discriminated against for any of the reasons previously established, may file a written complaint with the Chancellor.

In order to address reasonable accommodation requests from students, the Medical Sciences Campus has established the procedures to be followed by students and institutional officials. The document Proceso de Tramitación de Solicitud de Acomodo Razonable para Estudiantes is available in the Deanship of Students Affairs Office, in the students' affairs offices in each school, and in the Deanship of Students Affairs Office electronic address: **http://www.rcm.upr.edu/estudiantes/Documentos.htm**.

Other information on rights and services available for students with disabilities, are also available in this webpage.

Privacy of educational records

The University of Puerto Rico complies with the provisions of the Buckley Amendment (Family Educational Rights and Privacy Act of 1974, as amended). This act protects the privacy of students' educational records and establishes each student's right to examine his or her files. It also provides guidelines for correcting the accuracy of the information contained in those files through informal and formal hearings. Students wishing to do so may file a request with Family Policy Compliance Office, US Department of Education-400 Maryland Avenue, SW; Washington, DC 20202-5920; Phone: (202) 260-3887.

The Office of the Student Ombudsperson of the Medical Sciences Campus

The Office of the Student Ombudsperson offers intercession, mediation, negotiation and conciliation services and makes referrals to arbitration services, if needed. Since October of 2005, the services of the ombudsperson offices were acknowledged by Certification of the UPR Board of Trustees No.32; 2005-2006. This office is committed to help the MSC academic community in solving situations that may affect the quality of students' experiences in the academic, administrative and support services realms.

Security in the Medical Sciences Campus

The Surveillance and Security Office of the Medical Sciences Campus is located on the first floor of the indoor parking of the main building. Its mission is to provide safety and security to the campus community and facilities 24 hours every day. Emergency call boxes are located throughout the Campus to provide instant communication with the Surveillance and Security Office. A campus wide video camera system is also in place. Upon request; security officers provide an escort service for students and staff members on campus. This service is provided after 6:00PM and should be directly requested from the Surveillance and Security Office. In an emergency, individuals should contact this office at 758-25252, extension 1000 or 1001.

The Medical Sciences Campus complies with the 1999 Clery Act as amended. For information concerning alert bulletins, crime statistics, and other, please go to the Seguridad en el Campus section published in the main electronic page of the MSC.

Smoking, illegal drugs and alcohol abuse

Smoking is forbidden in all enclosed campus areas, including but not limited to classrooms, laboratories, lecture rooms, elevators, auditoriums, offices, museums, and all other places where groups of persons regularly meet. Smoking is permitted in areas such as open hallways and other open spaces.

The Medical Sciences Campus is committed to the UPR System endeavor to pursue a vigorous policy to combat the manufacture, distribution, supply, possession, and illegal use within its grounds of controlled substances as defined by the applicable law. The policy and the means and procedures for enforcement are detailed in University of Puerto Rico Regulations on the Use of Illicit Drugs, Controlled Substances and Alcohol Abuse, Certification of the UPR Board of Trustees No. 33, 2005-2006. This certification is available in the webpage of the MSC Deanship of Students Affairs, **http://www.rcm.upr.edu/estudiantes/Documentos.htm**.

Protection of human subjects in research

The Medical Sciences Campus of the University of Puerto Rico complies with all Federal regulations regarding human subjects in research. The Human Research Subjects Protection Office serves as the administrative office for the UPR MSC Institutional Review Boards. The Institutional Review Boards, or IRBs, are the committees that must review all research involving human subjects at the UPR MSC and affiliated institutions, to assure compliance with institutional ethical standards and federal regulations, and that the rights of human subjects are protected for all ongoing investigations.

As per Assurance (FWA 00005561), our institution is committed to guarantee that all research involving human subjects or analysis of data gathered from human subjects, regardless of funding status, be reviewed by the IRB prior to the implementation of any research activity.

Use of animals in research

The Medical Sciences Campus of the University of Puerto Rico complies with all applicable federal statutes and regulations concerning the use of animals in research. The Institution Animal Care and Use Committee must review all research involving the use of animals at the UPR MSC and affiliated institutions, to assure compliance with institutional ethical standards and federal regulations, and that animals are humanely cared and protected on all ongoing investigations.

Policy on patents and inventions

Certification of the UPR Board of Trustees No.135; 2002-2003, establishes the policy and procedures for disclosure and assignment of ownership of potentially patentable inventions created in the course of work at the UPR or with the use of the UPR resources. Its requirements extend to all employees including independent contractors, full or part time, as well as students, faculty, professionals, researchers, visiting professors and visiting scientists. This certification is available in the MSC main webpage, section Laws and Regulation (subsection Regulations Related to Research in the UPR).

Authorship

Faculty and students of the University of Puerto Rico will retain authorship of works created in the normal course of academic activities, unless otherwise agreed. The University of Puerto Rico will be owner of the work if it is the outcome of academic or administrative endeavors officially commissioned and assigned by the institution unless otherwise agreed. The policy on authorship also establishes criteria for partial copyright ownership, authorship on works produced while been on sabbatical, license, substitution of workload or similar, responsibility of students and faculty to register and protect their author rights, procedures to resolve disputes over copyright ownership and other. A student is presumed to have authorship of his thesis and other similar academic requisites unless otherwise agreed. Institutional policy on authorship is stated on Certification No. 140, 1993 of the Council on Higher Education (**http://www.certifica.upr.edu/PDF/CERTIFICACION/1992-1993/140%201992-1993.pdf**).

Scientific misconduct

Misconduct in research constitutes unacceptable behavior for faculty, staff, and students, and it is prohibited by University of Puerto Rico. The System-Wide Policy and Procedures on Responding to Allegations of Possible Research Misconduct is stated in the Board of Trustees Certification Number 45 2006-2007. Misconduct in research is prohibited in the UPR and constitutes unacceptable behavior for institutional members that may include but are not limited to officials, tenured and untenured faculty, teaching and support staff, researchers, research coordinators, clinical technicians, postdoctoral and other fellows, students, volunteers, and agents and contractors, subcontractors, and sub awardees, and their employees.

Any faculty member, student, or staff who believes in good faith that an act of research misconduct is taking place or has taken place at UPR has an obligation to report his concerns to a UPR official or directly to the Research Integrity Officer on campus. Institutional members will also cooperate with the Research Integrity Officer and other institutional officials in the review of allegations of research misconduct and in conducting inquiries and investigations. Institutional members, including respondents, have an obligation to provide evidence relevant to research misconduct proceedings to the Research Integrity Officer or other appropriate institutional officials. The policy on research misconduct defines research misconduct, establishes procedures for conducting and reporting the inquiry and investigation, institutional administrative actions that may be adopted if a finding of research misconduct is substantiated, reporting to the pertinent agencies, when required, appeal process, and protective measures to grant the rights of complainant, witnesses, and respondent. The Board of Trustees Certification No. 45 2006-2007, System-Wide Policy and Procedures on Responding to Allegations of Possible Research Misconduct, is available in the webpage of the Office of the Vice-President for Research and Technology **http://acweb.upr.edu/vpit/researchd/policies.html#comp**

Policy on the use of information technology

The System-Wide Policy for the Acceptable Use of Information Technology Resources (UPR Board of Trustees

Certification Number 35-2007-2008) grants the UPR community members access to information technology resources in order to facilitate their University-related academic, research, service, and job activities. Users are required to use information technology resources effectively, efficiently, and responsibly; in a manner that does not affect the quality, timeliness, or delivery of a person's work to the University nor hamper the rest of the community's ability to conduct their work for the University. As censorship is incompatible with the goals of an institution of higher education, information accessible from available electronic sources may not be restricted through censorship, as long as this information is not constrained by law or regulations and it is used for lawful purposes. By using the University's information technology resources, users agree to abide to the institutional policy as established by UPR Board of Trustees Certification Number 35-2007-2008, as well as to abide to all relevant University policies, norms, and procedures, and current federal and Commonwealth laws. The user should review, understand, and comply with all policies, procedures and laws related to access, acceptable use, and security of University information technology resources; request system administrators or data custodians for clarification on access and acceptable use issues not specifically addressed in University policies, regulations, standards, and procedures; and report possible policy violations to the appropriate entities. Institutional policy also states regulations on privacy and security, consequences of violations, and rights and responsibilities of the University, among others. The Policy for the Acceptable Use of Information Technology Resources (UPR Board of Trustees Certification Number 35-2007-2008) is available at **http://acweb.upr.edu/vpit/inftech/infdocs/cert035.pdf**

Policy on sexual harassment and sexual discrimination

Sexual harassment is unwelcome sexual advances, request of sexual favors and other conduct (physical or verbal) of sexual nature when submission to or rejection of this conduct implicitly or explicitly affects the person's employment or education, unreasonably interferes with a person's work or educational performance or creates an intimidating, hostile or offensive work or working environment. The University of Puerto Rico does not tolerate any form of sexual harassment or sexual discrimination. The University takes affirmative measures to prevent sexual harassment and sexual discrimination and responds to reports of such conduct. For informal grievance procedures, student should be referred to the Student Ombudsman. Formal procedures require the President or the Chancellor to submit the allegation to an Examining Official. Further information on this institutional policy as well as on formal and informal procedures to pursue an allegation of sexual harassment or sexual discrimination is stated in Carta Circular del Presidente de la UPR Núm. 95-06. This policy is available in **http://www.rcm.upr.edu/PublicHealth/Politicas/Procedimiento%20Querellas%20Hostigamiento%20Sexual.pdf**

Institutional policy for a climate of open discussion and non violence (uncivil conduct)

Uncivil conduct is not tolerated in the Medical Sciences Campus. All members of the academic community are expected to follow civil behavior and democratic principles. Uncivil conduct creates a tense and intimidating climate where aggression and anger prevails, thus reflective learning is hampered. It also encompasses rivalry and lack of sensibility, where attitudes of power and subjugation are disguised as professionalism and rationality. Medical Sciences Campus Academic Senate Certification No.24 (1999-2000) states the policy on uncivil behavior. This certification is available in the webpage of the MSC Deanship of Students Affairs, **http://www.rcm.upr.edu/estudiantes/Documentos.htm**.

Granted time to attend meetings of the Academic Senate and its committees

Student Senators will be excused from academic activities in case of schedule conflict between those and the established meeting schedule of the Academic Senate and committees where the student is a member. The Student Senator is held responsible for making up the course work for the period been excused through previous agreement with the professor in charge of the activity (Medical Sciences Campus Academic Senate Certification No.068, 1996-97). This certification is available in the webpage of the MSC Deanship of Students Affairs, **http://www.rcm.upr.edu/estudiantes/Documentos.htm**

Excused absence from exams and deferred exams

Deferred examinations are open to those students who were absent from examinations for reasons of illness or emergency and who have received written authorization from their instructors. An application form and corresponding evidence should be submitted one week prior to the exam. The student is not excused until this form is signed by him and the professor. The student, a classmate, or a family member, must verbally report requests for absence from exams for reasons of an unforeseen event to the instructor in person. In this situation, the application form and corresponding evidence should be submitted as soon as possible.

Applications for deferred examinations are available in the course manual, at professor's office, course coordinator's office, Office of he Associate Dean on Academic Affairs, and Office of Students Affairs. The student should handle the original signed application to the Office of Students Affairs for filing. Medical Sciences Campus Academic Senate Certification No. 033 (1997-98) establishes the policy on excused absences from academic activities and makeup. This certification includes specific information on the type of evidence required, time limit for the professor to answer the petition, and due process, among others. Medical Sciences Campus Academic Senate Certification No. 033 (1997-98) is available in the webpage of the MSC Deanship of Students Affairs, **http://www.rcm.upr.edu/estudiantes/Documentos.htm**

Excused absence and reposition of academic activities

In order to facilitate participation of students in extracurricular activities such as congresses, forums, workshops, research projects, interdisciplinary initiatives, community activities and sport events at local, national or international levels, the Medical Sciences Senate has established general norms to excuse students from academic activities previously established in the curriculum and to guarantee that the necessary reposition of content and/or experience is available to the student. The student should fill a specific from to excuse himself from the academic activity as soon as possible and submit it to the coordinator or professor of the course, including the corresponding evidence. The student will also coordinate with the professor the specific activities that will substitute those being excused. The form, approved by the professor or coordinator of the course, and the corresponding evidence should also be submitted by the student to the Dean or to the Assistant Dean on Students Affairs for final approval. Certification No. 040, 1004-05 of the MSC Academic Senate includes the document that establishes the specific process to be followed by the student and faculty and the corresponding due process. This certification is available in the webpage of the MSC Deanship of Students Affairs, **http://www.rcm.upr.edu/estudiantes/Documentos.htm**



School of Medicine



VISION, MISSION, AND INSTITUTIONAL VALUES

The School of Medicine of the University of Puerto Rico is an institution that is ready and able to reconfigure itself by active learning, experimentation and innovation in response to scientific, social and economic changes, while maintaining and safeguarding its timeless core mission and values.

The School's mission is to provide undergraduate, graduate, and continued medical education in order to train competent and compassionate physicians able to serve the underserved. The school also trains basic and clinical research scientists, sensitive to social and health issues and provides high quality clinical services to significantly enhance the health status of Puerto Ricans.

The School has established the following goals: promote the highest standards in the acquisition of knowledge, cognitive skills, and professionalism in medical education. Develop and maintain a learning environment based on active learning and the development of life-long learning habits and problem solving skills. Develop professionals who assume great responsibility and acknowledge the uncertainties in medicine. Serve the public interest by providing quality health care, research programs, and public education in accordance with the health, concerns and needs of society. Be accountable to society for all fiscal resources received.

In the context of this mission and goals, the faculty of the School of Medicine has the institutional responsibility of training medical professionals through its Doctor of Medicine Program, as well as training scientists through its master's and doctoral programs in Biomedical Sciences. It also offers continued educational experiences to physicians and the opportunity to keep abreast of their profession.

ORGANIZATION AND ADMINISTRATION

The Dean of Medicine exercises the administrative and academic authority within the School of Medicine. He/she is responsible to the Chancellor for the implementation of institutional policy, the academic programs, and campus administrative regulations.

There are eighteen departments in the School of Medicine. The thirteen clinical departments are: Internal Medicine; Pediatrics; Surgery; Obstetrics and Gynecology; Psychiatry; Family Medicine; Pathology; Dermatology; Anesthesiology; Ophthalmology; Radiological Sciences; Physical Medicine; Rehabilitation and Sports Healths; and Emergency Medicine. The five basic sciences departments are: Anatomy, Biochemistry, Microbiology and Medical Zoology, Pharmacology and Toxicology, and Physiology.

The School's major clinical teaching facilities are the University Hospital, the University Pediatric Hospital, the San Juan Veterans Administration Hospital, and the University of Puerto Rico Hospital at Carolina. Other branch clinical sites include: the San Juan City Hospital add San Jorge Children Hospital, the Pavía Hospital, and the San Pablo Hospital in the San Juan Metropolitan Area; and the Mayagüez Medical Center, La Concepción Hospital, San Antonio Hospital, and the Perea Hospital located in the west coast of Puerto Rico.

The School offers a Doctor of Medicine, Doctor of Philosophy, and Master of Science degrees. The School also oversees 13 postgraduate medical training programs, with 21 subspecialities. The Doctor of Philosophy and Master of Science degrees are granted by the Graduate Programs of the Division of Biomedical Sciences. In addition, the School offers the following:

- MD-PhD UPR – Students spend their first two years at the medical school and begin their PhD studies upon completion of the second year of the MD program. After completing their PhD requirements in approximately four years, they return to the MD program. Upon completion of the MD program, they receive an MD and a PhD as separate degrees.
- MD-PhD UPR-Mayo Clinic – The same sequence applies. Students study for their PhD at Mayo Clinic. This is a collaborative agreement between the UPR School of Medicine and the Mayo Clinic.

- Graduate School.
- MD-PhD UPR- MD Anderson Cancer Center – Students spend their first three years at the UPR School of Medicine in the MD program and begin their PhD program at MD Anderson on their fourth year. Upon completion of the PhD program, they return to the UPR School of Medicine for their fourth year of medical studies.
- MD-JD UPR – Students spend their first two years at the UPR School of Medicine and begin their law studies at the UPR Law School during their third year. Upon completion of all the requirements for the JD degree, students return to the School of Medicine for their third and fourth years of the MD program. Upon completion of the MD program of studies, students receive an MD and a JD as separate degrees.

The School of Medicine is located in the eight floor of the Medical Sciencies Campus main building.

DOCTOR OF MEDICINE DEGREE PROGRAM

The curriculum of the program leading to the Doctor of Medicine degree is designed following the trends of modern medical education and takes into consideration the health needs of the community. It is divided into two major components: two years of required basic sciences and two years of clinical clerkships. The clinical component covers contents and skills deemed essential for every medical student regardless of background or ultimate career direction. It consists of a series of courses and clinical clerkships programmed sequentially and longitudinally under departmental responsibility. There are several courses designed and delivered by an interdepartmental faculty, e.g., Human Development; Mechanisms of Disease; Fundamentals of Clinical Diagnosis; Basic Clinical Clerkship; Neurosciences; and Public Health, Ethics, and Legal Aspects.

The coordination of courses within each year of study is the responsibility of a faculty committee, while the coordination of all four years of study is the responsibility of the Curriculum Committee. The Curriculum Committee is an advisory committee to the Dean on curricular affairs and is composed of administrative, faculty, and student representatives.

The Curriculum Office and the Office of Evaluation and Research in Medical Education, under the Office of the Associate Dean for Academic Affairs, also aid in the assessment and coordination of courses by offering input relevant to these processes.

At the fourth-year level, a number of required hours must be completed through electives. This provides the student the opportunity to develop further along the lines of his/her individual interests. There is a wide variety of educational experiences to select from and to suit the needs of students according to their background, ability, and career objectives. Some elective courses may be pursued abroad in accredited institutions in the mainland.

The curriculum is flexible enough so as to allow variations in its scope and duration. Input from students to faculty is received regularly, particularly through evaluations at the end of each course or block. Faculty-administrative meetings are scheduled throughout the year to evaluate the curriculum cross-sectionally as well as longitudinally. At the end of each academic year, students, faculty, and administrators meet to discuss and evaluate findings as well as initiate changes and establish schedules for the next year.

Teaching methods vary according to content of the courses. During the first two years, the topics of biomedical and behavioral sciences are covered through lectures, reading assignments, computer simulations, clinical correlations, group discussions, review sessions, and laboratory exercises. The Problem Based Learning Program facilitates the integration of basic science, ethical issues, and behavioral sciences concepts, principles and facts by means of the analysis of clinical cases. Basic clinical knowledge and skills are introduced during the second year. It is expected that the students' active participation in the learning process will motivate them to develop lifelong learning techniques.

All core courses emphasize the preventive aspects of medicine and present the health programs available and needed in the community in the specific area or subject matter under discussion. They also stress the bio-opsychosocial aspects of illness vs. disease, the concept of the patient as a whole, and the core knowledge and skills necessary to perform as primary physicians in a community setting. Thus, ample exposure to hospitalized and ambulatory patients is offered during the clinical years clerkships . Students also become familiar with the secondary and tertiary levels of health care delivery.

OBJECTIVES OF THE M.D. PROGRAM

The student, prior to graduation, must demonstrate, to the satisfactiion of the faculty the floowing:

Knowledge

- Of the normal and altered structure and function of the body and of each of its major organ systems
- Of the molecular, biochemical, and cellular mechanism that maintain homeostasis
- Of the various etiologies and manifestations of diseases
- Of the fundamentals of Clinical Research
- Of how to critically appraise the scientific and clinical evidence that underlies EBM approaches to the treatment and care of individuals and populations
- Of the available tools to engage in lifelong learning
- Of theories and prinicples that encompasses ethical decisiion making and of the ethical dilemmas in medicine
- Of the various principles that govern Prevention and Health Promotion
- Of how physical, psychological, sociological, cultural, economic, and environmental processes contribute to disease etiology
- Of population health and epidemiology of common maladies and strategies of reducing the incidence and prevalence of those maladies
- Of the structure and function of a variety of health care delivery systems

Attitudes

- Compassion and emphathy in caring for patients
- Integrity and honesty at all times
- Respect for the patients autonomuy, privacy and dignity at all times
- A commitment to promote and advocate healthly lifestyles for patients, family and community
- A commitment to provide care to patients who are not able to pay
- A commitment to advocate the interest of patients over his/her own interests
- The ability to recognize and manage the threats posed by conflicts of interests involved in various arrangements for thte practice of medicine
- Acceptance of limitations in knowledge and skills
- A commitment to continuously improve his/her knowledge and skills
- A commitment to conduct patient-centered care

Skills

- The ability to obtain a culturally sensitive and accurate medical history
- The ability to perform a complete and problem specific physical examination including the mental status exam
- The ability to perform routine technical procedures
- The ability to use clinical reasoning to solve problems and to construct appropriate management strategies, including interpretation of commonly used diagnostic procedures
- The ability to recognize and provide initial management to patients with immediate life threatenig condictions
- The ability to communicate and educate effectively, both orally and in writing, with patients, families, colleagues, and others
- The ability to provide education on health promotion and healthy lifestyles
- The ability to exhibit tolerance towards the values and beliefs of patients being served by the health care system, to facilitate the clarification and negotiation of differences in values and beliefs in others and to avoid the use of physician authority to advance personal values and beliefs of a non-clinical nature
- The ability for self-education

Behaviors

- A commitment to work collaboratively with all healthcare professionals, ancillary personnel, and Basic and Clinical Scientists
- An awareness of the economic, psychological, occupational, social and cultural factors that contribute to the impairment of health
- An awareness of the human, physical and economical resources available for patient care
- The ability to retrieve, manage and utilize Evidence-Based-Medicine for decision making regarding patient care
- A commitment to provide the best care possible for all patients regardless of race, gender, sexual

preference, ethnicity, age, economical status, religious or political preferences
- A commitment for prevention and promotion of health
- An understanding and pursue of a balance between their professional and personal life

CLINICAL CLERKSHIP ASSIGNMENTS ABROAD

Medical students are allowed to take elective clerkships at other LCME accredited institutions. Students must obtain the approvals of the Department Chair and of the Curriculum Office Director prior to submitting the application and registering. Upon completion of the clerkship, the host institution must submit a student performance appraisal and report using the evaluation format of the University of Puerto Rico School of Medicine.

ADMISSION REQUIREMENTS

The School of Medicine endorses the general policy of the Medical Sciences Campus in encouraging its applicants to seek the broadest cultural formation available prior to their training in the field of the health professions. Candidates are admitted to the freshman class on a competitive basis. The applicant must comply and present evidence of successful completion of the following requirements for admission:

- Minimum of two full academic years of work in a college or university accredited by the Council of Higher Education or the corresponding U.S. accrediting agency, although a bachelor's degree is strongly recommended.
- Minimum general grade point average of 2.50, based on an A=4.00 scale, (includes all courses taken at college/university level).
- Minimum science grade point average of 2.50, based on an A=4.00 scale, (includes all courses in Biology, Chemistry, Physics, and Mathematics taken at college/university level).
- Total course work must comprise not less than 90 semester hours or 135 quarter hours, including the following:

General Chemistry
8 semester hours or 12 quarter hours
Organic Chemistry
8 semester hours or 12 quarter hours
Physics
8 semester hours or 12 quarter hours
Biology
8 semester hours or 12 quarter hours
Behavioral and Social Sciences
12 semester hours or 18 quarter hours
(Courses must be in Sociology, Psychology, Political Sciences, Economics, or Anthropology)
Spanish
12 semester hours or 18 quarter hours
English
12 semester hours or 18 quarter hours

In addition to the above requirements, course work in biochemistry, anatomy, cell biology, liberal arts and humanities are strongly recommended.

These requirements are in addition to the basic introductory courses required at some colleges or universities. Basic introductory courses in the Physical Sciences, Biological Sciences, and Social Sciences may not be substituted for the particular credit hours stipulated in this list.

Six semester hours in advanced or honor courses in English and Spanish acceptable to the Admissions Committee and approved with a grade of B or above per semester may substitute for the twelve semester hours required. Nevertheless, the total minimum number of 90 semester hours will still apply.

For applicants who began their college/university work before June 1996, the Behavioral and Social Sciences requirements is 6 semester hours or 9 quarter hours.

All academic requirements must be completed not later than the end of the second semester of the academic year preceding admission, excluding the summer session of that year. Admitted candidates will have their admission revoked if they fail to comply with this requirement.

Courses are conducted in English and Spanish, and patient interactions are nearly always conducted in Spanish, therefore, demonstrated fluency in speaking, reading and writing both languages is required. Applicants must select language courses which develop writing and reading comprehension skills.

Working knowledge in computers and their applications (computer literacy) is required, given the integration of computer technology in the medical curriculum.

The Medical College Admission Test (MCAT) must be taken not later than August of the year before admission. An MCAT taken after that date will not be considered in the selection process for the entering class of a given year. The test will be valid for three (3) years (**www.aamc.org/mcat**).

APPLICATION PROCESS

American Medical College Application Service (AMCAS):

Applications to the School of Medicine are processed through the American Medical College Application Services (AMCAS), a centralized application service for applicants to first year classes at participating U.S. medical schools. The AMCAS application is only available via the AMCAS web site **http://www.aamc.org/students/amcas**. AMCAS no longer offers paper or diskette versions of the application.

The complete application must be processed by AMCAS between June 1st and December 1st of the year preceding to admission. The School urges candidates to submit the AMCAS Web application with enough time in order to be considered before December 1st, the absolute deadline. DEADLINE EXTENSIONS WILL NOT BE GRANTED.

University of Puerto Rico - Medical Sciences Campus Supplementary Application:

In addition to the AMCAS application, all applicants who are permanent residents of Puerto Rico must complete and submit between the June 1st and December 1st deadline the University of Puerto Rico-Medical Sciences Campus Supplementary Application Form, along with a $20.00 non-refundable application fee. Payment should be made by certified check or money order payable to the University of Puerto Rico. If payment is made directly to the Bursar's Office, VISA, Master Card, or ATM may also be used. Supplementary applications may be requested at the following address: **http://www.md.rcm.upr.edu/**.

Central Office of Admissions - Medicine
Medical Sciences Campus
University of Puerto Rico
PO Box 365067 - San Juan, PR 00936-5067
Telephone (787)758-2525 Ext. 5213, 5211, and 5215 - FAX (787)282-7117
E-mail: **margarita.rivera4@upr.edu**

APPLICATIONS SUBMITTED AFTER THE DECEMBER 1ST DEADLINE WILL NOT BE CONSIDERED. DEADLINE EXTENSIONS WILL NOT BE GRANTED.

Upon a preliminary screening by the Admissions Committee, highly qualified non-residents who demonstrate "strong ties" to Puerto Rico, as defined in the Selection Criteria section, will be forwarded supplementary applications. Since the Supplementary Application deadline is also December 1st, qualified non- residents are strongly urged to submit their AMCAS application within the first three months of the application period.

Other Required Documents:

- A complete official transcript from each college attended should be sent directly to the Central Office of Admissions no later than December 1st of the year prior to admission, the absolute deadline.
- One completed Pre-medical Evaluation Form from the Premedical Committee of the college of attendance or three recommendations from current professors to be sent directly to the Central Office of Admissions no later than the December 1st deadline. The school's official format designed for this purpose must be used.
- An official transcript including the current academic year's first semester grades must be received at the Central Office of Admissions before February 15th of the year in which the applicant is seeking admission. A copy of the personal grade report should be sent as soon as it is available at the end of the first semester, pending the official transcript.

FAILURE TO COMPLY WITH ANY OF THE ABOVE MENTIONED REQUIREMENTS AND DOCUMENTS BY THE ESTABLISHED DEADLINES WILL LEAD TO AN ADMINISTRATIVE REJECTION.

SELECTION CRITERIA

Since the University of Puerto Rico School of Medicine is a state supported institution, strong first preference will be given to qualified applicants who are legal residents of Puerto Rico.

Highly qualified non-residents must demonstrate strong ties to Puerto Rico. To determine strong residential ties to Puerto Rico, the Committee on Admission will review the applicant's birthplace, high school attended, college attended, and parents' legal residence. An applicant who meets three of the four categories will demonstrate strong ties to Puerto Rico.

Foreign national applicants with an established legal residence in Puerto Rico will only be considered if, at the time of application, they are either U.S. citizens or have been granted a permanent resident visa in the United States.

The Admissions Committee of the School of Medicine will consider the following selection factors in screening qualified applicants, according to a formula established and approved by the Academic Senate of the Medical Sciences Campus.

Academic Performance will be determined by:

- General and Science Grade Point Average - Science and Mathematics courses, in addition to the required ones, approved with a grade of B or higher.
- Consistency in general grade point average - The number of withdrawals as evidenced in the official transcript.
- Medical College Admission Test (MCAT) - All test areas of assessment, including the Writing Sample, will be taken into consideration.

Non-academic factors, expressed in numerical indices derived from two source:

- Recommendation from the Premedical Committee or three recommendations from current professors.
- After an initial screening of all other selection factors, the Admissions Committee will determine which candidates will be invited for a personal interview.

ACCEPTANCE

To guarantee enrollment upon acceptance, the candidate must pay a $100.00 non-refundable fee within 15 days of receipt of notice, and send a written acknowledgement. The student must comply with the requirements specified in the letter of admission, and abide by the recommendations of the Association of American Medical Colleges (AAMC) as stated in the current edition of the "Medical School Admission Requirements" book.

PROGRAM OF STUDIES

The School offers a highly dynamic curriculum that calls for frequent changes and updates in core areas. This assures the up-to-datedness of the students' skills upon graduation. Total Hours = 4,968. (May increase with additional hours in elective courses).

Accreditation

The School of Medicine MD Program is fully accredited by the Liaison Committee on Medical Education. Official correspondence to the LCME should be addressed to both LCME Secretaries (at each sponsoring association).

Correspondence e-mailed to **lcme@aamc.org** will be distributed to both offices:

Association of
American Medical Colleges
2450 N Street, N.W.
Washington, DC 20037
Phone: 202-828-0596
Fax: 202-828-1125

Council on Medical Education
American Medical Association
515 North State Street
Chicago, IL 60654 NEW ZIP CODE
Phone: 312-464-4933
Fax: 312-464-5830

DOCTOR OF MEDICINE (M.D.)
TOTAL HOURS: 4,984

BASIC SCIENCE COMPONENT - FIRST AND SECOND LEVEL

First Level 891 – 1,073 Hours

		Hours
MPRI 7117	Medical Histology	82-100
MPRI 7119	Biochemistry and Molecular Biology	99-121
MPRI 7120	Human Physiology	144-176
MPRI 7127	Public Health, Preventive Medicine and Population Health	18-22
MPRI 7130	Integration Seminar I	54-66
MPRI 7136	Neurosciences	99-121
MPRI 7137	Human Behavior	45-55
MPRI 7138	Introduction to Clinical Skills	68-82
MPRI 7139	Human Development Course	68-82
MPRI 7140	Medical Gross Anatomy and Embriology	158-192
MPRI 7145	Medical Ethics: Constraints and Consequences I	16-18
MPRI 7155	Introduction to Principles of Clinical and Translational Research	40-44

Second Level 711-863 Hours*

MSEG 7215	Pathology and Introduction to Laboratory Medicine	146-178
MSEG 7216	Infectious Diseases	126-154
MSEG 7217	Introduction to Medical Pharmacology	99-121
MSEG 7218	Fundamentals of Clinical Diagnosis	90-110
MSEG 7237	Fundamentals of Clinical Epidemiology and Evidence-Based Medicine	36-44
MSEG 7229	Psychopathology	36-44
MSEG 7230	Mechanisms of Disease	113-137
MSEG 7236	Integration Seminar II	49-59
MSEG 7245	Medical Ethics II: Critique and Methods	16

Elective Courses 160 – 320

CLINICAL SCIENCE COMPONENT - THIRD AND FOURTH LEVEL

Third Level 1,400 – 2,440 Hours

		Hours
MTER 7310	Psychiatry	80-240
MTER 7325	Clinical Internal Medicine	400-560
MTER 7316	Pediatrics Clerkship	320-480
MTER 7326	Surgical Clinical Internship	320-480
MTER 7318	Obstetrics and Gynecology	160-320
MTER 7319	Family Medicine Third Year Clerkship	80-240
MTER 7320	Introduction to Diagnostic Radio-Nuclear Medicine	40-120

Elective Courses 160-320

Fourth Level 540 – 1,296 Hours

MCUA 7427	Public Health	108-160
MCUA 7437	Introduction to Clinical Physiatry	40-80
MCUA 7438	Dermatology	40-80
MCUA 7439	Ethical, Administrative, Legal and Economic Aspects of Population Health	40-60
Elective Courses (Clinical and Basic Areas) (minimum required)		720
Junior Internship		160

Select one course of the following primary areas:

MMED 7010	Clinical Clerkship in Medicine	80-240
MOBG 7010	Applied Obstetrics and Gynecology	80-240
MPED 7010	General Pediatrics	80-240

MMFA 7010	Clinical Clerkship in Family Medicine	80-240
Selective Junior Internship		160

*Total hours excluding hours of elective courses.

The student may select, with the approval of the Committee for the Clinical Component, another course among the primary areas of the Junior Internship, or in areas such as Surgery, Psychiatry, and Emergency Medicine, or in another area of the student's interest.

Course Descriptions
Faculty

POSTGRADUATE CLINICAL TRAINING PROGRAMS

Residency Programs are offered by the University of Puerto Rico School of Medicine at several affiliated hospitals. Applicants to these programs must be graduates of LCME accredited medical schools and have approved USMLE part I as requisite for admission. Graduates of foreign medical schools must have USMLE part 1 & 2 and a valid ECFMG certificate.

Accredited Residency Programs:

- Dermatology
- Emergency Medicine
- Family Medicine
  - Geriatrics
- Anesthesiology
- General Surgery
  - Neurological Surgery
  - Orthopaedic
  - Otolaryngology
  - Urology
- Internal Medicine
  - Cardiology
  - Endocrinology
  - Gastroenterology
  - Geriatrics
  - Infectious Diseases
  - Nephrology
  - Neurology
  - Pulmonary Disease
  - Rheumatology
  - Hematology/Oncology
- Obstetrics and Gynecology
- Ophthalmology
- Orthopaedics
- Pathology
- Pediatrics
  - Critical Care Medicine
  - Hematology/Oncology
  - Neonatal
- Physical Medicine and Rehabilitation
- Psychiatry
  - Child and Adolescent Psychiatry
- Radiology
  - Nuclear Medicine

Applicants should contact the Deanship of Graduate Medical Education at the following address:

Graduate Medical Education Office
Suite A 209
School of Medicine
Medical Sciences Campus, UPR
P.O. Box 365067, San Juan,
Puerto Rico 00936 5067

BIOMEDICAL SCIENCES DIVISION GRADUATE PROGRAMS

The Biomedical Sciences Division offers programs leading to the Master of Science and Doctor of Philosophy degrees with specialties in anatomy, biochemistry, microbiology, pharmacology, physiology, and toxicology. The Master of Science program takes at least two years of study, whereas the Ph.D. program takes at least four. In the master's program, the required courses are completed during the first two or three semesters, leaving the final year for required credits in research and for completion of the thesis. At the end of the second or third semester or after completion of required courses, doctoral students must pass a qualifying examination. Before the end of the second year, the student must present and successfully defend his or her thesis proposal before a committee of the graduate faculty. Students participate in a wide variety of seminars, workshops, and similar activities scheduled by the departments. They may also participate in clinical activities that may be germane to their research topic. The graduate faculty fosters interdisciplinary collaboration between basic and clinical scientists in an effort to broaden the exposure of students beyond what is traditionally expected in biomedical research.

The Division cosponsors an intercampus Ph.D. program with specialty in Biology with the Department of Biology of the Río Piedras Campus. The intercampus program allows students to benefit from the scientists, facilities, equipment, and course offerings at the two largest research institutions in the Caribbean.

RESEARCH FACILITIES

The Division's facilities are housed in the Medical Sciences Campus building, with ancillary facilities at the:

Institute of Neurobiology
Caribbean Primate Research Center
Cancer Center
Latin American Center for the Study of Sexually Transmitted Diseases
Center for Energy and Environmental Research
Veterans Administration Hospital
University Hospital
University Pediatric Hospital
other affiliated hospitals

Facilities house research and teaching laboratories, faculty offices, lecture rooms, and specialized libraries. A central library serves the general needs of the academic community, with linkages to other local and national libraries. Each department has its own laboratories and office space for faculty and students, as well as specialized equipment.

A system of core laboratories serves the needs of several departments, providing facilities for tissue culture, electron microscopy, flow cytometry and cell sorting, histocompatibility testing, and hybridoma preparation, as well as a BL3 virology laboratory, an AIDS Clinical Trials Group (ACTG) certified laboratory, facilities for molecular biology and molecular parasitology, and state-of-the-art animal facilities, including BL3 areas for nonhuman primates.

Students are granted access to the resources they may need to carry out their research program.

Admission Requirements

Applicants for the Master of Science degree should hold a bachelor's degree or its equivalent in biology, chemistry, or physics, with an overall grade index of at least 3.00 in science subjects (on a 4.00 scale). The applicant must also be proficient in English and Spanish and must submit scores on the GRE General Test and the Subject Test in biology, chemistry, physics or related areas. Three letters of recommendation, two from professors in the major field and one from a professor in another department, must also be submitted. The graduate faculty of the department will personally interview applicants.

Requirements for admission to the Ph.D. program include demonstrated ability in research; scores on the GRE General Test and the Subject Test in biology, chemistry, physics or related areas; knowledge of both English and Spanish; letters of recommendation; a minimum grade index of 3.00 (4.00 scale); and a personal interview. Application deadlines are: February 15th for admission in August and September 15th for admission in January. Requests for more information and application forms should be addressed to:

Division of Graduate Studies,
Suite A 847 School of Medicine,
Medical Sciences Campus, UPR
P.O. Box 365067
San Juan, Puerto Rico 00936 5067

Sequential Curriculum Models

Students may complete a graduate curriculum or doctoral track enriched in interdisciplinary areas of study such as: Neuroscience, Molecular Genetics, Microbial Molecular Biology and Pathogenesis; Immunology and Virology; Exercise Physiology; and Cardiovascular Biology. There is also an option for a combined M.D.-Ph.D. degree at the institution or in the joint program with Mayo Clinic or MD Anderson.

ACADEMIC PROGRAMS

DEPARTMENT OF ANATOMY AND NEUROBIOLOGY

MASTER OF SCIENCE WITH SPECIALTY IN ANATOMY (M.S.)

TOTAL SEMESTER CREDIT-HOURS: 37
First Year: 24 Credit-Hours

ANAT 8501	Graduate Course in Human Gross Anatomy	8

ANAT 8503	Graduate Course in Human Embryology	2
ANAT 8504	Graduate Course in Human Cell Biology and Microscopic Anatomy	4
ANAT 8505	Graduate Course in Human Neuroanatomy and Neuroscience	5
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8505	Neuroanatomy	3
ANAT 8528	Topics in Anatomy	2
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8591	Special Problems in Anatomy	1

Second Year: 13 Credit-Hours

CBIO 8500	Statistics for the Biomedical Sciences	3
ANAT 8525	Practice in Teaching	2
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8595	Master's Thesis Research	6

DOCTOR OF PHILOSOPHY WITH SPECIALTY IN ANATOMY (Ph.D.)

TOTAL SEMESTER CREDIT-HOURS: 63
First Year: 23 Credit-Hours

ANAT 8501	Graduate Course in Human Gross Anatomy	8
ANAT 8503	Graduate Course in Human Embryology	2
ANAT 8504	Graduate Course in Human Cell Biology and Microscopic Anatomy	4
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8505	Graduate Course in Human Neuroanatomy and Neuroscience	5
ANAT 8528	Topics in Anatomy	2
ANAT 8532	Combined Seminar and Journal Club	1

Second Year: 21 Credit-Hours

BCHM 8500	Biochemistry	6
FISA 8601	Vertebrate Physiology I	4
CBIO 8500	Statistics for the Biomedical Sciences	3
ANAT 8532	Combined Seminar and Journal Club	1
FISA 8602	Vertebrate Physiology II	4
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8525	Practice in Teaching	2

Third And Fourth Years: 19 Credit-Hours

ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8532	Combined Seminar and Journal Club	1
ANAT 8599	Doctoral Dissertation Research	15

DEPARTMENT OF BIOCHEMISTRY

MASTER OF SCIENCE WITH SPECIALTY IN BIOCHEMISTRY (M.S.)

TOTAL SEMESTER CREDIT-HOURS: 33
First Year: 24 Credit-Hours

BCHM 8500	Biochemistry	6
BCHM 8551	Methods in Protein and Nucleic Acid Biochemistry	2
BCHM 8552	Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology	2
BCHM 8531	Research Seminar Series I	1
CBIO 8500	Statistics for the Biomedical Sciences	3

BCHM 8532	Research Seminar Series II	1
BCHM 8507	Special Biomedical Laboratory Techniques I	3
BCHM 8504	Biochemistry of Proteins	3
BCHM 8502	Molecular Biology or Equivalent Molecular Biology Course Recommended by the Department	3

Second Year: 9 Credit-Hours

BCHM 8595	Research for Master's Thesis	6
Electives		3

DOCTOR OF PHILOSOPHY WITH SPECIALTY IN BIOCHEMISTRY (PH.D.)

TOTAL SEMESTER CREDIT-HOURS: 63
First Year: 24 Credit-Hours

BCHM 8500	Biochemistry	6
BCHM 8551	Methods In Protein and Nucleic Acid Biochemistry	2
BCHM 8552	Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology	2
BCHM 8531	Research Seminar Series I	1
CBIO 8500	Statistics for the Biomedical Sciences	3
BCHM 8532	Research Seminar Series II	1
BCHM 8504	Biochemistry Of Proteins	3
BCHM 8502	Molecular Biology	3
BCHM 8507	Special Biomedical Laboratory Techniques I or Elective Recommended by The Department	3

Second Year: 21 Credit-Hours

BCHM 8533	Research Seminar Series III	1
BCHM 8515	Enzyme Kinetics and Mechanism	2
BCHM 8517	Physical Chemistry of Macromolecules (Enzyme Reaction Mechanism)	3
BCHM 8534	Research Seminar Series IV	1
BCHM 8525	Recent Advances in Biochemistry and Molecular Biology	2
BCHM 8530	Regulation of Gene Expression in Eucaryotes	3
BCHM 8526	Special Topics in Biochemistry	3
Electives Recommended by the Department		3
Electives		3

Third and Fourth Years: 18 Credit-Hours

BCHM 8526	Special Topics in Biochemistry (Thesis Proposal and Comprehensive Examination)	3
BCHM 8599	Research for Doctoral Thesis	15

DEPARTMENT OF MICROBIOLOGY

MASTER OF SCIENCE WITH SPECIALTY IN MICROBIOLOGY (M.S.)

TOTAL SEMESTER CREDIT-HOURS: 35
First Year: 24 Credit-Hours

MICR 8499	Introduction to Medical Microbiology	6
BCHM 8500	Biochemistry	6
MICR 8540	Principles of Immunology	3
ZOME 8502	Introduction to Parasitology	3
Electives	Two Department Courses	6

Second Year: 11 Credit-Hours

CBIO 8500	Statistics for the Biomedical Sciences	3
MICR 8590	Teaching Practice	1
MICR 8580	Graduate Seminar	1
MICR 8595	Master's Thesis	6

DOCTOR OF PHILOSOPHY WITH SPECIALTY IN MICROBIOLOGY (PH.D.)

TOTAL SEMESTER CREDIT-HOURS: 62
First Year: 25 Credit-Hours

MICR 8499	Introduction to Medical Microbiology	6

BCHM 8500	Biochemistry	6
MICR 8580	Graduate Seminar	1
MICR 8540	Principles of Immunology	3
ZOME 8502	Introduction to Parasitology	3
Electives	Two Department Courses	6

Second Year: 18 Credit-Hours

CBIO 8500	Statistics for the Biomedical Sciences	3
MICR 8580	Graduate Seminar	1
MICR 8590	Teaching Practice	1
BCHM 8551	Methods in Protein and Nucleic Acid Biochemistry	2
BCHM 8552	Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology	2
	Advanced Topics in Area of Specialization	3
Electives	Two Department Courses	6

Third and Fourth Years: 19 Credit-Hours

MICR 8580	Graduate Seminar	1
	Advanced Topics in Area of Specialization	3
MICR 8599	Doctoral Dissertation	15

DEPARTMENT OF PHYSIOLOGY

MASTER OF SCIENCE WITH SPECIALTY IN PHYSIOLOGY (M.S.)

TOTAL SEMESTER CREDIT-HOURS: 35
First Year: 25 Credit-Hours

FISA 8601	Vertebrate Physiology I	4
BCHM 8500	Biochemistry	6
BCHM 8551	Methods in Protein and Nucleic Acid Biochemistry	2
BCHM 8552	Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology	2
FISA 8503	Seminar in Physiology	1
FISA 8602	Vertebrate Physiology II	4
FISA 8532	Advanced Physical Instrumentation	3
FISA 8540	Cellular Molecular Physiology	3

Second Year: 10 Credit-Hours

CBIO 8500	Statistics for the Biomedical Sciences	3
FISA 8503	Seminar in Physiology	1
FISA 8595	Master's Thesis	6

DOCTOR OF PHILOSOPHY WITH SPECIALTY IN PHYSIOLOGY (PH.D.)

TOTAL SEMESTER CREDIT-HOURS: 65
First Year: 25 Credit-Hours

BCHM 8500	Biochemistry	6
FISA 8601	Vertebrate Physiology I	4
BCHM 8551	Methods in Protein and Nucleic Acid Biochemistry	2
BCHM 8552	Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology	2
FISA 8602	Vertebrate Physiology II	4
FISA 8532	Advanced Physical Instrumentation	3
FISA 8540	Cellular Molecular Physiology	3
FISA 8503	Seminar in Physiology	1

Second Year: 20 Credit-Hours

CBIO 8500	Statistics for the Biomedical Sciences	3
FISA 8541	Problems In Physiology I	3
FISA 8542	Directed Reading	1
FISA 8503	Seminar in Physiology	1
ELECTIVES	Department Courses	6
ELECTIVES	Department Courses	6

Third and Fourth Years: 20 Credit-Hours

FISA 8585	Preparation of Physiology Proposal	3
FISA 8503	Seminar In Physiology	1
FISA 8503	Seminar In Physiology	1
FISA 8599	Doctoral Thesis	15

DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY

MASTER OF SCIENCE WITH SPECIALTY IN PHARMACOLOGY (M.S.)
(Typical sequence)

TOTAL SEMESTER CREDIT-HOURS: 35
First Year: 20 Credit-Hours

BCHM 8500	Biochemistry	6
FISA 8601	Vertebrate Physiology I	4
PHAR 8513	Pharmacology Seminar	1
BCHM 8551	Methods in Protein and Nucleic Acid Biochemistry	2
	or	
BCHM 8552	Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology	2
PHAR 8507	Topics of Pharmacology	3
FISA 8602	Vertebrate Physiology II	4

Second and Third Year: 15 Credit-Hours

PHAR 8500	Pharmacology	5
PHAR 8513	Pharmacology Seminar	1
CBIO 8500	Statistics for the Biomedical Sciences	3
PHAR 8595	Master's Thesis	6

DOCTOR OF PHILOSOPHY WITH SPECIALTY IN PHARMACOLOGY (PH.D.)
(TYPICAL SEQUENCE)

TOTAL SEMESTER CREDIT-HOURS: 63
First Year: 24 Credit-Hours

BCHM 8500	Biochemistry	6
FISA 8601	Vertebrate Physiology I	4
PHAR 8513	Pharmacology Seminar	1
BCHM 8551	Methods In Protein And Nucleic Acid Biochemistry	2
BCHM 8552	Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology	2
PHAR 8507	Topics of Pharmacology	3
FISA 8602	Vertebrate Physiology II	4
Electives		2

Second Year: 22 Credit-Hours

PHAR 8500	Pharmacology	5
PHAR 8513	Pharmacology Seminar	1
PHAR 8525	Pharmacological Methods	3
CBIO 8500	Statistics For The Biomedical Sciences	3
PHAR 8507	Topics of Pharmacology	3
Electives in Physiology (FISA)		2
Electives		5

Third and Fourth Years: 17 Credit-Hours

Electives		2
PHAR 8599	Doctoral Dissertation	15

MASTER OF SCIENCE WITH SPECIALTY IN TOXICOLOGY (M.S.)

TOTAL SEMESTER CREDIT-HOURS: 33
First Year: 22 Credit-Hours

BCHM 8500	Biochemistry	6
FISA 8601	Vertebrate Physiology I	4
TOXI 8501	Basic Toxicology	3
TOXI 8509	Seminar in Toxicology	1
FISA 8602	Vertebrate Physiology II	4
TOXI 8515	Special Topics*	2
TOXI 8515	Special Topics*	2

Second Year: 11 Credit-Hours

TOXI 8515	Special Topics*	2
CBIO 8500	Statistics for the Biomedical Sciences	3
TOXI 8595	Research for Master's Thesis	6

* Special topics in different areas.

DOCTOR OF PHILOSOPHY WITH SPECIALTY IN TOXICOLOGY (PH.D.)

TOTAL SEMESTER CREDIT-HOURS: 63
First Year: 28 Credit-Hours

BCHM 8500	Biochemistry	6
FISA 8601	Vertebrate Physiology I	4
TOXI 8501	Basic Toxicology	3
TOXI 8509	Seminar in Toxicology	1
FISA 8602	Vertebrate Physiology II	4
TOXI 8515	Special Topics*	2
BCHM 8995	Special Topics in Biochemistry	3
PHAR 8500	Pharmacology	5

Second Year: 18 Credit-Hours

TOXI 8502	Advanced Toxicology Techniques	2
CBIO 8500	Statistics for the Biomedical Sciences	3
TOXI 8509	Seminar in Toxicology	1
TOXI 8515	Special Topics*	2
TOXI 8508	Problems in Forensic Toxicology	5
Electives	Courses from the Department	5

Third and Fourth Years: 17 Credit-Hours

TOXI 8509	Seminar in Toxicology	1
TOXI 8509	Seminar in Toxicology	1
TOXI 8599	Doctoral Dissertation	15

* Special topics in different areas.

Course Descriptions
Faculty

JOINT DEGREE PROGRAMS

The Post-Doctoral Master of Science and the Graduate Certificate in Clinical Research represent a joint effort, of the School of Medicine and the School of Health Professions of the Medical Sciences Campus of the University of Puerto Rico, to offer two multidisciplinary didactic training programs to meet the need among minority health professionals for formalized academic training in the principles of clinical research. These programs were developed with the support of the other four academic schools of our campus; Graduate School of Public Health, School of Dentistry, School of Pharmacy and School of Nursing. These academic programs also joined in the partnership with the graduate clinical research program, K - 30, at Mayo Clinic - Rochester, MN, the San Juan Veterans Administration Medical Center and the Puerto Rico Department of Health to increase the depth and breadth of training opportunities and improve the overall quality of the education.

GRADUATE CERTIFICATE IN CLINICAL RESEARCH

The objectives of the Graduate Certificate program are to increase knowledge and skills in clinical research and improve the attitudes toward clinical research through completion of the didactic component. The curriculum consists of one year of didactic courses for a total of 24 semester credit hours. After completion of the program requisites, the graduate will have acquired knowledge in study design, analysis, interpretation and evaluation of clinical research, biostatistics methods appropriate to clinical research and legal, ethical and regulatory issues related to clinical research. The graduates will also develop skills in problem solving, analysis and critical thinking strategies for the design, implementation and management of clinical projects, effective oral and written communication and use of technology for seeking information and data processing purposes. The graduates will exhibit an ethical responsible conduct in clinical research , recognize the importance of collaborative work and the importance of communicating scientific knowledge and findings.

Admission Requirements

The program will competitively evaluate all interested candidates from accredited institutions across the island. Applicants meeting all requirements will be interviewed and recommend the top ranked candidates.

1. Hold a master degree
2. Minimum master general grade point average of 3.00
3. Submission of the official application and all required documents prior to the deadline established by the program
4. Curriculum Vitae
5. Transcript from the institution granting the master degree
6. Two (2) letters of recommendation from individuals familiar with the applicants science-research related activities
7. Personal statement detailing how this program will contribute to the candidate career goals

Graduation Requirements

A Graduate Certificate in Clinical Research degree will be awarded to those students admitted to the certificate program that complete successfully the 24 semester credits of the didactic component and attendance to seminar series.

GRADUATE CERTIFICATE IN CLINICAL RESEARCH

TOTAL SEMESTER CREDIT-HOURS: 24

INCL 6005	Introduction to Clinical Research	1
INCL 6006	Introduction to Health Services Research	1
INCL 6016	Application of Informatics in Research	1
INCL 6025	Bioethics and Regulatory Issues in Clinical Research	2
INCL 6035	Epidemiology in Clinical Research I	2
INCL 6041	Biostatistic in Clinical Research I	2
INCL 6042	Biostatistic in Clinical Research II	2
INCL 6046	Epidemiology in Clinical Research II	2
INCL 6055	Clinical Trials	2
INCL 6065	Scientific Communication	2
INCL 6075	Bioanalytical Methods in Clinical Research	2

Electives recommended by the Program

INCL 6007	Gender Considerations in Clinical Research	1
INCL 6045	Introduction to Bioinformatics and Medical Genomics	1
INCL 6056	Clinical Research Protocol Development	2
INCL 6085	New Frontiers in Clinical Research	1

MASTER OF SCIENCE IN CLINICAL RESEARCH

The post-doctoral master program is designed to meet the need for formal academic training in quantitative, qualitative, and other methodological principles of clinical research, including patient-oriented research, epidemiologic and behavioral studies, outcomes research, and health services research. Graduates of the post-doctoral program will be trained to plan original clinical research with adequate sample size, sampling methods, well-defined diagnostic criteria, and effective control of confounding variables. The post-doctoral master program consists of a two-year competency - based curriculum with two major components: didactic courses and a mentored research project (research component).

The program's mission is to promote the development of multidisciplinary clinical scientific teams working in collaboration toward the attainment of two common goals: improvement in quality of life and decrease health disparities. In the research component the program will target specific health conditions of high priority to the Hispanic population as delineated by Healthy People 2010 and based on the mortality and morbidity trends in Puerto Rico. The research component will focus on HIV, cancer, cardiovascular and respiratory diseases, diabetes, oral health, issues related to aging, mental health/psychiatric disorders, and drug abuse and addiction.

The graduates are expected to become independently funded and committed clinical researchers that will be able to develop culturally appropriate research aimed at reducing health disparities in Hispanic populations, conduct ethically responsible clinical research, build and lead effective collaborative networks in their area(s) of clinical research interest, communicate effectively in writing and orally (unless a handicap precludes one of these forms of communication), be able to work collaboratively, interdependently and effectively with other disciplines on the clinical research team and become a lifelong self-directed learner.

Admission Requirements

The program will competitively evaluate all interested candidates from accredited institutions across the island. Recruitment of post-doctoral candidates will include: Junior Faculty (7 years or less of their first faculty appointment or 7 years or less since the date that they received their doctoral degree) ; fellows, residents, interns and outstanding University of Puerto Rico, Medical Sciences Campus (UPR- MSC) 4th year medical students.

1. Have a doctoral degree or formal doctoral studies in progress in a health field, such as MD, DDS, DMD, DO, Ph.D., ScD., Pharm. D or an entry level degree in a health - related discipline and a doctoral degree.
2. Minimum doctoral general grade point average of 3.00 or the GPA of the most recent degree.
3. Two Formal Commitment Letters from Dean/ Director of Unit and Immediate Supervisor (Department Chair, Division Director, Program Director) for release time to attend this program.
4. Submission of the official application and all required documents prior to the dead line established by the program.
5. Curriculum Vitae.
6. Transcript from the institution granting the doctoral degree.
7. Two letters of recommendation from individuals familiar with the applicants science-research related activities.
8. Personal statement detailing how this program will contribute to the candidate career goals.
9. A one-page research letter in one of the clinically relevant health areas.

Graduation Requirements

A Master of Science in Clinical Research degree will be awarded to those scholars that complete successfully the 24 semester credits of the didactic component and the following clinical research requirements:

- Approval of a research proposal.
- Preparation and submission of an abstract for an oral or poster presentation in a national/ international scientific forum/ meeting/congress.
- Completion of clinical research project.
- Preparation of a manuscript ready for submission to a peer-reviewed scientific journal.
- Approval of oral presentation of research findings.
- Attendance to seminar series.

MASTER OF SCIENCE IN CLINICAL RESEARCH

TOTAL SEMESTER CREDIT-HOURS 30

INCL 6005	Introduction to Clinical Research	1
INCL 6006	Introduction to Health Services Research	1
INCL 6016	Application of Informatics in Research	1
INCL 6025	Bioethics and Regulatory Issues in Clinical Research	2
INCL 6035	Epidemiology in Clinical Research I	2
INCL 6041	Biostatistic in Clinical Research I	2
INCL 6042	Biostatistic in Clinical Research II	2
INCL 6046	Epidemiology in Clinical Research II	2
INCL 6055	Clinical Trials	2

INCL 6056	Clinical Research Protocol Development	2
INCL 6065	Scientific Communication	2
INCL 6075	Bioanalytical Methods in Clinical Research	2
INCL 6085	New Frontiers in Clinical Research	1
INCL 6095	Clinical Research	6

Electives recommended by the Program

INCL 6007	Gender Considerations in Clinical Research	1
INCL 6045	Introduction to Bioinformatics and Medical Genomics	1

Course Descriptions

SCHOOL OF MEDICINE
COURSE DESCRIPTIONS

First Professional Level: Doctor of Medicine (MD)

MANE 7010
Introduction to Anesthesiology and Resuscitation. Eighty to one hundred and sixty (80-160) hours.

The course consists about multiple aspects of the subspecialty and, in particular, about the application of acquire skills and knowledge in the care of critically ill patient. The student will be able to acquire basic knowledge as to the preoperative evaluation, intraoperative care, postoperative care of surgical patients. He/she will also acquire knowledge on the use of anesthetic adjustments and about different techniques used in anesthesiology. Special emphasis will be made in the development of skills geared to manage the respiratory trait and resuscitation techniques. This will be offered by way of lectures, demonstrations, and practical exercises in the operative room.

MANE 7015
Introduction to Postoperative Intensive Care. Eighty to one hundred and sixty (80-160) hours.

The student will be able to acquire knowledge and skills about the management of acute complications that may occur during the immediate post-surgical period, by means of lectures, demonstrations and clinical experiences. The student will also have the opportunity to learn monitoring techniques and the management of problems related to the administration of liquids and acid- base and electrolytic balance.

MANE 7016
Introduction to Respiratory Intensive Care. One hundred and sixty (160) hours.

The course consists of a series of lectures and practical experiences on the evaluation and management of patients in acute respiratory failure. The student will also have the opportunity to familiarize him/herself with the use and management of respiratory equipment such as: mechanical lung that used for respiratory therapy and for measuring respiratory functions.

MANE 7017
Critical Care Medicine. Three hundred and twenty (320) hours.

Critical Medicine is a new field in all specialties. It grew out of the need to improve the quality of interdisciplinary medical services and care to critically ill patients in specially equipped units. Medical students on the verge of graduation should be exposed to those experiences that enable them to make decisions pertinent to consultation as to: When?, How?, Where?, and to Whom?, as well as what to do in case of cardiovascular or other critical emergencies in cardiac patients.

MCBI 7001
Research Introduction to Basic and Clinical Sciences. One hundred and sixty to two hundred and forty (160-240) hours. Pre-requisites: Medicine I, Grade Average of 2.50 or more and not having any pending Reposition or Remedial Course.

This course in Basic Clinical Research will allow participation of the student in active research projects carried out in the School of Medicine. These are: Research in Pediatric and Adult AIDS, Molecular Parasitology, Cell Communication, Vascular Alterations and Cardiovascular Disease, Mechanisms of Drug Resistance in Bacteria and Malaria, Diabetes, Hereditary Disease, Cancer, etc. The student will be trained in the activities associated with the conduct of scientific research such as the objectives, significance and scientific background of the project, experimental design, methodology, and analysis of results. The students will participate in one or more of the developmental phases of the research project they choose.

MCBI 7002
Research in Basic and Clinical Sciences. One hundred and sixty to two hundred and forty (160-240) hours. Pre-requisites: MCBI 7001 or equivalent, Medicine I, Grade Average of 2.50 or more and not having any pending Reposition or Remedial Course.

This course in Basic and Clinical Research will allow direct participation of the student in active research projects carried out in the School of Medicine. There are research in Pediatric and Adult AIDS, Molecular Parasitology, Cell Communication, Vascular Alterations and Cardiovascular

Disease, Mechanisms of Drug Resistance in Bacteria and Malaria, Diabetes, Hereditary Diseases, Cancer, etc. This second course is designed to provide the student with a broader experience in research. The student(s) will have a more active role in the direction of the research project. This will be achieved through the continuation of the project initiated in the previous course or through their integration into an existing formal research project.

MCBI 7003
Advanced Research in Basic and Clinical Sciences. One hundred and sixty to two hundred and forty (160-240) hours. Pre-requisites: MCBI 7001, MCBI 7002 or equivalents, Grade Average of 2.50 or more and not having pending Repositions or Remedial Courses.

This course in Basic and Clinical Research will allow direct participation of the student in active research projects carried out in the School of Medicine. There are research in Pediatric and Adult AIDS, Molecular Parasitology, Cell Communication, Vascular Alterations and Cardiovascular Disease, Mechanisms of Drug Resistance in Bacteria and Malaria, Diabetes, Cancer, etc. In this third research course, is intended that the student(s) will complete the research initiated during the previous two courses. It is expected that the student(s) analyze their experimental results, present a final written report, and present the data in a scientific meeting. The completion of these three research courses will qualify the student(s) for a formal recognition of their research trajectory during their class graduation ceremony.

MCBI 7505
Cardiovascular Biology. Fifty four (54) hours. Pre-requisite: Second Year of Medicine.

The Cardiovascular Biology course is designed to cover the primary aspects of the Cardiovascular System. These include genetics, structure and function at the cellular level, physiopathology and pharmacology of the most common cardiovascular disorders. The Cardiovascular Biology course will be useful in the education of graduate students, medical students and residents. It will complement the graduate student's education by putting them in contact with clinical aspects of cardiac pathologies. Likewise the medical students and residents may complement their clinical formation with training in cellular and molecular aspects.

MCIR 7004
Trauma and Surgical Critical Care. One hundred and fifty to one hundred and seventy (150-170) hours. Pre-requisite: MTER 7326.

One-month rotation in the trauma and surgical critical care service. The medical student (IV) will be exposed to the initial assessment and subsequent management of the polytraumatized patient. If the patient is severely injured and requires an intensive care unit management, the MS IV will be involved in the overall management of the critically ill patient.

MCIR 7010
General Surgery. Eighty to two hundred and forty (80-240) hours.

This course aims to familiarize the fourth year medical student with the practice of General Clinical Surgery. He/she will work in one of the four departmental services. The student will be assigned no more than four patients per week, so as to take a medical history and perform a physical examination within the first twenty four hours following admission.

MCIR 7016
Experimental Surgery. One hundred and sixty to three hundred and twenty (160-320) hours.

This course is designed for the fourth year medical student who has an interest on surgical research. An individualized program will be prepared for him/her that will include a basic orientation in the process of identifying a research problem; review of literature, protocol design and perform a research project. The student will participate in the research project currently held at the laboratory and will be taught about the basic surgical techniques on the research animal.

MCIR 7017
Pediatric Surgery. One hundred and sixty to three hundred and twenty (160-320) hours.

The student will have the opportunity to become a member of the surgical pediatric service of the Children Hospital. He/she will participate in the evaluation and management of surgical conditions on children. These will include:

surgical emergencies on neonates, tumors, traumas and congenital cardiovascular anomalies. Student will perform night duties every four nights under the supervision of the resident in-charge.

MCIR 7018
Cancer Surgery. One hundred and sixty (160) hours.

The composition of the Cancer Program for this elective course will consists of TGR, TPO, Tumor Clinics, Breast Clinic, Head/Neck Clinic, Cancer Detection and Demonstration, and WTC. Other activities to be attended are: Cancer Seminar, Cancer Journal Club, Cancer Conferences and procedures at the operating room.

MCIR 7019
Tumor Service. One hundred and sixty to four hundred and eighty (160-480) hours.

The student will join the faculty and residents at the tumor service in the diagnosis and management of patient who suffers from Cancer. He/she will attend to tumor clinics, breast clinic and other activities, as well as lectures held on the therapeutic plans. Besides attending surgical procedures, he/she will relate to the consultation services, such as, Pathology and Radiology. He/she will have duties every four nights.

MCIR 7020
Clinical Neurosurgery. One hundred and sixty to three hundred and twenty (160-320) hours.

This course is geared to familiarize the student to the different neurologic conditions amenable to surgery. He/she will have the opportunity to examine and participate in the treatment of ambulatory and hospitalized patients, will perform daily visits with residents and faculty; will attend weekly seminars and combined lectures on Neurosurgery, Neurology and Neuroradiology, as well as attend to surgical procedures.

MCIR 7025
Clinical Urology. Eighty to four hundred and eighty (80-480) hours.

The course aims to familiarize the student with the symptoms and physical findings of the most of the urologic conditions. He/she also acquire basic knowledge as to interpretation and performances of minor urologic procedures. The student also will get acquainted with the diagnosis, classification and treatment of the most common tumors in the genitourinary tract.

MCIR 7026
General Orthopedic Clerkship. Eighty to four hundred and eighty (80-480) hours.

This course consists of evaluations of patients at emergency, ambulatory and hospital settings. Weekly lectures on basic sciences, journal club meetings and daily ward rounds to hospitalized patients will be held. The student will become acquainted with situations such as; trauma, and degenerative disease of the extremities, occurring in population, children and adults.

MCIR 7027
Introduction to Clinical Physiatry. Eighty to one hundred and sixty (80-160) hours.

The student will be exposed to the clinical aspects of Physical/ Rehabilitation Medicine. He/she will be able to take medical histories, perform physical examinations to hospitalized and non hospitalized patients, under supervision by a faculty member or a resident. He/she will participate in all academic activities held by the section and will be exposed to those electro diagnostic principles and treatments in physical and rehabilitation medicine used by the general physician.

MCIR 7028
Otorhinolaryngology Head and Neck Surgery. Eighty to one hundred and sixty (80-160) hours.

The student will participate in all the activities held at the selection under supervision of faculty staff and residents. This includes working at OPD, or, Ward and Emergency Room. He/she will be exposed to all aspects of the specialty.

MCIR 7029
Transplant Surgery and Immunology. One hundred and sixty to three hundred and twenty (160-320) hours.

1) The student will be exposed to a specialty which comprises medical, immunological, and surgical aspects of clinical transplantation.

2) He/she will be familiarized with the indications and selection process of kidney transplant recipients with end stage renal disease as well as the evaluation and selection of living related donors and cadaver donors.
3) He/she will be exposed to the immunological identification, selection, and preparation of these patients including concepts of Histocompatibility.
4) He/she will be exposed to the pre, intra, and post-operative management of these patients as well management of all medical and immunological complications.
5) He/she will be exposed to the immunosuppresive management to prevent and treat graft rejection.
6) The student will be assigned to the transplant ward with the supervision of the transplant surgeon and transplant nephrologist.

MCIR 7030
Clinical Nutritional Support. Eighty to one hundred and sixty (80-160) hours.

1) The student will participate in rounds with the tending physician three times a week.
2) Will evaluate the consult to the service and discuss it with the attending.
3) Through a series of conferences, selected readings and lectures the student will be more able to cope with the multiple problems in the selection and anagement of the complications of nutrition (enteral and arenteral) in critically ill patients.

According to the interest of the student he will participate in some of the research or studies running at the service.

MCIR 7035
Thoracic and Cardiovascular Surgery. One hundred and sixty (160) hours.

This elective is designed to familiarize the student with the day to day management of patients suffering from cardiovascular diseases. During the rotation he/she will work as Junior Intern under the supervision of the Resident and Attending Staff. He/she will share the responsibilities and privileges of management of patient with a wide variety of disorders.

MCIR 7036
Topics in Sports Health and Exercise Sciences. Eighty to one hundred and sixty (80-160) hours.

This is an elective course designed to present and discuss the interdisciplinary nature of this field. The students will have the opportunity to participate in clinical, educational and research activities in the following areas: Primary Care Services in the Physically Active Individual: Sports Traumatology and Rehabilitation: Biostatistics and Computing, Exercises Physiology and Biosychosocial Aspects of Sports.

MCIR 7045
Inpatient Rehabilitation Clinical Rotation. Eighty to one hundred and sixty (80-160) hours. Pre-requsities: MTER 7316, MTER 7325, MTER 7326

This course aims to expose medical students to the medical care of hospitalize patients with acute acquired disabilities such as: patients with stroke, spinal cord injuries, orthopedic injuries, neurological and traumatic brain injuries. This rotation will gfive the student the opportunity to recognize and manage these medical issues. Also this rotation will give the student the opportunity to be an integral part of a multidisciplinary team.

MCIR 7055
Quality Assurance and Total Quality Management in the Emergency Department. One hundred and sixty to three hundred and twenty (160-320) hours.

This course is designed to introduce students to one of the administrative aspects of the practice of Medicine, in particular Emergency Medicine. It is meant to give students an overview of the tools available to help us ensure quality medical care. This involves the identification of a situation needing attention. The process involved in that situation is then analyzed. The process is broken down into its components. These components are then studied in order to identify which could be improved. A corrective plan is then devised and implemented. Finally, the effectiveness of such plan is evaluated and the project then closed or redirected.

MCUA 7427
Public Health. One hundred and eight to one hundred and sixty (108-160) hours.

Three weeks course in preventive medicine and public health. During this course the student develops and improves research, knowledge and skills in public health and community oriented primary care. Students will analyze the health status of a community through investigation of a health program in the community.

MCUA 7437
Introduction to Clinical Physiatry. Forty to eighty (40-80) hours. Pre-requisites: Third Year of Medicine.

In this course of Clinical Physiatry, the medical student should be introduce to basic concepts and clinical experiences in the field of rehabilitation medicine, through the academic Program of Physical Medicine and Rehabilitation, everything that is related to clinical management in the field of Physical Medicine and Rehabilitation and the evaluation of neuromusculoskeletal and cardio-respiratory conditions. The student should have clinical experiences with patient in a wide range of age, from pediatric to geriatric; acute, subacute and chronic conditions at institutions of acute care and rehabilitation centers. In addition, the students will have the opportunity to participate on workshops, where can observe, then participate in the performance and interpretation of electrodiagnostic and exercises tests.

MCUA 7438
Dermatology. Forty to eighty (40-80) hours. Pre-requisites: Third Year of Medicine.

This course will consist of lectures offered by the faculty of the department of Dermatology. The students will attend OPD Dermatology Clinic and will manage patients under supervision of staff and residents. He/she will take a written and/or oral examination at the end of the course that will cover the topics discussed at lectures. Students attendance to all activities is compulsory.

MCUA 7439

Ethical, Administrative, Legal and Economic Aspects of Population Health. Forty to sixty (40-60) hours. Pre-requisites: 1st, 2nd, and 3rd Year of Medicine approved.

The purpose of this course is to integrate the four years of Medical School and the Residency years giving emphasis to topics of population health, health systems and ethical, economic, legal and administrative aspects pertinent to a doctor's daily work. It is expected that students will apply the knowledge and skills about population health aspects acquired in this course to their professional practices. The following topics will be included: world health care systems, Puerto Rico health care system, United States health care system, EMTALA Law, HIPAA Law, prevalence and prevention of common diseases, legal and ethical aspects of the medical record, and legal aspects pertinent to palliative care.

Grading System: Passed (P), Not Passed (NP)

MDAA 7006

Independent Study for United States Medical Licensing Exam (USMLE) - Step I. Zero (0) hours. Pre-requisites: Medicine I, Medicine II.

A course designed for students who have not passed the USMLE Step I Exam. The coordinator will assign a professor to each student. The student will meet with the professor one hour each week. At first, the student and professor will analyze the results of the USMLE Step I, to establish the areas of strength and weakness of the student. Afterwards, they will design a plan of review, using material from the previous courses of Medicine, review books, and any other material that they think will be useful for the purpose. The student shall be responsible for the self-study of this material. Each week, the student will meet with the professor to clarify concepts, and plan the self study. When the student feels prepared, he/she can apply for and take the USMLE Step I Exam again.

MDER 7010
Dermatology in Everyday Practice. Eighty to one hundred and sixty (80-160) hours.

The student will interview and examine patients. The most common dermatologic conditions seen on daily practice will be emphasized. He/she will participate in all educational activities held at the department and attend to Dermatology Clinics.

MDER 7015
Clinical Investigation in Dermatology. One hundred and sixty (160) hours.

During this course the student will be assigned a special clinical project. It is expected that he/she will make use of different methods on Immunopathology, Microbiology, Epidemiology and other advanced techniques while working in the project.

MEMR 7010
Principles of Emergency Medicine. Eighty (80) hours. Pre-requisites: Courses of Second Year of Medicine.

The course involves a series of lectures, skill stations and ambulance runs. The lecture topics include Basic Approach, Shock, Trauma, Toxicology and Cardio-Pulmonary Problems. The skill stations include Suture Lab, Intubation Skills, Immobilization Techniques, Arrhythmia Recognition, Gastric Lavage and Intravenous Techniques. The student will have two ambulance runs to be expose to our prehospital care system.

MEXT 7000
Out of State Elective Course. Eighty to four hundred and eighty (80-480) hours.

Clinical or research experiences conducted in out of state accredited institutions. Experiences may be taken in any of the clinical fields.

MFIS 7010
Endocrine Physiology Seminar. Thirty six (36) hours. Pre-requisites: Physiology and Biochemistry for Medicine students.

This is an advanced seminar on Endocrinology geared to those problem areas in the field. Introductory activities will include an elective review of Endocrine Physiology and an introduction to the most recent topics of interest. Student will present critical work on selected topics. The course is designed for a group of (four-ten) students.

MFIS 7015
Methods in Neurobiology Research. Eighty to one hundred and sixty (80-160) hours.

The course will expose the student to the different techniques used in Neurobiology including Electrophysiology, Histology, Electron Microscopy and Tissue Culture. It includes demonstrations, theory and independent study.

MFIS 7017
Renal Physiology and Pathophysiology. Eighty (80) hours.

Advanced topics on Renal physiology and Pathophysiology are presented in this course, with special emphasis on the research aspects. Clinical research work will be discussed.

MFIS 7018
Research Program in Physiology I. Eighty to three hundred and twenty (80-320) hours.

This course involves direct participation in a research program in Physiology, including development of protocols, experimentation, laboratory analyses, data handling, statistical analysis and literature review. Possible review areas include: Cell Physiology, Tissue O2 Transport, Nervous System Development, Electrophysiology, Actions of Pituitary Peptides, Fluid Homeostasis and Renal Hormones.

MISH 7005
Community-Based Preceptorship Extended Course. Eighty to one hundred and sixty (80-160) hours. Pre-requisites: Medicine I courses.

The Community-Based Extended Course (CBEC) is a multidisciplinary clinical experience. Participants are expected to spend between 2 to 4 weeks at a Community Health Center or Community Based Service Organization located in any Special Community. The Community Center or Service Organization must provide the basic health services. The goal of this course is to offer participants the opportunity to increase experience in Ambulatory Primary Care Health and Multidisciplinary Centers located in areas of great need for health services and for multidisciplinary services as well. The CBEC is based on an apprenticeship model in which the learner benefits from the knowledge and experience of a senior physician and the Health Center Staff and their willingness to share patients and community health related activities.

MISH 7010
Research Seminar: Hispanic Health Issues. One hundred and sixty to three hundred and twenty (160-320) hours.

Independent study of a particular problem or issue related to Hispanic Health in U.S. and compare with puertorricans in the island. The study will require extensive review of the literature. The student will meet regularly with the professor in charge to present progress reports. This process will end with the submission of a manuscript for possible publication. The student will conduct a descriptive/documentary research. This type of research requires analysis of government documents, related literature, and research papers, among others. The focus of descriptive studies may include prevalent practices, points of view, and processes and tendencies of a given area of study. The analysis consists in comparing, contrasting, classifying, and interpretation of collected information and data. Parametric statistical analysis is excluded of descriptive research. Significant and innovative conclusions and approaches based on documentary analysis are expected.

MISH 7015
Community-Based Managed Care. Eighty to one hundred and sixty (80-160) hours. Pre-requisites: Courses of Second Level of Medicine.

The course integrates didactic sessions on Managed Care and Public Health with field experiences in a primary care, community-based, managed care setting. Students will attain knowledge, skills, and attitudes needed to practice Medicine in a Managed Care System while learning about the advantages of collaboration between Managed Care Organizations (MCOS) and Public Health. Didactic sessions will be dedicated to building knowledge and skills base in managed care concepts and principles, Public Health and MCOS collaboration, and nutritional science as a health promotion and disease prevention strategy. Experiential learning sessions will provide opportunities for students to apply the managed care concepts and principles while providing services to patients. Students will attend personnel meetings to observe management principles in practice, and be exposed to manage care decision-making processes.

MISH 7017
Instructional and Evaluation Strategies in Medical Education. Fourthy to eighty (40-80) hours. Pre-requisites: First, Second, and Third Year of Medicine approved.

This course is designed to develop knowledge and skills in medical education in 4th Year medical students. It focuses on the longitudinal development of students in the areas of Evidence-Based Medicine and Problem-Based Learning. Through lectures, workshops, and supervised practice, students will develop small group teaching skills, seminar facilitation, and preparation of didactic materials related to the Clinical Epidemiology knowledge that underlies the practice of Evidence-Based Medicine. Together with the didactic sessions, this course will have a practical component which will be provided by the Integration Seminar 1 course that is offered to 1st Year medical students. Students' performance will be supervised by the course coordinator, with the collaboration of other faculty members.

MMED 7010
Clinical Clerkship in Meidicne. Eighty to two hundred and forty (80-240) hours.

This is a clinical experience held at the Department of Medicine, University District Hospital or at any other hospital of the consortium of the School of Medicine. The student will work assigned patients; medical history, physical examination, clinical conclusions and manage the patient under supervision. It is expected that he/she attends all educational activities offered during the clerkship.

MMED 7015
Clinical Diagnosis and Management of Cardiovascular Disease. Eighty to one hundred and sixty (80-160) hours.

The student will work with cardiovascular patients and help in their management, under supervision. Will attend educational activities and cardiovascular procedures held at the University District Hospital.

MMED 7016
Cardiology and Electrocardiography. One hundred and sixty (160) hours.

The student will attend consultation of vascular patients, under supervision. He/she will get acquainted with electrocardiography interpretations. Will attend activities held at the Cardiology Section at Mayagüez Medical Center.

MMED 7017
Adult Cardiology. One hundred and sixty (160) hours.

The student will attend cardiovascular patients and become acquainted with the interpretation of procedures, such as, Electrocardiography. It is expected that he/she will attend educational activities held at the Cardiovascular Section of the hospital.

MMED 7018
Cardiovascular Diseases. One hundred and sixty (160) hours.

The student will attend cardiovascular patients and help in their management, under supervision. Will attend the educational activities and cardiovascular procedures held at the San Juan City Municipal Hospital.

MMED 7019
Non Invasive Cardiovascular Procedures. One hundred and sixty (160) hours.

The purpose of this course is to familiarize the student with the modern Non Invasive Techniques applicable to the Cardiovascular System. These include: Sonography, Exercise Tests, Holter, Systolic Intervals Measurments, Electrocardiography, Vectocardiograms and Electrophysiologic Studies. The course is held at the Cardiology Section, VA Hospital.

MMED 7020
Coronary Care Unit. Eighty to one hundred and sixty (80-160) hours.

The student will work on patients with coronary heart disease and will learn from the different clinical variations that they present. He/she will learn to manage patients without complications as well as the most frequent emergencies and complications. He/she will attend the teaching activities held at the Cardiovascular Section at the University District Hospital.

MMED 7025
Electrocardiography. One hundred and sixty (160) hours.

The student will attend learn to interpret electrocardiograms, under supervision. It is expected that he/she study the assigned textbook and attend the teaching activities held at the Cardiovascular Section, University District Hospital.

MMED 7026
Clinical Clerkship in Endocrinology and Diabetes. One hundred and sixty (160) hours.

The student will work on patients with endocrine disorders and will learn to manage them under supervision. Will attend the educational activities held at the Endocrinology Section, University District Hospital. He/she will learn to interpret tests related to this subspecialty of Medicine.

MMED 7027
Diagnosis and Management of Gastrointestinal and Liver Diseases. Eighty to one hundred and sixty (80-160) hours.

The student will work on in-and out- patients with gastrointestinal and liver diseases, learn to establish a diagnosis and management plan emphasizing the use of the history taking and physical examination tools. Attend educational activities of the section and the multidisciplinary activities.

Old title: Diagnosis and Management of Gastrointestinal Diseases – Changed since August 2007.

MMED 7028
Clinical Gastroenterology. Eighty to three hundred and twenty (80-320) hours.

This is an elective course geared to present the student the different aspects in the practice of Clinical Gastroenterology, including the medical history, physical examination, and case discussions. The Pathophysiology

Mechanism of the gastrointestinal disorders is emphasized. The student is exposed to the diagnosis procedures and will participate in the academic activities, including research opportunities.

MMED 7029
Clinical and Laboratory Aspects of Hematology and Oncology. One hundred and sixty (160) hours.

The student will act as an Intern, under supervision. He/she will attend the educational activities, will benefit from audiovisual material, and, if he/she shows interest, will be able to participate in various programs under the supervision of the Hematology Section, University District Hospital.

MMED 7030
Hematology. One hundred and sixty (160) hours.

The student works on Hematology patients. will participate in the readings of peripheral blood and bone marrow smears; will attend teaching activities held, and if he/she so wishes, will participate on research projects under the supervision of the Hematology Section at San Juan City Hospital.

MMED 7035
Infectious Diseases and Parasitology. One hundred and sixty to three hundred and twenty (160-320) hours.

The student works on patients with infectious diseases. He/she will perform diagnostic procedures such as, Gram Stains and will use audiovisual materials. He/she will attend teaching activities held and will be supervised by faculty at the University District Hospital.

MMED 7036
Nephrology. One hundred and sixty (160) hours.

The student will work on patients with renal diseases. He/she will study Renal Physiology, Electrolyte and Acid Base Imbalance and the Principles of Renal Dialysis. He/she will attend teaching activities held at the Renal Section, University District Hospital.

MMED 7037
Neurology. Eighty to one hundred and sixty (80-160) hours.

The student works on patients with neurological diseases, under supervision. He/she will have the opportunity to study basic concepts about Neurophysiology, Neuropathology and Neuroradiology. He/she will attend the teaching activities held at the University District Hospital.

MMED7038
Nuclear Medicine and Diagnostic Ultrasound. One hundred and sixty (160) hours.

The student will receive information about the various aspects of Nuclear Medicine (physical properties of isotopes and their uses in Medicine, diagnostic procedures, the use of machines for diagnostic purposes, and work on patients). He/she will attend the teaching activities held at the Division of Nuclear Medicine, San Juan City Hospital.

MMED 7039
Diagnostic and Management of Pulmonary Diseases. One hundred and sixty (160) hours.

The student will work on patients with respiratory problems including pediatric patients. He/she will be exposed to problems in Pulmonary Allergy. It is expected that he/she will attend the educational activities held at the Pulmonary Section, University District Hospital.

MMED 7040
Clinical Pneumology. Three hundred and twenty (320) hours.

The student will work on patients with pulmonary pathology problems or diseases. He/she will attend the educational activities held at the section, Mayagüez Medical Center.

MMED 7045
Basic and Clinical Rheumatology. Eighty to one hundred and sixty (80-160) hours.

This elective course is a review of the Collagen diseases with emphasis on the latest diagnostic and treatment

advancements. Students will be exposed to special procedures, under supervision. He/she will attend the teaching activities held at the Rheumatology Section, University District Hospital.

MMED 7046
General Intensive Care. Eighty to one hundred and sixty (80-160) hours.

The student will familiarize him/herself with the diagnosis and treatment of such conditions that merit Intensive Care. He/she will be able to perform procedures under supervision. He/she will attend teaching activities held at the Intensive Care Unit, VA Hospital.

MMED 7047
Out Patient Department Clinical Experience. Eighty to one hundred and sixty (80-160) hours.

The student will work on and manage patients at Outpatient Department Clinics, under supervision. Will attend the educational activities held at the clinics and the Internal Medicine Department, University District Hospital.

MMED 7048
Renal Metabolism. Eighty to one hundred and sixty (80-160) hours.

The student will familiarize him/herself with clinical research and work with patients at the Metabolic Unit. He/she will be exposed to metabolic problems, electrolyte disorders, diabetes and renal diseases. It is expected that he/she will make ward rounds held at the Endocrinology and Renal Section, VA Hospital.

MMED 7056
Industrial Medicine. One hundred and sixty (160) hours.

In this course, emphasis is made on those labor diseases amenable to compensation by law. The student will work on patients whose cases will be discussed mostly in terms of loss of functions, assessment of handicap and vocational/rehabilitation programs. It is held at the Industrial Hospital.

MMED 7057
Emergency Medicine. Eighty to two hundred and forty (80-240) hours.

The student will participate as a member of the Medical-Resident Team with the faculty members. He/she will work on patients, will perform minor surgical procedures, and will interpret laboratory tests under supervision. These activities will be held at the Emergency Room, Puerto Rico Medical Center.

MMED 7060
Geriatric Medicine Clerkship. Eighty to one hundred and sixty (80-160) hours.

The student will participate in the day to day management of selective geriatric patients. There will be daily group discussions and geriatric boards questions review. The student will participate of rounds at the Geriatric Units; and receive advise from an interdisciplinary faculty. He will accompany the physician and other members of the team in home care visits.

MMED 7067
Health Promotion for the Older Adult. Sixty (60) hours.

Using teaching methods such as lectures, seminars, and classroom discussions the students will be exposed to various strategies of prevention and interventions to qualify them to develop programs in health promotion for the elderly in the community. Students will also get knowledge related to the interdisciplinary approach of health care, in order to develop successful health programs. By the time the students finish the requirements of this course, it is expected that the student designs a program in Health Promotion and disease prevention to cope with the numerous health needs of the elderly population. This course is designed to offer advanced principles and concepts on Health Promotion and disease prevention in the elderly.

Professionals in the Health and Behavioral Sciences, and academic and clinical faculty will also register in this course. For this special population it will be used GERI 6006 code.

MMED 7068
Rehabilitation: Health Promotion in Older Adult. Twenty four (24) hours.

This course is a continuation of the Health Promotion in Older Adult, MMED 7067 (GERI 6006), course. The content of the course has a clinical approach, it is divided in four areas: Overview of Geriatric Rehabilitation, Rehabilitation Process to Improve the Functional Ability of the Geriatric Patient, Rehabilitation Settings and Observation Visits to Different Rehabilitation Settings. Students will be exposed, using the most advanced teaching methods and concepts such as lectures, seminars, and observation visits, in the rehabilitation of the elderly and in the Principles of Health Promotion in the Elderly Person at the Tertiary Level.

Professionals in the Health and Behavioral Sciences, providing services to this population segment, and academic and clinical faculty, may also register in this course. For this participants it will be used GERI 6006 code, and two (2) credits contact unit.

MMED 7070
Clinical Practice on Health Promotion in the Elderly: Interdisciplinary Approach. Seventy two (72) hours. Pre-requisite: MMED 7068.

This course consists of 72 hours trimester with a total of 60 hours that will be dedicate to the clinical experience on different practice settings and twelve hours on conferences. The students will accomplish a need assessment of the elderly persons on the practice settings previously identified. Also, they will develop a Health Promotion Intervention Plan considering the priorities previously identified on the need assessment. Likewise will work as an interdisciplinary team on the intervention and evaluation with the older adults. Also, the students will have the opportunity to share with other professionals on the practice setting through team work meetings, counseling, clinical interventions, and informal talks. Each student will be responsible for the implementation of the Health Promotion Model through educational activities according to the professional expertise. They will deliver a final report of all the educational activities implemented on the practice setting. The practice experience will develop on community based programs for older adults.

MMED 7075
General Internal Medicine Clinical Experience. One hundred and sixty (160) hours.

This course has been designed to provide Fourth Year medical students with interdisciplinary clinical and ambulatory experiences in General Internal Medicine in primary and secondary settings. The educational experiences designed for this purpose, will offer the opportunity to assist patients from a biopsychosocial perspective. An interdisciplinary faculty will advise students in their interventions.

MMED 7080
Research in Gastroenterology. One hundred and sixty to three hundred and twenty (160-320) hours. Pre-requisite: Medicine I.

The student will be assigned to participate in one or more clinical research projects of the Gastroenterology Research Unit. The student will be part of the research team, including the principal investigator (preceptor), research fellow, statistician-epidemiologist co-investigators and auxiliary personnel. Duties will be according to his level of skills, and may include search of the literature, participation in study design, patient interviews, record review, data recording, computerized statistical analysis, sampling, and presentations. For 2nd, 3rd & 4th Year medical students.

MMED 7085
Tuberculosis: Clinic and Education. Eighty to one hundred and sixty (80-160) hours. Pre-requisites: Medicine I & II.

The student will be part of the Tuberculosis Clinic Team. Together with the supervising physician he/she will see patients. The management of patients with the disease will be discussed. Issues to be discussed are: how the diagnosis is made, which laboratory tests are utilized, which is the disease chemotherapy, risk factors for patients with TB, how the contact investigations are made. It is expected the student will present a seminar on one of the areas of diagnosis, treatment and Epidemiology of Tuberculosis.

MMED 7086
Introduction to Organ and Tissue Donation. Eighty to one hundred and sixty (80-160) hours. Pre-requisite: Medicine I.

The student will spend between 2-4 weeks participating in all activities related to organ and tissue donation and procurement by Lifelink of Puerto Rico. These will include an orientation about the process, attendance to all educational or administrative activities in the office or the community, participation with vascular coordinators in the evaluation of referrals, the donation process, and the organ or tissue procurement from donors. The student evaluation will include attendance, attitudes, interest, professionalism, humanism and an activities roster. Ethical and humanistic aspects of organ donation will be emphasized. The student will have reading assignment on the subjects of donation and transplantation.

MMFA 7010
Clinical Clerkship in Family Medicine. Eighty to two hundred and forty (80-240) hours.

The student will participate in the care of hospitalized patients at the family medicine ward with emphasis in comprehensive care of all the patients. He/she will be exposed to all the patients, notwithstanding age, sex or type of pathology. Specifically, he/she will manage patients having pediatric, obstetric gynecological, psychiatric and medical surgical conditions. The student will admit patients; make a medical history, perform a physical examination and, together with the resident and the attending staff in charge, will discuss and decide on the plan of action.

MMFA 7016
Family Practice in the Community. Eighty to one hundred and sixty (80-160) hours.

The purpose of this course is to provide the students the opportunity to observe a family physician applying his/her knowledge and skills in a community setting. Student will be urged to participate in the professional tasks held by the physicians according to their abilities and legal limitations. His/her participation will be way of techniques that will help him/her take a view at the physician's practice and role in the community.

MMFA 7019
Family Practice Preceptorship. Eighty to one hundred and sixty (80-160) hours.

This elective introduces the student to the clinical practice of a family physician an its role in the solution of community health problems. The student will become acquaintes with the most common and prevalent problems encountered in the practice of Family Medicine.

MMFA 7020
Rural and Preventive Medicine. One hundred and sixty (160) hours.

The student will acquire experience on evaluating and managing clinical cases in primary care rural setting. The setting will enable the student to develop skills and apply knowledge through participating as member of the team in charge of the administration of health care and research. Medical students will live at the setting. They will perform activities under the direct supervision of a resident in Family Medicine or an attending, related to management of patients seen at OPD Clinics, Emergency Room, and Ward.

MMFA 7027
Family Medicine and Geriatric Ambulatory Clerkship. Two hundred and forty (240) hours. Pre-requisites: Courses of Second Year of Medicine. Co-requisite: Enroll in Third Year of Medicine.

Enable the Third Year medical student to develop the knowledge, skills, values and attitudes pertinent to the discipline of Family Medicine and the care of the elderly in the context of his family and social support system.

MOBG 7010
Applied Obstetrics and Gynecology. Eighty to two hundred and forty (80-240) hours.

This course main objective will be to teach the student how to recognize at the early stage, understand, diagnose and treat diseases found in the femine-genital tract. Also, they will familiarize themselves with the normal and abnormal aspects of pregnancy. Emphasis will be given to the interrelation with other systems and medical specialties. Duration: 6 weeks.

MOBG 7015
Applied General Gynecology. Eighty to two hundred and forty (80-240) hours.

To familiarize the student with the most important disease of the reproductive female tract. It is designed to diagnose, manage and know the diseases related to General Gynecology. The student will have the same responsibilities as an Intern. He/she will attend to Gynecological Clinics, Emergency Room, lectures and case presentations.

MOBG 7016
Applied Gynecologic Oncology. One hundred and sixty (160) hours.

This elective course enables the student to get acquainted with the most common malignant processes in the reproductive female tract. It is designed to diagnose and manage those conditions. The student will participate in the outpatient clinics of General Gynecology, Emergency Room, case presentations, and journal club discussions. He/she will perform as if an Intern under faculty supervision. He/she will attend surgical procedures relative to the sub-specialty.

MOBG 7017
Applied Obstetrics. Eighty to two hundred and forty (80-240) hours.

This course aims to familiarize the student with the most important conditions that occur in normal and complicated pregnancies. Most of the time will be allocated to attend at prenatal and post natal clinics (MIC), and at the delivery rooms. The student will show the same tasks as PGY I (Intern) under the direct supervision of residents. He/she will get acquainted with fetal monitoring, Sonography and Amniocentesis as diagnostic procedures.

MOBG 7018
Fetal Maternal Medicine. Eighty to two hundred and forty (80-240) hours.

The purpose of this elective is to expose the medical student to an experience in the service for high risk pregnancy. Emphasis is made on the evaluation and management of the high risk pregnant woman. The activities will be held at the prenatal and delivery wards and at the prenatal high risk and post natal clinics. He/she will share the same tasks as PGY I (Intern).

MOBG 7019
Gynecologic Endocrinology and Infertility. One hundred and sixty (160) hours.

The topics covered are the diagnosis and treatment of patients with menstrual disorders, male and female infertility, including Radioimmunoessay of hormones laboratories and sperm count. Other areas also covered are Hirsutims and inadequate secretion of Prolactine. The student will be required to discuss articles activities of Tubal Reanastomosis.

MOBG 7025
Methods of Contraception and their Use. Twenty four (24) hours.

This course is designed to study and evaluate the various contraceptive methods in use. Lectures are given on: problems on world population; how were the oral contraceptive developed; difference in the use and effectivity of contraceptives; the sterilization in males and females and intrauteral diseases; legal aspects of family planning.

MOBG 7027
Researching in Ob-Gyn. One hundred and sixty to two hundred and forty (160-240) hours.

The course will expose the student to active research in Basic or Clinical Science. The first week will be dedicated to the preparation of the protocol, statistical analysis and report writing. The rest of the time he will be assign to the research project being undergone under the supervision of a professor, stimulating his originality.

MOBG 7028
Women and Health: Social and Clinical Perspectives on Sexual and Reproductive Health in Puerto Rico. Eighty to two hundred and forty (80-240) hours. Pre-requisite: 1st Level of Medicine.

Through conferences group discussions and independent study, the course is designed to disseminate information and subject-matter unknown to many about different aspects of Women's Sexual Reproductive Health in

Puerto Rico from Clinical and Social Perspectives. The course also seeks to acquaint students with specific health services realities in the mentioned areas and to encourage research on specific matters, giving students an opportunity to open up to new areas of involvement in the clinical and research fields.

MOFT 7010
Clinical Ophthalmology. One hundred and sixty to three hundred and twenty (160-320) hours.

This course consists of clinical demonstrations on various methods used to examine the eye and the presentation, at the outpatient clinics and hospital, of patients suffering from eye disease. The student will be able to observe procedures and surgical techniques used at or and examine patients at outpatient department clinics under faculty supervision.

MOFT 7015
Research in Ophthalmology. One hundred and sixty (160) hours. Pre-requisite: First Year of Medicine.

This course in Ophthalmology research involves the participation of the student in one of the current research projects carried out at the Department of Ophthalmology, such as Epidemiology of Senile Cataracts, Lens Antibodies in Diabetes and Cataracts, Biochemistry of Lens Pigments, or Human Aqueous Humor Composition. The student will receive basic instruction on scientific research methodology, will become familiar with the specific aspects of a particular project (objectives, rationale and significance, methodology, preliminary results) and will have a hands-on experience in some defined aspects of its development.

MOFT 7995
Introduction to Medical Ethics: Constraints and Consequences. Eighty to one hundred and sixty (80-160) hours.

This course will initiate the participant to the Ethical Theory of Principlism as formulated by Beauchamp and Childress. Principlism has been, for the last twenty years, the most often used ethical construct to explain, examine, justify, and evaluate the physician-patient interaction through Four Principles:

1) Autonomy: the self determination of a competent patient;
2) Beneficence: the welfare of the patient as the primary concern;
3) Non Maleficence : first do no harm;
4) Justice: the balance between benefits and burdens.

These principles derived from the common morality, that is tradition and common sense, can lead the competent morally serious person to the right decision. Conferences, case presentations and discussions will be complemented by guest speakers. Self teaching, modules in form of take-home, multiple choice, and true or false tests will incline the students to read and review the subject matter without increasing the burden of an already challenging curriculum.

Grading System: Passed (P), Not Passed (NP)

MPAT 7010
Basic Anatomic Pathology. One hundred and sixty (160) hours.

Students will be expose to a process of Clinicopathological Correlations. During this period the student will be exposed to Macroscopic and Microscopic Pathology. The student will help in the performance of some autopsies and the preparation of protocols.

MPAT 7015
Correlative Neuropathology. One hundred and sixty (160) hours.

The course will introduce the student to the clinical correlation of Neuropathology and Neurology. Through a series of audiovisual packages the students will be able to review all the basic Neuropathology on his own. He will aid in removing brains at autopsy, describing and sectioning them. He will write at least two final notes on neurological cases in which the clinical correlation is so essential. He will describe, macro and microscopically, all neurosurgical specimens from the Medical Center O.R. during the course. He will attend neurological and neurosurgical case presentation conferences in order to understand the position of the neuropathologist in this team of neurosciences. It is optional to write a short paper on Neuropathology findings.

MPAT 7017
Transfusion Medicine/Blood Banking. Eighty to one hundred and sixty (80-160) hours. Pre-requisite: Second Year of Medicine.

Introduction to all aspects of Transfusion Medicine. Laboratory work will be provided in the Transfusion Service (ASEM), the Blood Bank of American Red Cross and the HLA Laboratory. Contact with patients will be done at the hospitals. Case presentation, rounds, and regular conferences will be held. Emphasis in the knowledge of Immunohematology, blood collection, processing of blood and blood components, storage and shipment, Apheresis, transfusion of blood and components, adverse effects of donor and recipient and the Quality Assurance Program.

MPAT 7018
Research in Transfusion Medicine. One hundred and sixty to three hundred and twenty (160-320) hours. Pre-requisite: Second Year of Medicine.

Research project related to Transfusion Medicine. An experienced investigator will be in charge of the student during the entire period. The student will write a paper to be presented at the annual student research forum at the University of Puerto Rico (UPR), School of Medicine.

MPAT 7019
Laboratory Medicine. One hundred and sixty (160) hours. Pre-requisites: Courses of Second Year of Medicine.

This elective will introduce the students to the main aspects of Laboratory Medicine as a supplement of their Pathology course and as an aid during their clinical years, in order to learn about the optimum laboratory utilization. The exposure to laboratory work will be provided in the Clinical Laboratory of ASEM through their main sections: Clinical Chemistry, Hematology, Microbiology and Transfusion Medicine. The students will participate in the regularly scheduled conferences and case presentation.

MPAT 7025
The Ascent of Man. Eighty to two hundred and twenty (80-220) hours.

The Ascent of Man covers, not in strict chronological order but according to the strongly evolutionary model suggested in the title, the Emergence of Humanity, the Agricultural Revolution, Architecture and Engineering, Metallurgy and Chemistry, Mathematics, Astronomy, Newtonian and Relativistic Mechanics, the Industrial Revolution, Darwinism, Atomic Physics, Quantum Physics, DNA, Neurobiology and Cognitive Science, and Artificial Intelligence. The course follows "The Ascent of Man", Jacob Bronowski's series of video -essays that trace the development of science in the context of the evolution of human civilization- how science has influenced human culture and vice-versa. Using the series as a base, we hope to follow man's journey through western intellectual history: back to the days of Ancient Greece, when Pythagoras was exploring the harmony of nature through numbers; via the Middle Ages and the Renaissance, when Galileo challenged religious dogma with his revolutionary theory of the heavens and Michelangelo was painting the Creation of Adam on the ceiling of the Sistine Chapel; into the Age of Enlightenment, when Newton was writing of the problems of gravity and light in "Principia" and Mozart was composing "The Marriage of Figaro"; and finally to the Quantum Age, with Einstein reflecting on the nature of time and space and Heisenberg pondering on the uncertainty of the quantum world. Science consists of man-made ideas and it should be no surprise, therefore, that great scientific discoveries reflect the age in which they are made: how we think at a particular time. Science is an integral part of man's cultural history and it is important for us to try and understand how science and society have interrelated throughout history up to the present time. It is the aim of the course to explore this theme through dialogue, discussion and debate, thus providing students with the experience of expressing their own ideas and opinions in written and spoken form.

MPAT 7105
Darwinian Medicine. Fifty four to sixty (54-60) hours.

Darwinian medicine is the appplication of modern evolutionary theory to human health and illness, lying at the crossroads between theoretical and applied with human biology, medical antropology, psychology and physiology. It begins examining the overall concept of evolutionary medicine, advancing through a series of topics showing the scope of impact that evolutionary

theory has on medicine today. A continuing theme will be the disparity between proximate and the ultimate causes, approached through an evolutionary interpretation. It will lay emphasis upon those situations and conditions of health (or illness) that necessitate both proximate and ultimate causality. It will address homo sapiens as a microecosystem grounded on the complex interaction of genotype, phenotype, environment, and behavior that influence health and illness. It will also address recent re-evaluation of the biological locus of homo sapiens, its evolvability and the current status of human evolution.
Grading System: Passed (P), Not Passed (NP)

MPAT 7995
Instructional and Evaluation Strategies in Pathology. Eighty to one hundred and sixty (80-160) hours. Pre-requisites: First and Second Level of Medicine.

This course is designed for Third and Fourth Level medical students. It will allow the student to explore and develop teaching skills, including the preparation of educational materials, such as lectures using Power Point, offering laboratory exercises, leading small group discussions and/or tutorials during the Pathology course offered to Second Level Year medical student. The course coordinator will supervise the development of the skills. The medical student will also learn how to write best answer questions and will study the characteristics that distinguish professor of excellence. The methodology to attain these objectives includes lectures, independent study, group discussions, and supervised practice.

MPAT 7996
Pediatric Pathology. Eighty to one hundred and sixty (80-160) hours. Pre-requisite: Completed 2nd Year of Medicine.

The course will expose the students to the process of Clinicopathologic Correlations in the field of Pediatric Pathology. During a period of four weeks, the student will be exposed to gross and microscopic examination of pediatric specimens and placentas. The student will also participate in the weekly Pediatric Treatment Planning Conference (TPC). The student will perform a pediatric autopsy and will be responsible for the Autopsy Protocol and Clinicopathologic Correlation. This case will be presented at the end of the rotation at the Autopsy Review Conference.

MPAT 7997
Medicine in Shakespeare. Thirty six to forty eight (36-48) hours.

This course will explore the tragedies of King Lear, Othello,Macbeth and Hamlet from a medical viewpoint. The plays will present men and women finding their identities or forge new ones while they struggle to balance obligations to family, society, and self. The student will see and analyze their struggle with the outcome of choices made. through this course, the student shall explore Shakespeare's dramatic art for conveying human foibles, fallibility and weaknesses as well as his deep understanding of our humanity. Students will develop a clinical history of the play's main character.

MPED 7010
General Pediatrics. Eighty to two hundred and forty (80-240) hours.

The student will demonstrate the acquisition of knowledge and skills necessary to work on the diagnosis and management of the most common pediatric conditions. He/she will attend activities held at wards for hospitalized patients and/or pediatric emergency room.

MPED 7015
Introduction to Care of High Risk Infant. Eighty to one hundred and sixty (80-160) hours.

The student will acquire knowledge and skills in the detection and management of the high risk infant. The educational activities will consist of lectures, seminars and case demonstrations about the care of the high risk infant. Special emphasis will be made in the care of the acutely ill patient. An opportunity will be available for the student to learn about the interpretation of clinical problems on acid base balance.

MPED 7016
Applied Neonatology. One hundred and sixty to three hundred and twenty (160-320) hours.

It is expected that the student will acquire knowledge and skills in the detection and management of the high risk infant. Educational activities consist of ward rounds with the personnel of the Neonatology Section; high-risk-infant-clinics and seminars on neonatal diseases. The

student will get acquainted with the management of the high risk infant at the Delivery Room.

MPED 7017
Introduction to Basic Knowledge in Newborn. One hundred and sixty (160) hours.

The student will be offered a general, solid view about the normal physiology of the newborn and an introduction to the most common pathologic conditions affecting the newborn. Educational activities will include daily ward rounds, daily discussions of assigned topics and demonstrations of the resuscitation procedures as they apply to the neonate.

MPED 7018
Introduction to Pediatric Cardiology. One hundred and sixty to three hundred and twenty (160-320) hours.

This course consists of the evaluation of hospitalized and ambulatory patients served at the Pediatric Cardiology Section. Emphasis will be made on electrocardiography readings, cardiac catheterization and the correlation of these with the clinical diagnosis and physiologic data.

MPED 7019
Primary Pediatric Health Care. Eighty to four hundred and eighty (80-480) hours.

This course is divided into two mayor areas. The Care of the Acute Patient and Developmental Pediatrics and Health Maintenance. During the First Phase, the student will attend activities related to the evaluation of children at the Emergency Room, while studying the Phase, he/she will be exposed to developmental behavioral and learning disorders as well as patients with cerebral-palsy and defects in the central nervous system. During the Third Phase of the course the student will attend activities held at the School-Health Clinic and Maternal Infant Care Clinic, both involved in the follow-up care of healthy children.

MPED 7020
Pediatric Endocrinology. One hundred and sixty to three hundred and twenty (160-320) hours.

The student will participate in activities pertinent to the diagnosis, evaluation and management of children having endocrinological, metabolical, and genetic problems. Emphasis will be made on clinical experiences with hospitalized elective patients and at the Emergency Room. He/she will have the opportunity to interpret bone/age, X-Rays, and endocrine laboratories.

MPED 7025
Assess and Management of Behavioral Patterns in Pediatrics. One hundred and sixty to two hundred and forty (160-240) hours.

The student will show the acquisition of knowledge and skills in the evaluation and management of various aspects of common behaviors seen in pediatric patients. Emphasis will be made on the psychological aspects of acute and chronic illness; psychophysiologic disorders, behavior disorders, as well as community resources and the child in the family and community.

MPED 7026
Clinical Genetics. One hundred and sixty (160) hours.

The student will show acquisition of knowledge and skills in the detection, diagnosis and management of neonates with congenital anomalies. The course includes a review of basic concepts about Mendelian Patterns, especially those pertinent to pathology of chromosomes and transmission of diseases involving one or more genes, the detection and evaluation of hereditary and chromosome pathology related diseases. Genetic counseling and prevention is also included.

MPED 7027
Pediatric Nephrology. One hundred and sixty to four hundred and eighty (160-480) hours.

The student will have the opportunity to evaluate and manage ambulatory and hospitalized patients suffering from renal diseases, in renal failure and in Hemodyalisis. They will get acquainted with those laboratory procedures necessary to evaluate patients. The course also offers the opportunity for a limited research project in Pediatric Nephrology.

MPED 7028
Clinical Pediatric Neurology. One hundred and sixty (160) hours.

The student will get acquainted with the most common clinical entities in Pediatric Neurology. Emphasis will be made in the basic skills needed to perform a neurologic evaluation and in the pathophysiologic mechanisms present in the clinical course of the disease.

MPED 7029
Pediatric Pneumology. One hundred and sixty to three hundred and twenty (160-320) hours.

The course consists of a clinical experience at the Intensive Care Pediatric Unit with special emphasis on respiratory complications and management. He/she will also participate in the delivery of Respiratory Physio-Therapy to the ambulatory patients. He/she will attend activities related to asthma induced by exercises, Alpha-L-Antitypsin, NBT Test and determination of serum complement.

MPED 7030
Pediatric Hematology and Oncology. Eighty to one hundred and sixty (80-160) hours.

The student will become a member of the team in the Hematology and Oncology Section. He/she will actively participate in all of the activities held at the section. He/she will make an in-depth study of a clinical case, performing a review of literature pertinent to the case, under direct supervision of one of the members of the medical team.

MPED 7035
Introduction to Clinical Aspects of Adolescent Health Care. One hundred and sixty to three hundred and twenty (160-320) hours.

The student will attain knowledge and skills in the management of adolescent's problems. He/she will learn to interview adolescents patients; growth and development, detection of normal behavior variants, and identification of Biopsychosocial Pathology. He/she will participate in school and community activities so as to get acquainted with the adolescent's needs and expectations.

MPED 7036
Pediatric Intensive Care. One hundred and sixty (160) hours.

The student will have the opportunity to work on critically ill patients and will learn about the normal and pathological physiology of some diseases. He/she will learn too, about management of patients in respiratory and cardiovascular failure, in coma, and the use of fluids/electrolytes, artificial lungs and mechanisms.

MPED 7037
Research Problems in Medical Genetics. Three hundred and twenty (320) hours.

This course is geared to First and Second Year medical students with purpose of introducing him/her participation in research projects pertinent to this area and currently going-on at the section of Medical Genetics. The student's work will consist of review of literature, data gathering from patients, learning laboratory techniques on the subject of Medical Genetics, as pertinent to the problem under study, and analysis of patients and laboratory data.

MPED 7040
Rural Pediatrics. Two hundred and forty (240) hours.

The student will be exposed to Primary Out Patient Clinics in Pediatrics. Will be exposed to Emergency Room consults and admissions to Pediatric Ward. An hour of discussions will be arranged during the afternoons. No night duties.

MPED 7045
Pediatric Oncology. Eighty to one hundred and sixty (80-160) hours.

The student will become a member of the team in the Oncology Program. He/she actively participate in all of the activities held at Oncology Ward and Clinics. He/she will make an in-depth study of a clinical case, performing a review of literature pertinent to the case, under direct supervision of one of the members of the medical team.

MPED 7046
Developmental Pediatrics and Developmental Disabilities. Eighty to one hundred and sixty (80-160) hours.

Comprehensive assessment of the child with developmental disorders, with emphasis in early identification, therapy and management of children with mental retardation, motor delay, cerebral palsy, language, learning and behavior disorders.

MPED 7055
Clinical Nutrition. Eighty (80) hours. Pre-requisite: First Year of Medicine.

This course integrates diverse topics in Nutrition from the perspective of the pediatric patient by using different strategies such as conferences, discussions, seminars and demonstrations, case and topic discussions as well as clinical rounds. The student will also explore recent literature and will apply this concepts and knowledge to the evaluation and management of pediatric patients.

MPED 7065
Clinical and Population Epidemiology of Dengue in Puerto Rico. One hundred and sixty to three hundred and twenty (160-320) hours. Pre-requisite: Medicine I.

The course provides students with an exposure to clinical characteristics and epidemiologic aspects of Dengue, using preventive systems of the condition used in Puerto Rico and educational resources available at the dengue Laboratory in Puerto Rico. Students may select a specific project adjusting the available data and the duration of the course.

MPED 7105
Research in Pediatrics. One hundred and sixty to three hundred and twenty (160-320) Hours. Pre-requisite: Medicine I.

This is a laboratory course with field experiences directed to medical students. It is expected for the students to learn the basic elements of the research process in Pediatrics through the close interaction with a research preceptor/mentor, and their participation in some of the departmental research projects.

MPED 7106
Research on the History of Health. One hundred and sixty to three hundred and twenty (160-320) Hours. Pre-requisite: Medicine I.

This course aims to provide students with an investigation in history events, and professional conceptions related to health problems using resources from the Medical Sciences Campus and the Rio Piedras Campus of the University of Puerto Rico. Students will make and original investigation using primary and secondary resources. Student will select an investigation project adjusting to data available to analyze his knowledge in history and duration of the course.

MPHA 7019
Environmental Toxicology. Eighty to one hundred and sixty (80-160) hours.

The course will provide for the discussion of environmental toxicity problems and how they are related to disease processes. The student will participate in ongoing research work about specific environmental toxicity problems in Puerto Rico.

MPHA 7020
Clinical Pharmacology. Eighty (80) hours.

This course was primarily designed to give the Fourth Year medical students the opportunity to develop the knowledge of establishing therapeutic schemes based on the most advanced pharmacological approaches. It will consist of presentation of previously selected clinical cases and the justification of treatment. Members of the Department of Pharmacology will collaborate in order to generate an intimate relationship between basic and clinical aspects of each case.

MPHA 7021
Supervised Research. One hundred and sixty to two hundred and forty (160-240) hours.

MPHA 7022
Medical Student Fellowship in Research, Phase II. One hundred and sixty to two hundred and forty (160-240) hours. Pre-requisite: MPHA 7021.

MPHA 7023
Advanced Student Fellowship. One hundred and sixty to two hundred and forty (160-240) hours.

Student should submit a proposal of the research to be pursued to the Preceptor and the Program Director for

written approval, and implement the approved proposal. The student should be able to implement the approved proposal in well recognized laboratory outside of the University of Puerto Rico, this will be conditioned to the approval of the Dean of Medicine.

MPRI 7115
Medical Gross Anatomy. One hundred and forty to one hundred and seventy (140-170) hours.

Lectures, dissections, discussions and examinations (theoretical and practical) organized for the purpose of familiarizing the future physician with the three dimensional, system and functional organizational of the adult human.

MPRI 7116
Medical Embryology. Eighteen to twenty two (18-22) hours.

This course follows early development of the human embryo from the time of fertilization up until the time that all major organs are formed. Emphasis is given to the cellular and tissue interaction that occurs during early organogenesis, so that students can better understand what can go wrong during the occurrence of congenital malformations. Clinical correlations are presented by physicians to reinforce the role.

MPRI 7117
Medical Histology. Eighty two to one hundred (82-100) hours.

Conferences, laboratories and discussions about the normal microscopic structure of the cell, tissues and organs in relation to principles of biochemistry, physiologic and molecular biology pertinent to the medical practice.

MPRI 7119
Biochemistry and Molecular Biology. Ninety nine to one hundred and twenty one (99-121) hours.

The first half of the course includes basic physical-chemistry principles, structure and properties of proteins and enzymes, energetic metabolism and metabolic pathways of carbohydrates, lipids and amino acids. General hormone action. The second half emphasizes the fundamental aspects of molecular biology and its projections into modern medicine. Includes the structure and properties of genetic material, nature of the genetic information and genetic code. Duplication and repair of DNA. Repetitive and specific sequences. Introns, exons, palindromes, promoters, transposons, enhancers, etc. oncogenes, mutations, genetic recombination and genetic engineering, gene therapy. Transcription and translation. Control of genetic expression. Utilization of molecular biology methodology in medicine. The course ends with a series of topics on physiological biochemistry such as blood proteins, coagulation and fibrinolysis, muscle contraction, vitamins and basic concepts on nutrition. Most of the subjects of the course are illustrated with clinical correlations.

MPRI 7120
Human Physiology. One hundred and forty four to one hundred and seventy six (144-176) hours.

This course presents cellular and system physiology and its control. The physio-chemical basis of biological phenomena are emphasized. The course includes theoretical and experimental sessions with group discussions. Clinical protections of physiological phenomena are introduced whenever this is possible.

MPRI 7127
Public Health, Preventive Medicine and Population Health. Eighteen to twenty two (18-22) hours.

This is the first course of a four-year curriculum in Public Health for medical students. The course is designed to introduce medical students to fundamental concepts of Public Health, Preventive Medicine and Population Health, including basic quantitative indicators of morbidity and mortality in populations; surveillance systems; major data sources for assessing the health status of populations; screening for undiagnosed diseases in populations, assessment of screening and diagnostic tests; guidelines for community and clinical preventive services, and health objectives as presented in Healthy People 2010.

Title changed since January 2009.
Old title: Public Health and Preventive Medicine I.

MPRI 7130
Integration Seminar I. Fifty four to sixty six (54-66) hours.

The course will develop skills in computerized information retrieval and appropriate use of library resources. A variety of related clinical skills will be developed. The study of clinical cases with emphasis in the basic sciences associated concepts will be introduced.

Grading system: Passed (P), Not Passed (NP)

MPRI 7136
Neurosciences. Ninety nine to one hundred and twenty one (99-121) hours.

Neurosciences includes function of the individual nerve cell, basic anatomical connections and organization of the central nervous system, and integrative and systems neurophysiology. These topics are reinforced by laboratories in neuroanatomy and neurophysiology as well as clinical correlation conferences.

MPRI 7137
Human Behavior. Forty five to fifty five (45-55) hours.

Upon completion of this course, the participants will identify the basic knowledge of the behavioral sciences; will also develop skills and attitudes that will enable him/her to understand the psychopathology of psychiatric disorders and clinical psychiatry.

MPRI 7138
Introduction to Clinical Skills. Sixty eight to eighty two (68-82) hours. Co-requisites: First Level Medicine courses.

This course is offered to the whole class of first level medical students with the purpose of developing important skills which are necessary for the practice of medicine, such as: the medical interview, including adult, pediatric and geriatric patients; physical examination, including the correct techniques and normal findings; the correct use of diagnostic medical equipment; universal precautions, occupational safety and personal protective measures; venipuncture and parenteral medications administration; cardiopulmonary resuscitation. At the same time, this course will serve as an introduction and liaison with clinical setting in which these students receive most of their training.

Grading system: The grading system for this course was Passed(P) Not Passed(NP), since August 2005 it changes to the traditional grading system of A,B,C,F.

MPRI 7139
Human Development Course. Sixty eight to eighty two (68-82) hours.

This course presents the basic principles of human development, from conception to old age, using the biosychosocial model. This model includes aspects of medical genetics. The environment and their interaction with the integral development of the person. The course is addressed to first year medical students. The educational methodology to be use includes, among others: small group discussions, lectures, panel discussions by medical students and or faculty, independent studies utilization of external resources and patients.

MPRI 7140
Medical Gross Anatomy and Embriology. One hundred and fifty eight to one hundred and ninety two (158-192) hours.

Through lectures, laboratory dissections, and discussions future physicians will be familiarized with the normal three-dimensional structure and functional organization of the human body. Students will analyze early embryonic development and the patterns for formation of all major organs in the human embryo, which provide the conceptual basis for comprehending both normal human anatomy and congenital malformations.

MPRI 7145
Medical Ethics: Constraints and Consequences I. Sixteen to eighteen (16-18) hours.

This course provides the student an approach to normative ethics. It will initiate the participant in the ethical system of Principlism as formulated by Beauchamp and Childress. Principlism has been, for the last twenty years, the most often used ethical construct to explain, examine, justify and evaluate the physician-patient interaction through three principles which are derived from common morality:

1) autonomy; 2) beneficience, and 3) justice. Beginning the end of life dilemmas will be exhaustively analyzed. Other ethical perspectives such as basic human goods, existential phenomenology, contractualism, deontology, utilitarianism, eclectic syncretism, and relativism will be discussed.

MPRI 7155
Introduction to Principles of Clinical and Translational Research. Forty to forty four (40-44) hours.

The objective of this course is to introduce medical students to the principles of clinical and translational research early in their careers. Through lectures, group discussion, and practice exercises students are expected to acquire basic research skills and to integrate new scientific views and knowledge of biomedical sciences with clinical research. The course includes topics that emphasize basic knowledge on clinical and translational research, such as ethics, research methodologies, critical analysis, and patient interventions, among others.

MPSI 7010
Clerkship in Psychiatry. Eighty to two hundred and forty (80-240) hours.

The student will participate in the complete workup of a patient and family. He/she will be assigned to current activities and seminars offered to psychiatric residents while in this rotation.

MPSI 7015
Comprehensive Child Psychiatry. One hundred and sixty to two hundred and forty (160-240) hours.

The student will participate in the evaluation and management of children and adolescents. He/she will participate in all the daily activities held by his/her Proctor. Readings will be assigned.

MPSI 7016
Care of the Disturbed Psychiatric Patient. One hundred and sixty (160) hours.

This course is designed for those medical students interested on attaining knowledge about the management of psychiatric emergencies, the patient in crisis and about the different treatment and alternatives used in Psychiatry. He/she will get acquainted with the diagnosis and management of acute and chronic patients, either in crisis or in acute state at the Emergency Room and Wards of the Psychiatric State Hospital. Emphasis will be made on psycho-pharmacologic treatment and other alternatives.

MPSI 7018
Alcohol Dependence. Eighty to one hundred and sixty (80-160) hours.

This course is designed to familiarize the student with the etiology, diagnosis and treatment of drug dependency.

MPSI 7019
Introduction to Drug Dependence. Eighty to two hundred and forty (80-240) hours.

The student will be exposed to the technique of evaluating and managing patients with dependency and addiction to substances.

MPSI 7025
Psychiatric Research. One hundred and sixty (160) hours.

Students in this course will be familiarized with the basic skills in Psychiatric Research. Emphasis will be placed on the development of a short term research project preferable clinically oriented.

MPSI 7026
Psychiatric Emergencies. Eighty to one hundred and sixty (80-160) hours.

This course offered the student the opportunity to evaluate patients suffering a Psychiatric Emergency, as well as to initiate prompt and intermediate therapies.

MPSI 7027
Family Psychiatry. One hundred and sixty (160) hours.

This is a theoretical and clinical course that offers the student the opportunity to get acquainted with knowledge about family dynamics by using different theoretical models. The student will evaluate and follow as assigned a family including a home visit.

MRAD 7010
Basic Diagnostic Radiology. Eighty (80) hours.

This elective course will familiarize the student about the basic concepts on diagnostic radiology, particularly the principles of X-Rays reading and correlations with the pathology. It will familiarize the student with the different procedures available for the study of the respiratory, gastrointestinal and genito-urinary tract while emphasizing the indications for each procedure.

MRAD 7015
Diagnostic Radiology. Eighty to one hundred and sixty (80-160) hours.

This is an elective course with emphasis on readings and individualized tutorships. The student will participate in all radiologic procedures held at the service. He/she will analyze X-Rays, will discuss the diagnosis, techniques and indicators with his/her Proctor. He/she will attend to inter- departamental conferences in which the Radiology services are involved. X-Ray records will be used. He/she will also participate at the combined lectures with the Radiology residents.

MRAD 7017
Introduction to Clinical Practice of Nuclear Medicine. Eighty to one hundred and sixty (80-160) hours.

This course serves as an introduction to the clinical practice on Nuclear Medicine. It aims to familiarize with the principles and basic techniques to this field of Medicine and relate them to the practice of General Medicine. The student will be assigned to the Outpatient Clinic and to the laboratory where he/she will actively participate in all the activities held.

MRAD 7018
Radiation Oncology. One hundred and sixty (160) hours.

Students will participate on the regular academic activities held at the Radiotherapy Program (lectures in the treatment and clinical management of patients with Cancer) under the supervision of faculty staff. He/she will also participate in performing therapeutic procedures using kilo/megabolt units and in the follow-up ambulatory treated patients.

MRAD 7019
Pediatric Radiology. Eighty to one hundred and sixty (80-160) hours.

This course is geared to develop the basic concepts on the radiologic interpretation in Pediatrics including studies, diagnosis, and indications.

MSEG 7215
Pathology and Introduction to Laboratory Medicine. One hundred and forty six to one hundred and seventy eight (146-178) hours.

The study of the natural history of diseases, including their origins and causes, evolution and final outcome, as well as the effect upon the said natural history of clinical interventions; this also includes all techniques, methods and procedures applied to the examination of cells, tissues and fluids of the human body employed in the analysis of the said history.

MSEG 7216
Infectious Diseases. One hundred and twenty six to one hundred and fifty four (126-154) hours.

introduction to basic concepts in bacterial physiology and genetics. The study of the epidemiology, taxonomy, diagnosis, immunopathology, and treatment of the microorganisms of medical importance (bacteria, virus, fungi, and parasites).

MSEG 7217
Introduction to Medical Pharmacology. Ninety nine to one hundred and twenty one (99-121) hours.

Basic medical pharmacology and introduction to therapeutics. Emphasis on vocabulary, mechanisms of action and handling of drugs in the body. Prototype drugs of the mayor classes will be studied in detail.

MSEG 7218
Fundamentals of Clinical Diagnosis. Ninety to one hundred and ten (99-110) hours.

This course comprises both of the essential process for the clinical study of diseases: the history of the patient's disability, and the complete physical examination. The students will rotate through participating hospitals for the clinical exercises covering the different organ systems.

MSEG 7229
Psychopathology. Thirty six to forty four (36-44) hours. Pre-requisites: Courses of First Year of Medicine (MPRI).

This course is designed to provide second year medical students with basic knowledge related to the major psychiatric entities of the DSM-III-R. The methods used for delivering content will be lectures, audiovisual presentations and small group discussions. Evaluation will be by short quizzes and summative exam.

MSEG 7230
Mechanisms of Disease. One hundred and thirteen to one hundred and thirty seven (113-137) hours. Pre-requisites: Courses of First Year of Medicine (MPRI). Co-requisites: Courses of Second Year of Medicine (MSEG).

Through correlation of basic sciences with the clinical disciplines, this course will introduce and stimulate the student to understand the physiopathology bases using a dynamic and innovative approach. Given the broad spectrum of medical knowledge, this course will develop critical thinking and analysis of signs and symptoms of different diseases integrating basic knowledge to the mechanisms of diseases.

MSEG 7236
Integration Seminar II. Forty nine to fifty nine (49-59) hours. Pre-requisites: MPRI 7130.

The goal of the course is to extend and refine the skills initiated during the Integration Seminar I counterpart. To develop further the habits of self-directed, student-centered, problem base learning within a clinically relevant format, designed to reinforce the contents of the second year curriculum and generate new knowledge, considering the biopsychosocial aspects of comprehensive health care.

MSEG 7237
Fundamentals of Clinical Epidemiology and Evidence-Based Medicine. Thirty six to forty four (36-44) hours. Pre-requisite: MPRI 7127.

This course presents an introduction to quantitative clinical research to medical students in their second year of education through biostatistics and clinical epidemiology methods. Topics include: descriptive and inferential statistics; absolute and relative measures of risk; person-time units and survival analysis; clinical trials; observational analytical studies; bias; confounding; adjustment, and causality.

Title changed since January 2009.
Old Title: Fundamentals of Public Health and Preventive Medicine II.

MSEG 7245
Medical Ethics II: Critique and Methods. Sixteen (16) hours.
This course will review the fundamental theory of Principalism and the application of autonomy, beneficence, non malfeasance and justice to the doctor-patient relationship through an evaluation of different clinical cases and public policity. Particular cases and public policity statements will be evaluated in the following dimensions: 1) objetive clinical status regarding diagnosis, prognosis, possible interventions including doing nothing, most likely outcomes, conflicts of interest and cultural differences; 2) informed consent; 3) third party interests.

MTER 7310
Psychiatry. Eighty to two hundred and forty (80-240) hours.

This course is one phase of the course in clinical psychiatry for third year medical students. It consists of a series of lectures, assigned readings, and clinical experience evaluating psychiatric patients. At the end of third year, it is expected that the student will be able to differentiate normal states from psychiatric disorders. He/she will acquire knowledge, skills and develop attitudes, enabling him/her to arrive a diagnosis therapeutic plan
and prevention of disorders. He/she will also be able to promote mental health. He/she will apply these objectives during the intensive five weeks course as well as at liaison activities with other departmental courses and throughout his/her professional life.

MTER 7316
Pediatrics Clerkship. Three hundred and twenty to four hundred and eighty (320-480) hours.

The Pediatric Clerkship addresses issues unique to persons from prenatal age to late adolescence. The objectives define the "core" of pediatric knowledge, skills and attitudes which every general physician must master. The clerkship includes liaison psychiatry, adolescent medicine and pediatric HIV program clinical rotations. The comprehensive patient care experiences are varied and relevant to the most common P.R. children health problems. Approximately 60% of a student's time will be spent in outpatient (ambulatory) settings.

MTER 7318
Obstetrics and Gynecology. One hundred and sixty to three hundred and twenty (160-320) hours.

This third year clerkship is designed to last six full weeks. Time is allotted equally to work/study on services of gynecology and obstetrics. Students are exposed to patients at pre labor rooms; prenatal clinics, emergency room, and operating room. Each student must perform a minimum of twelve deliveries and present fifteen cases.

MTER 7319
Family Medicine Third Year Clerkship. Eighty to two hundred and forty (80-240) hours. Pre-requisites: Courses of First and Second Year of Medicine.

This course has been designed to provide students a comprehensive experience in Family Medicine. The course will expose students to the content and development of this specialty. In addition, they will learn about the evaluation and management of the 25 health problem most commonly encountered by family physicians, with an emphasis in ambulatory care. The students will also be exposed to the skills of working with families and the basic concepts of health promotion and disease prevention.

MTER 7320
Introduction to Diagnostic Radio-Nuclear Medicine. Forty to one hundred and twenty (40-120) hours. Pre-requisites: Courses of Second Year of Medicine (MSEG).

The course is designed for third year medical students. The topics will be presented by means of conferences and small-group discussions of clinical cases. Topics to be discussed include basic concepts in image formation of various modalities available in the fields of Diagnostic Radiology and Nuclear Medicine; basic concepts in the interpretation of these imaging modalities; indications and applications for diagnostic imaging modalities.

MTER 7325
Clinical Internal Medicine. Four hundred to five hundred and sixty (400-560) hours. Pre-requisites: First and Second Year of Medicine.

The course is divided in two six-weeks rotations. The students are transferred to another hospital in the second part of the rotation, when possible, except when rotating at Mayagüez Medical Center. The first part of the rotation includes case discussions with a proctor, a practical examination and formative exam. The second part, further case discussions with a proctor, includes ambulatory clinics, computer cases, one practical examination, one formative exam and written examination from the board.

MTER 7326
Surgical Clinical Internship. Three hundred and twenty to four hundred and eighty (320-480) hours. Pre-requisites: MTER 7316, MTER 7319, MTER 7325.

This course will consist of a rotation of 10 weeks through all the surgical specialties and general surgery. The principle objective is to train medical students in the recognition, diagnosis and inmediate treatment of common and critical conditions in the area of general surgery and specialties. Understand by critical those conditions that if not known of, could cause permanent multiple damage or death to the patient. Multiple models of teaching should be utilized that will include:

- conferences (2 hours daily the first 6 weeks)
- ambulatory clinical experience (60%)
- emergency clinical experience (80%)
- problem solving sessions (14 sessions of 2-3 hours)
- laboratory and practice workshops in basic techniques: sutures, resuscitation, recognizing arrythmias, curve interpretation and hemodynamics parameters
- computer assisted learning

School of Medicine
Biomedical Sciences Division
Course Descriptions

Inter-Program Courses

CBIO 8500
Statistics for the Biomedical Sciences. Three (3) credits.

Statistics as an art and a science. Basic characteristics of Statistical Inference. Normal Poisson and other distributions. Stimulation of parameters. Central Limit Theorem. Sample distributions. Comparison of means, variances, proportions. Analysis of Variance, orthogonal polynomials. Partition of degree of freedom. Variance components. Correlations simple, multiple, partial. Regression. Goodness of fit test. Some special topics: Analysis of Covariance. Transformations. Biological Assay. Sampling and Experimental Methods. Sequential Methods. Follow up studies. Non-parametric methods.

CBIO 8501
Transmission Electron Microscopy Techniques. Four (4) credits.

This course is designed to teach the basic Techniques of Transmission Electron Microscopy. The student will become familiar with fixation, embedding, sectioning, staining, the use of the transmission electron microscope and dark room techniques. Extra time, other than scheduled, will be required by the student for individual laboratory practice.

CBIO 8505
Cardiovascular Biology. Three (3) credits. Pre-requisites: Courses of Physiology, Biochemistry, and/or Molecular Cellular Biology.

The Cardiovascular Biology course is designed to cover the primary aspects of the Cardiovascular System. These include Genetics, Structure and Function at the Cellular Level, Physiopathology and Pharmacology of the most common cardiovascular disorders. The Cardiovascular Biology course will be useful in the education of graduate students, medical students and residents. It will complement the graduate student's education by putting them in contact with clinical aspects of cardiac pathologies. Likewise the medical students and residents may complement their clinical formation with training in cellular and molecular aspects.

Department of Anatomy

Master of Science with specialty in Anatomy (M.S.)
Doctor of Philosophy with specialty in Anatomy (Ph.D.)

ANAT 8501
Graduate Course in Human Gross Anatomy. Eight (8) credits.

The course provides students with a basic understanding of the organization and three-dimensional gross structure of the human body, with emphasis on the relation between structure and function. At the end of the course, the student will have gained knowledge of the segmental and compartmental organization of the human body, the basic organization and morphology of the vascular and lymphatic systems of all major organs and regions of the body, the musculoskeletal and peripheral nervous system, and all visceral organs. The student will also understand surface anatomy and various imaging modalities. In the laboratory the student will conduct a complete dissection of a human cadaver, identifying and describing the structures and their relations to each other. The course will be offered through lectures, laboratory dissection, small group discussions, and independent study.

ANAT 8503
Graduate Course in Human Embryology. Two (2) credits.

Human development mechanisms are emphasized in this lecture course, including congenital malformations. This course will provide the students with an understanding of the prenatal period of human development, particularly between fertilization and the end of the 8th prenatal week, from a developmental and clinical perspective. The student will also learn about the major abnormalities that can occur during early human development which can result in congenital malformations. The structured component of the course will be offered through lectures. It is expected the students will also spend time on independent study.

ANAT 8504
Graduate Course in Human Cell Biology and Microscopic Anatomy. Four (4) credits.

Through lectures, group discussions and laboratory, the student will receive an introduction on: (1) the structure and function of the cell; and (2) the microscopic anatomy of human tissues and organs as visualized with light and electron microscopy. Emphasis will be placed on correlating the arrangement and structure of component cells with the function and physiology of the tissue/organ. After completion of the course a student should have: (1) knowledge of the normal microscopic structure of the cells, tissues, and organs of the human body; and (2) the ability to correlate structure and function in cells, tissues, and organs at both light and electron microscopic levels. The structured time of the course consists of lectures, group discussions and laboratory sessions. It is expected the students will also spend time on independent study.

ANAT 8505
Graduate Course in Human Neuroanatomy and Neuroscience. Five (5) credits.

The course includes study of the structure and function of individual nerve cells, basic anatomical connections and organization of the human central nervous system, as well as integrative and systems neuroscience. These topics are reinforced by laboratories in neuroanatomy/ neuroscience as well as clinical correlation conferences in which physicians present clinical material related to basic neurosciences topics. The structured component of the course will be offered through lectures, laboratory experiences and small group discussions. It is expected the students will also spend time on independent study.

ANAT 8510
History of Anatomy. Two (2) credits.

ANAT 8512
Seminar Physical Anthropology. Three (3) credits.

Reading, discussion, and demonstration utilizing laboratory materials of topics related to human biological evolution.

ANAT 8519
Advanced Neuroanatomy. Three (3) credits.

Offered by consent of the instructors. A more detailed investigation of select aspects of the structure and function of the brain and spinal cord.

ANAT 8524
Comparative Vertebrate Neuroanatomy. Three (3) credits.

Principal changes in the internal structure of the Central Nervous System as exemplified by representative spell of the different vertebrate classes, culminating with the higher mammals (primates) and man.

ANAT 8525
Practice in Teaching. Two (2) credits. Pre-requisites: ANAT 8501, ANAT 8503, ANAT 8504, ANAT 8505.

Revised practice of teaching methods in the various anatomical courses for Medical, Dental and Allied Health students.

ANAT 8526
Practice in Teaching. Three (3) credits.

ANAT 8528
Topics in Anatomy. One to three (1-3) credits. Pre-requisites: Authorization of the Course Coordinator and Graduate Coordinator or Department Director.

Provides graduate students the opportunity to obtain credit in concentrated courses of 10-20 hours duration.

ANAT 8532
Combined Seminar and Journal Club. One (1) credit.

Graduate students attend seminars and journal clubs, participate in discussions and present one seminar.

ANAT 8591
Special Problems in Anatomy. One (1) credit. Pre-requisites: ANAT 8501, ANAT 8503, ANAT 8504, ANAT 8505.

Special research projects in Anatomy may be carried out by students that qualify, through special arrangements with the faculty. This course includes laboratory work.

ANAT 8593
Special Problems. Three (3) credits.

ANAT 8595
Master's Thesis Research. Six (6) credits. Pre-requisites: ANAT 8501, ANAT 8503, ANAT 8504, ANAT 8505.

Laboratory research work for Master's Thesis.

ANAT 8599
Doctoral Dissertation Research. Fifteen (15) credits. Pre-requisites: ANAT 8501, ANAT 8503, ANAT 8504, ANAT 8505.

Laboratory research work for Doctoral Dissertation.

Department of Biochemistry

Master of Science with specialty in Biochemistry (M.S.)
Doctor of Philosophy with specialty in Biochemistry (Ph.D.)

BCHM 8500
Biochemistry. Six (6) credits.

This course is designed specifically for graduate and professional students with interests in laboratory research. This will be a lecture course in general biochemistry. Topics to be covered include catabolic and anabolic pathways in living organisms, nucleic acid, protein, carbohydrate, and lipid structures and functions, the basics of DNA, RNA, and protein synthesis, enzyme kinetics, photosynthesis, electron transport, biochemical endocrinology, physiological biochemistry (including excitable membranes, blood biochemistry, and allosteric effectors), and organ specific biochemistry. Selected topics will be assigned to self-learning, small group discussion and/or problem solving.

Course changed from 5 to 6 credits since First Semester 2005-2006.

BCHM 8502
Molecular Biology. Three (3) credits.

A research oriented lecture course in Molecular Biology. Topics to be covered include Biophysics of Macromolecules; Recombinant DNA and Biotechnology; Regulation of Transcription, including considerations of promoters, DNA Binding Proteins and Oncogenes; The Processing of RNA including capping, splicing, polyadenylation and editing, Translation including targeting, frame shifting, folding and post translational modifications; and Applications of Biochemical Genetics and Cell Biology. Resource material will be scholarly scientific publications. (For a state of arts, research oriented course, the specific topics to be considered will vary from one semester to the next in order to enable the most important and latest scientific discoveries to be covered).

BCHM 8504
Biochemistry of Proteins. Three (3) credits.

The structure and function of various proteins (i.e. antibodies, enzymes, nucleic acid, binding proteins, cytoskeletal proteins, and membrane associated proteins) will be examined in detail. Protein folding, denaturation, and refolding will be reviewed. Applications of site directed mutagenesis, nuclear magnetic resonance, X-Ray crystallography, and molecular modeling will be covered. Enzyme kinetics will be examined in detail with emphasis on the analyses of catalytic mechanisms, subunit interactions, allosteric effectors, and inhibitors. sieve, affinity, and high pressure liquid column chromatography, Western Blotting, mass spectrometry, Edmon degradation, composition analyses, S.D.S. gel electrophoresis, isoelectric focusing, and PKA determinations, and other procedures that are used in the purification and analysis of proteins will be considered.

BCHM 8506
Membrane Biochemistry. Three (3) credits. Pre-requisites: BCHM 8500 and/or completed graduate level Biochemistry/Physiology/Biology course.

This is an advanced Biochemistry course focusing on biomembranes. The following topics will be discussed:
1) Membrane structure;
2) Approaches to study membrane dynamics;
3) Membrane transport (influx/efflux) and transporter protein;
4) Excitable membrane, pump, and ion channel;
5) Membrane component biogenesis and their trafficking; and finally

6) Liposomes for targeted delivery of membrane impermeable drugs, macromolecules, etc. of therapeutic interest.

This is a highly specialized course dealing with membranes from higher eukaryotic cells. The students will be engaged in classroom lectures/exercises for 3 hours per week.

BCHM 8507
Special Biochemical Laboratory Techniques I. Three (3) credits.

BCHM 8515
Enzyme Kinetics and Mechanism. Two (2) credits. Pre-requisite: BCHM 8500.

In this course the students will work with the concepts and applications of enzyme mechanisms with emphasis on the key kinetic and thermodynamic concepts that rule the activity of enzymes steady state kinetics, transient kinetics, mechanisms of catalysis, and mechanisms of inhibition. Methods to elucidate kinetic and chemical mechanisms will be explored such as kinetic isotope effect, spectroscopy and stopped-flow techniques. The students will have hands-on experience in the analysis of data by using software for kinetics research.

BCHM 8517
Physical Chemistry of Macromolecules. Three (3) credits.

BCHM 8521
Practice and Teaching of Biochemistry. Three (3) credits.

Students registered in this course conduct class discussions under the supervision of a faculty member. These discussion groups are made of a minimum of twelve, First Year dental or medical students and are part of the course work required in the respective Biochemistry courses offered to dental or medical students. Graduate students in charge of the discussions lead the group, prepare-self evaluation quizzes for the students, reports to faculty members their observations as to the proficiency of students under their supervision. Two group discussions per week. The course is open only to graduate students registered in the Department of Biochemistry and Nutrition.

BCHM 8525
Recent Advances in Biochemistry and Molecular Biology. Two (2) credits.

Recently published scientific literature will be discussed on a weekly basis through oral presentations made by the course participants followed by group discussions. Topics relevant to diverse aspects of Biochemistry and Molecular Biology will be discussed.

BCHM 8526
Special Topics in Biochemistry. Three (3) credits.

BCHM 8527
Special Topics in Biochemistry. One (1) credit.

This will be a short intensive course on a special topic in Biochemistry that will be offered by visiting professors. Recent research findings will be emphasized. The format may vary from lectures with assigned reading, discussions, and/or laboratory exercises.

BCHM 8528
Special Topics in Biochemistry. One (1) credit.

This will be a short, intensive course on a special topic in Biochemistry that will be offered by visiting professors. Recent research findings will be emphasized. The format may vary from lectures to lectures with assigned reading, discussions, and/or laboratory exercises.

BCHM 8529
Special Topics in Biochemistry. One (1) credit.

This will be a short intensive course on a special topic in Biochemistry that will be offered by visiting professors. Recent research findings will be emphasized. The format may vary from lectures to lectures with assigned reading, discussions, and/or laboratory exercises.

BCHM 8530
Regulation of Gene Expression in Eucaryotes. Three (3) credits. Pre-requisite: BCHM 8550.

The first half of the course includes Basic Physical-Chemistry Principles, structure and properties of proteins and enzymes, energetic metabolism and metabolic pathways of carbohydrates, lipids and amino acids.

General hormone action. The second half emphasizes the Fundamental Aspects of Molecular Biology and its projections into modern Medicine. Includes the structure and properties of genetic material, nature of the genetic information and genetic code. Duplication and repair of DNA. Repetitive and specific sequences. Introns , exons, palindromes, promoters, transposons, enhancers, etc. oncogenes, mutations, genetic recombination and genetic engineering, gene therapy. Transcription and translation. Control of genetic expression. Utilization of Molecular Biology Methodology in Medicine. The course ends with a series of topics on Physiological Biochemistry such as blood proteins, coagulation and fibrinolysis, muscle contraction, vitamins and basic concepts on nutrition. Most of the subjects of the course are illustrated with clinical correlations.

BCHM 8531
Research Seminar Series I. One (1) credit.

This Seminar Series will meet an average of once per week throughout the semester, for approximately 1.0-1.5 hours during which doctoral level scientists will give presentations about their research investigations or about subjects relevant to pursuing a career in science.

BCHM 8532
Research Seminar Series II. One (1) credit.

This Seminar Series will meet an average of once per week throughout the semester, for approximately 1.0-1.5 hours during which doctoral level scientists will give presentations about their research investigations or about subjects relevant to pursuing a career in science.

BCHM 8533
Research Seminar Series III. One (1) credit.

This Seminar Series will meet an average of once per week throughout the semester, for approximately 1.0-1.5 hours during which doctoral level scientists will give presentations about their research investigations or about subjects relevant to pursuing a career in science.

BCHM 8534
Research Seminar Series IV. One (1) credit.

This Seminar Series will meet an average of once per week throughout the semester, for approximately 1.0-1.5 hours during which doctoral level scientists will give presentations about their research investigations or about subjects relevant to pursuing a career in science.

BCHM8535
Research Seminar Series V. One (1) credit.

This Seminar Series will meet an average of once per week throughout the semester, for approximately 1.0-1.5 hours during which doctoral level scientists will give presentations about their research investigations or about subjects relevant to pursuing a career in science.

BCHM 8536
Research Seminar Series VI. One (1) credit.

This seminar series will meet an average of once per week throughout the semester, for approximately 1.0-1.5 hours during which doctoral level scientists will give presentations about their research investigations or about subjects relevant to pursuing a career in science.

BCHM 8550
Introduction to Human Biochemistry. Six (6) credits.

Topics covered include introduction to the Physical Chemistry of Molecules of biological interest, enzymology, biological oxidations, metabolism of the main group of nutrients, biosynthesis of cell constituents, with emphasis in biosynthesis of proteins, regulation of cellular processes, nutrition seen from the molecular point of view, role of plasma proteins on body physiology, an introduction to Immunochemistry and respiration and acid base balance.

BCHM 8551
Methods in Protein and Nucleic Acid Biochemistry. Two (2) credits.

This laboratory course will meet once a week during which there will be lectures and laboratory exercises with possible follow-up requirements. Procedures to be covered include the purification of proteins and nucleic acids, restriction analysis of DNA, polymerase chain reaction (PCR) sieve and/or ion exchange chromatography, HPLC chromatography, gel electrophoresis, ultra centrifugation, UV/Visible Spectrophotometry, and Scintillation Spectrometry.

Changed from 1 to 2 credit(s) since 1st Semester 2004-2005.

BCHM 8552
Methods in Lipid and Carbohydrates Biochemistry, Nutrition, and Biochemical Pharmacology. Two (2) credits.

This laboratory course will meet once a week during which there will be lectures and laboratory exercises with possible follow-up requirements. Focus will be directed toward metabolic aspects of lipid and carbohydrate chemistry including nutrition. Techniques employed will include use of radioisotopes, radio immunoassay, differential centrifugation, Spectrophotometry, and dietary analysis utilizing computerized programs. Other procedures covered will be separations of mono-, di-, and oligosaccharides, digestion of exo- and endoglycosidases, thin layer Chromatography, molecular sieve and/or ion exchange Chromatography, HPLC, Periodic Acid-Schiff's (PAS) Staining, and lectin blots.

Changed from 1 to 2 credit(s) since 1st Semester 2004-2005.

BCHM 8557
Protein Modification. One (1) credit.

BCHM 8558
Investigations in the Biochemistry of Aging. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research on the Biochemistry of Aging using the ocular lens as a model. In this course students will investigate post translational modifications in lens proteins that are associated with human disease and/or aging. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8559
Investigations in Angiogenesis I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research to study the Biochemistry of Angiogenesis. For this course the student will study the biochemistry of differentiation of capillary endothelial cells. Studies will include screening of angiogenic factors affecting capillary endothelial cell proliferation, the mapping of cell cycle, and the characterization of factors responsible for cell proliferation and differentiation. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8560
Investigations in Angiogenesis II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research to study the Biochemistry of Angiogenesis. For this course the student will identify the gene products responsible for endothelial cell proliferation and capillary formation. Translational regulation of the process will be studied and any modification at the Pre-Golgi compartment will be examined. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8561
Investigations in Complex Carbohydrates Biochemistry I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Complex Carbohydrate Biochemistry. For this course the student will identify a glyco-conjugate and its glycan structure as a complex, high-mannose or hybrid type will be determined. Enzymatic and chemical methods will be followed for the structural studies and the role of the carbohydrate residues for biological function will be determined. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8562
Investigations in Complex Carbohydrates Biochemistry II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Complex Carbohydrate Biochemistry. For this course the enzymatic synthesis and subsequent processing of the glycan chains in the Post-Golgi compartment and network will be investigated. In vitro assays of glycosyltransferases will also be performed to understand the regulatory events. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8563
Investigations in Enzyme Biochemistry I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Enzyme Biochemistry. For this course the student will purify and study native or recombinant enzymes. Studies will include specific activity determinations during purification and analyses of the steady state kinetics of enzyme catalyzed reaction for the purified enzyme. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8564
Investigations in Enzyme Biochemistry II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Enzyme Biochemistry. For this course the student will use various screening procedures, enzyme assays, and kinetic studies to identify potential ligands and inhibitors of an enzyme. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8565
Investigations in Filamentous Proteins I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the Structure and Function of Filamentous Proteins. This course will include studies in identification, isolation, and mutagenesis of selected DNA regions encoding a portion of a filamentous protein. These selected DNA fragments will be obtained by PCR techniques from a cloned DNA template. Mutations generated will be confirmed by direct DNA sequencing of the mutated DNA fragment. The resulting experiments will inquire into the role of specific amino acids in the function and control of filamentous proteins. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8566
Investigations in Filamentous Proteins II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the Structure and Function of Filamentous Proteins. Mutated filamentous protein gene(s) will be used for generating chromosomal mutants. This course will include studies in the functional analysis of filamentous proteins mutants through assays for secretory function, distribution of cell polysaccharides and cytoskeletal proteins, protein phosphorylation of the mutant protein, and effects on cell division. The course will incorporate the techniques of Fluorescence Microscopy, for analysis of immunochemical and other protein specific dyes, and immunoprecipitation of radiolabelled filamentous proteins. These experiments will generate novel information on the function of filamentous proteins in non-muscle cell systems. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8567
Investigations in Hybridomas I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the preparation of Hybridomas. For this course the student will use a purified antigen to immunize a mouse whose lymphocytes will subsequently be fused with tumor cells and these hybridomas will be cloned. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8568
Investigations in Hybridomas II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the utilization of Hybridomas. For this course students will screen hybridoma clones for those producing monoclonal antibodies , to a specific antigen. The monoclonal antibodies will be purified and used to characterize the functional role of the antigen. These will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8569
Investigations in Membrane Biochemistry I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Membrane Biochemistry. This course will provide training in the procedures to investigate cell membrane fluidity as well as chemical composition, and external factors that modify these parameters (i.e. diet, drugs, Ethanol and/or toxic agents). EPR and lipid analysis by HPLC will be used. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8570
Investigations in Membrane Biochemistry II. Six (6) credits.

This course will involve training in how to design, conduct and analyze independent research in Membrane Biochemistry. This course will give students the opportunity to prepare membrane cell components such as mitochondria, plasma membranes and microsomes or membrane derivatives such as liposomes , synaptosomes or synaptoneurosomes and to study the biological activities of proteins (i.e. receptors, ion channels) associated with the membranes. Ligand binding, ion uptake, enzyme activity, HPLC and EPR will be among the procedures employed for these investigations. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8571
Investigation in Molecular Genetics I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze experiments in molecular genetics. For this course, students will learn and acquire hands on experience in bacterial culture and the use of prokaryotic and eukaryotic cloning vectors. Cloning from a genomic or CDNA library, and physical characterization of selected DNA will be performed using procedures such as restriction mapping and DNA sequencing. Computer aided analysis of DNA and amino acid sequences will be used. These studies will provide information leading to the identification of gene sequences from a variety of organisms. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8572
Investigations in Molecular Genetics II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze experiments in molecular genetics. In this course, students will participate in the generation of mutant cells by site specific recombination of mutant constructs introduced into diploid yeast cells. The mutant gene constructs will be generated by the students in the laboratory by the deletion and/or insertion of DNA or DNA markers respectively into a selected target gene clone. Traditional transformation and electroporation techniques will be used for generation of mutants. Candidate mutant cells will be analyzed by diagnostic Southern Blot and PCR analysis of genomic DNA. Techniques for genetic analysis of gene function through analysis of haploid cells will be applied. The results of these experiments will generate novel mutants that will reveal information on gene structure-function relationships.

BCHM 8573
Investigations in Nucleic Acid Biochemistry I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Nucleic Acid Biochemistry. For this course the student will clone and sequence a gene or CDNA of interest. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8574
Investigations in Nucleic Acid Biochemistry II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Nucleic Acid Biochemistry. For this course the student will purify and study a native or recombinant nucleic acid. Studies may involve the synthesis, evaluation, and/or probing of a genomic or CDNA library. These studies will be expected to answer new questions and

to generate novel data as opposed to reproducing experiments that have been performed before.

BCHM 8575
Investigations in Nutritional Biochemistry I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the area of Nutritional Biochemistry. In this course students will carry out epidemiological studies with human populations utilizing standard computer programs. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8576
Investigations in Nutritional Biochemistry II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Nutritional Biochemistry. Methods employed will be analysis of nutrients in blood using HPLC and enzymatic techniques. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8577
Investigations in Ocular Biochemistry. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research on the Biochemistry of Eye Tissues and Fluids. For this course students will specifically investigate natural antioxidants (i.e. ascorbic acid, glutathione, vitamins and proteins) and free radicals as related to the protection of ocular tissues against photo-oxidative stress. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8578
Investigations in Protein Structure/Function I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Protein Structure/Function Relationships. Methods employed will involve investigations of the functional roles of specific amino acids in substrate binding and catalytic mechanism of a recombinant enzyme using techniques such as site directed mutagenesis. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8579
Investigations in Protein Structure/Function II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in Protein Structure/Function Relationships. In this course students will learn to grow x-ray diffraction quality protein crystals. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8580
Investigations in Tumorigenesis I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the area of Tumorigenesis. In this course students will search for genetic alterations during development of the malignant phenotype. Methods employed will involve state of the art procedures in Molecular Biology. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8581
Investigations in Tumorigenesis II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the area of Tumorigenesis. In this course students will search for molecular alterations during development of the malignant phenotype. Methods employed will involve state of the art procedures in Molecular Biology. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8582
Investigations in Vaccine Development I. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the area of Vaccine Development. In this course students will use a variety of selection procedures to identify potential vaccine antigens for the treatment of human disease. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8583
Investigation in Vaccine Development II. Six (6) credits.

This course will involve training in how to design, conduct, and analyze independent research in the area of Vaccine Development. In this course students will investigate potential vaccines in animal models of human disease. These studies will be expected to answer new questions and to generate novel data, as opposed to reproducing experiments that have been performed before.

BCHM 8595
Research for Master's Thesis. Six (6) credits.

A requirement for all students registered for a Master of Science with concentration in Biochemistry and Nutrition.

BCHM 8599
Research for Doctoral Thesis. Fifteen (15) credits.

A requirement for all students registered for a Doctor of Philosophy Degree with concentration in Biochemistry and Nutrition.

Grading system: Since the Graduate Class 1998-1999 the grading system is P or F (Passed or Fail).

BCHM 8995
Special Topics in Biochemistry. One to three (1-3) credit(s).

This is a course of variable length, intensive, on special topics in Biochemistry that will be offered by visiting professors or Biochemistry faculty. Recent research findings in the Biochemistry area will be emphasized. The format may vary from lectures to lectures with assigned readings, discussions, and/or practical exercises.

Department of Physiology

Master of Science with specialty in Physiology (M.S.)
Doctor of Philosophy with specialty in Physiology (Ph.D.)

FISA 8500
Human Physiology. Twelve (12) credits.

The course presents basic Human Physiology in detail.

FISA 8503
Seminar in Physiology. One (1) credit.

The seminars are presented by the students. The dates are scheduled at the convenience of the students and the professor. Each student presents number of seminars given per each student dependent on the number of participation in the course. The seminars are presented at the convenience of the student and the professor.

FISA 8504
Seminar in Physiology. Two (2) credits.

FISA 8510
Biophysics. Three (3) credits. Pre-requisites: FISA 8601, FISA 8602.

A seminar course in Biophysics with detailed discussion of special topics on this subject as selected by or assigned to graduate students.

FISA 8511
Seminar in Endocrinology. Two (2) credits. Pre-requisites: FISA 8601, FISA 8602.

This course offers recent information regarding Endocrinology above and beyond what is available in the basic Endocrinology textbooks. New advances in Endocrinology will be discussed in detail, depending on the students enrolled in the course. Students will pick topics of interest to them, research the topic in detail and present a seminar, or a group discussion of information

contained in the collection of papers. All students will be required to read background information about each seminar topic in advance of the seminar. Students will normally discuss methodologies, which integrate basic concepts, theories and research strategies.

FISA 8512
Cardiovascular Physiology. Two (2) credits. Pre-requisites: FISA 8601, FISA 8602.

A course on comparative Cardiovascular Physiology based on some of the most recent advances in the field. The course includes heart mechanics, Electrophysiology, Hemodynamics and regulation.

FISA 8513
Advanced Exercise Physiology I. Three (3) credits.

This course will address how the body adapts to exercise during acute and chronic time frames. It will also review and discuss terminology and concepts of cellular metabolism, muscle contraction, and neuromuscular function for enhanced understanding of acute and chronic adaptations to exercise. The course is concluded with a review of recent findings on various pharmacological, hormonal, physiological, and environmental agents known to either enhance or impair exercise performance. The course consist of three sections: Fundamentals of Exercise Physiology, Systemic Response to Exercise, and Aids to Exercise Performance.

FISA 8514
Advanced Exercise Physiology II. Three (3) credits. Pre-requisite: FISA 8513.

This course by means of lectures, seminars, and laboratory experiences will review and discuss the latest research findings in Exercise Physiology/ Biochemistry related to: fatigue, aging, gender, children, environmental conditions and genetics. It will also review the measurement of endurance, anaerobic capacity, strength and body composition as well as applications of Exercise Physiology to Exercise Testing. The course consist of three sections: Measurement of Physiologic Composition and Capacities, Special Topics within Exercise Physiology, and Exercise and Health.

FISA 8515
Respiratory Physiology. Three (3) credits. Pre-requisites: FISA 8601, FISA 8602.

The course consists of both lecture and discussion sessions. Discussions are developed primarily to critical analyses of important scientific papers. Topics covered: (a) O2 and CO2 Exchange between the Atmosphere and Blood, with particular emphasis on the role of matching alveolar ventilation and pulmonary capillary diffusion; (b) Nervous and Chemical Regulation of Respiration. In addition, Exercise and/or Aviation Physiology will also be discussed.

FISA 8516
Physiology of the Kidney and Body Fluids. Two (2) credits. Pre-requisites: FISA 8601, FISA 8602.

FISA 8518
Mathematics for Biologists. Two (2) credits. Pre-requisites: FISA 8601, FISA 8602.

Contents of the course are: The Concept Function. The Derivate of a Function. Rules for obtaining Derivatives. Exponential Function. The Primitive of a Function. Principle Theorem of Integral Calculus. Geometric Interpretation of Derivatives. Some Normal Differential Equations.

FISA 8525
Introduction to Neurosciences. Three (3) credits. Pre-requisites: FISA 8601, FISA 8602.

FISA 8526
Seminar on Brain and Behavior. Three (3) credits. Pre-requisites: FISA 8601, FISA 8602.

FISA 8531
Physical Instrumentation for Biologist. Two (2) credits.

FISA 8532
Advanced Physical Instrumentation. Three (3) credits. Pre-requisite: FISA 8601.

This course will present to the students the theoretical applications and practice of the instruments used for biological studies, including a practical section in General Electronic.

FISA 8540
Cellular Molecular Physiology. Three (3) credits.

This course will provide students with basic concepts of Cell Physiology from a molecular point of view. The main emphasis of the course is protein synthesis, sorting, and final targeting (endocytosis and exocytosis-vesicular trafficking) to different organelles of an eukaryotic cell (endoplasmic reticulum, Golgi apparatus, lysosome, peroxisome, mitochondria, nucleus and plasma membrane). In addition, some time have been dedicated to receptor regulation at the transcriptional, posttranscriptional, translational and postranslational level. Finally, the course will cover cellular processes that are related to proteins involved in cell communication and cytoskeletal proteins. The material will be presented as lectures and presentation of specific recent publications. The final goal of this course is to teach the students the molecular basis of Cell Physiology and learn the approaches used to determine the role of specific proteins and organelles.

FISA 8541
Problems in Physiology I. Three (3) credits.

Topics assigned for laboratory work, conferences, and reading.

FISA 8542
Directed Reading. One (1) credit.

This course offers recent information regarding Physiology above and beyond what is available in the basic textbooks. New advances in Physiology will be discussed in detail, depending on the students enrolled in the course. Students will pick topics of interest to them, research the topic in detail and present a seminar, or a group discussion of information contained in the collection of papers. All students will be required to read background information about each seminar topic in advance of the seminar. Students will normally discuss methodologies, which integrate basic concepts, theories and research strategies.

FISA 8543
Problems in Physiology II. Three (3) credits. Pre-requisites: FISA 8601, FISA 8602, FISA 8541.

Topics assigned for laboratory work, conferences, and reading.

FISA 8551
Problems in Physiology III. Three (3) credits. Pre-requisites: FISA 8601, FISA 8602, FISA 8543.

Topics will be assigned for laboratory work, lectures, and reading in any of the areas of Physiology.

FISA 8552
Problems in Physiology IV. Three (3) credits. Pre-requisites: FISA 8601, FISA 8602, FISA 8551.

Topics will be assigned for laboratory work, lectures, and readings in any of the areas of Physiology.

FISA 8585
Preparation of Physiology Proposal. Three (3) credits. Pre-requisites: Approved the credits required for the Master or Doctoral Program (except the Thesis) of the Physiology Department and the Comprehensive Test of the Department.

This course offers essential information for the preparation of thesis proposals integrating basic concepts of Physiology, theories and research strategies. Topics to be discussed include the development of specific aims, evaluation of literature to develop a rationale for the proposal, analysis of preliminary results, and design of research methodology to evaluate the problems to be investigated. The central focus of the course will be to train students in writing of thesis proposals and federal predoctoral fellowships. In addition, potential pitfalls of proposed research will be discussed. The material will be presented by the students as discussions of specific topics recently published in scientific journals and review of literature related to the specific student proposal.

FISA 8595
Master's Thesis. Six (6) credits.

Research for Master's Thesis.

FISA 8599
Doctoral Thesis. Fifteen (15) credits.

Research for Doctor's Thesis.

FISA 8601
Vertebrate Physiology I. Four (4) credits.

This course is designed to offer students the basic concepts in Vertebrate Physiology, emphasizing the human vertebrate. The course develops from the cell, discussing membrane properties and the Physiology of muscle cells, and continues with a discussion of the two integrative systems: The Nervous and Endocrine Systems. The final portion of the course is dedicated to discuss Reproductive Physiology and its neuroendocrine regulation. Different educational strategies will be used throughout the course, such as group discussions, lectures, and student presentations. Computer demonstrations will be used in some topics. The course is recommended for all master and doctoral students of the Physiology Department and for all doctoral students of the Departments of Anatomy and Pharmacology. Students from the Intercampus Doctoral Program of the Biology Department of the University of Puerto Rico, Rio Piedras Campus are allowed to register in the course.

Course changed from 3 to 4 credits since August 2008.

FISA 8602
Vertebrate Physiology II. Four (4) credits. Pre-requisite: FISA 8601.

This course offers graduate students the opportunity to be exposed to basic concepts of the Physiology of Vertebrates, with particular emphasis on the human organism. Animal models will be used to make pertinent the presentation and discussion of relevant topics. The course consists of five sections. The First deals with Cell Membrane Transport, Osmotic Regulation, and Some Aspects of Renal Physiology, the Second with Cardiovascular Physiology, the Third with Gas Exchange Between the Environment and the Organism (Respiratory Physiology), and the Fourth with Gastrointestinal Physiology with Emphasis in Motility, Secretion, Digestion and Absorption of Nutrients. Finally, the Fifth section deals with Exercise Physiology and the Acute and Chronic Adaptation of the Organism to Exercise. The course format will consists of lectures, paper discussions, and computer-assisted demonstrations.

Course changed from 3 to 4 credits since August 2008.

FISA 8605
Teaching Assistantship in Physiology. One (1) credit. Pre-requisites: FISA 8601, FISA 8602 or MPRI 7120. Approved the doctoral qualify examinations.

This is a practical course which will provide the doctoral student, who has approved his/her qualify examinations, the academic experience of teaching other junior graduate and medical students in diverse fields of Physiology, under the supervision of a facultative of Physiology. The student will propitiate the discussion of the diverse topics of Physiology presented in the course, through case presentations and laboratories elaboration. The student will be in charge of the presentation and delivery of the following topics: cellular & membrane physiology, neurophysiology, cardiovascular, respiratory, acid-base, renal, gastrointestinal and endocrinology. The student will also prepare two laboratories to graduate and medical students. The first one deals with cardiovascular physiology, and the second one is focused on respiratory physiology.

Grading System: Passed (P), Not Passed (NP)

Department of Microbiology

Master of Science with specialty in Microbiology (M.S.)
Doctor of Philosophy with specialty in Microbiology (Ph.D.)

MICR 6303
Microbiology. Three (3) credits.

Health related topics and laboratory exercises in Applied, Environmental, and Industrial Microbiology.

MICR 8499
Introduction to Medical Microbiology. Six (6) credits.

General Microbial Physiology, Microbial Genetics, and the study of different disease producing agents: bacteria, virus, and fungi. The organisms are studied in relation to their particular characteristics, methods of cultivation, the pathological processes in which they are involved, and the immunological host responses. The course is composed of conferences and laboratories. This is an introductory

course for graduate students. This course will prepare the students for other advanced Microbiology courses.

MICR 8501
Diagnostic Bacteriology. Three (3) credits. Pre-requisite: MICR 8499.

Includes instruction and laboratory work with the emphasis on its isolation and identification.

MICR 8503
Microbiology Techniques. One (1) credit.

Research methods and the use of special apparatus utilized in various research projects.

MICR 8504
Advanced Topics in Medical Bacteriology. One (1) credit. Pre-requisite: MICR 8499.

Topics of interest related to Medical Bacteriology will be discussed. The faculty have to approve the topics. Can be taken more than once, up to 3 credits.

MICR 8505
Advanced Topics in Medical Bacteriology. Three (3) credits. Pre-requisite: MICR 8499.

Topics of interest related to Medical Bacteriology will be discussed. The faculty have to approve the topics. Can be taken more than once, up to 3 credits.

MICR 8506
Advanced Topics in Medical Bacteriology. Three (3) credits. Pre-requisite: MICR 8499.

Topics of interest related to Medical Bacteriology will be discussed. The faculty have to approve the topics. Can be taken more than once, up to 3 credits.

MICR 8510
Virology and Tissue Culture. Three (3) credits. Pre-requisites: BCHM 8500, MICR 8499.

The fundamental characteristics of viruses and tissue culture.

MICR 8511
Virology and Tissue Culture Laboratory. One (1) credit.

It is intended to complement lectures on Microbiology 8510.

MICR 8513
Postgraduate Dental Microbiology. Two (2) credits.

Current Microbiology topics relevant to the dental resident.

MICR 8514
Advanced Topics in Virology. One (1) credit. Pre-requisites: MICR 8499, MICR 8510.

Topics of interest related to Virology will be discussed. The faculty has to approved the topics.

MICR 8515
Advanced Topics in Virology. Two (2) credits. Pre-requisites: MICR 8499, MICR 8510.

Topics of interest related to Virology will be discussed. The faculty has to approved the topics.

MICR 8516
Advanced Topics in Virology. Three (3) credits. Pre-requisites: MICR 8499, MICR 8510.

Topics of interest related to Virology will be discussed. The faculty has to approve the topics.

MICR 8517
Advanced Selected Topics in Microbiology. One (1) credit.

Current selected topics of Microbiology will be covered by one or more members of the staff or by visiting professors. The topics to be covered must be approved by the departmental faculty. This course can be taken more than once in different semesters up to a maximum of three.

MICR 8518
Advanced Microbiology. Two (2) credits.

Current select topics in Microbiology will be covered by one or more members of the staff or by visiting professors. The topics to be covered must be approved by the

departmental faculty. This course can be taken more than once in different semesters up to a maximum of three.

MICR 8525
Molecular Biology of Microorganisms. Three (3) credits.

This course is design for second year graduate students from the Biomedical Sciences Program. Genetic expression in eukaryotic organisms, DNA, and RNA recombinant techniques and current topics in the Molecular Biology of Microorganisms will be covered in this course.

MICR 8530
Mycology. Two (2) credits.

The fundamental characteristics of fungi and the pathological, immunological, and diagnostic aspects of most important pathogenic fungi and the diseases they cause.

MICR 8531
Mycology Laboratory. One (1) credit.

The basic techniques in the diagnosis of diseases caused by fungi.

MICR 8532
Advanced Topics in Mycology. One (1) credit.

Topics of interest related to Medical and Environmental Mycology.

MICR 8533
Advanced Topics in Mycology. Two (2) credits. Pre-requisite: MICR 8532.

Topics of interest related to Medical and Environmental Mycology.

MICR 8534
Advanced Topics in Mycology. Three (3) credits. Pre-requisite: MICR 8532.

Topics of interest related to Medical and Environmental Mycology.

MICR 8540
Principles of Immunology. Three (3) credits.

Basic concepts in Immunity, Hypersensitivity, both Cellular and Humoral, Tumor Immunology, Cancer Immunology, and Transplant Immunology. It also includes basic concepts in Immunochemistry.

MICR 8541
Immunology Laboratory. One (1) credit.

Basic techniques on Immunology and Immunochemistry.

MICR 8542
Advanced Topics in Immunology. Two to three (2-3) credits. Pre-requisite: MICR 8540.

Topics related to Immunology or Immunochemistry.

MICR 8543
Advanced Topics in Immunology. Two (2) credits. Pre-requisite: MICR 8540.

Topics related to Immunology or Immunochemistry.

MICR 8544
Advanced Topics in Immunology. Three (3) credits. Pre-requisite: MICR 8540.

Topics related to Immunology or Immunochemistry.

MICR 8550
Microbial Physiology. Two to three (2-3) credits. Pre-requisites: BCHM 8500, MICR 8499.

The course covers important topics in Microbial Physiology and Biochemistry.

MICR 8551
Microbial Physiology Laboratory. One (1) credit.

Special techniques in the study of Microbial Physiology.
MICR 8552
Advanced Topics in Microbial Physiology. One (1) credit. Pre-requisite: MICR 8550.

Topics of interest related with Microbial Physiology.

MICR 8553
Advanced Topics in Microbial Physiology. Two (2) credits. Pre-requisite: MICR 8550.

Topics of interest related with Microbial Physiology.

MICR 8554
Advanced Topics in Microbial Physiology. Three (3) credits. Pre-requisite: MICR 8550.

Topics of interest related with Microbial Physiology.

MICR 8560
Genetics of Microorganisms. Three (3) credits. Pre-requisites: BCHM 8500, MICR 8499 or equivalent courses.

This course includes the study of the mechanisms of storage, expression and information of genetic transfer among microorganisms and the genetic variation by mutation. The effect of the selective pressures over the microbial population will also be discussed.

MICR 8561
Microbial Genetics Laboratory. Two (2) credits.

Basic techniques in Microbial Genetics.

MICR 8562
Advanced Topics in the Genetics of Microorganisms. One (1) credit.

Topics of interest related to Microbial Genetics will be discussed.

MICR 8563
Advanced Topics in the Genetics of Microorganisms. Two (2) credits.

Topics of interest related to Microbial Genetics will be discussed.

MICR 8564
Advanced Topics in the Genetics of Microorganisms. Three (3) credits.

Topics of interest related to Microbial Genetics will be discussed.

MICR 8580
Graduate Seminar. One to three (1-3) credits.

Includes attendance to all seminars presented by other members of the Department and the presentation of at least one one-hour seminar during the course of the semester.

MICR 8590
Teaching Practice. One (1) credit. Pre-requisite: MICR 8499.

The student is expected to serve as an instructor in any laboratory session (at the undergraduate level) offered by the Department of Microbiology. The student will be under the direct supervision of one of the faculty members.

MICR 8595
Master's Thesis. Six (6) credits.

The student will be involved in full-time research activities for at least one semester. The credit will be awarded upon the presentation and approval of his thesis.

MICR 8599
Doctoral Dissertation. Fifteen (15) credits.

The student will be involved in full-time research activities for at least a year. The credits will be awarded upon the presentation and approval of the thesis.

ZOME 6303
Human Parasitology. Two (2) credits.

Parasites of medical importance with special attention given to Ecology, Life Cycles, Morphology, and Identification of the Different Stages of Development.

ZOME 6304
Medical Parasitology. One (1) credit.

Human parasites and resulting clinical conditions. Specially those found in Puerto Rico. This course is a part of the infectious diseases area.

ZOME 6503
Medical Parasitology. Three (3) credits.

Helminths and protozoa of medical importance. Special attention to sample handling and to the practice of some diagnostic techniques.

ZOME 8502
Introduction to Parasitology. Three (3) credits.

Parasitism, with special emphasis on the situations of real impact on human and domestic animal's health. The Biology Transmission and Identification of Parasites are revised.

ZOME 8503
Medical Entomology. Two (2) credits.

Arthropods of medical importance, particularly those of Puerto Rico. The objectives are: to identify arthropods, explain their role in Epidemiology, and develop control methods.

ZOME 8504
Nematodes. Two (2) credits. Pre-requisites: ZOME 8502 or equivalent course.

This course will cover the morphological details and general characteristics of Parasitic Nematodes. In addition to lectures, it will emphasize the discussion of previous works. Other topics include the epidemiological, historical and evolutionary aspects of each organism. A weekly laboratory will allow the students to learn diagnostic and research techniques used in studies on parasites.

ZOME 8505
Platyhelminthes. Two (2) credits.

Morphological features and general characteristics of some Parasitic Platyhelminthes. Other topics of discussion should cover the epidemiological, historical, and or evolutionary aspects of each form.

ZOME 8506
Protozoa. Two (2) credits.

To familiarize the student with modern approaches to:
a) The study of protozoan parasites of medical relevance,
b) Worldwide important diseases caused by protozoan parasites.

The student will become familiar with recent published literature relevant to the course and the critical analysis of published materials as well as interpretations of results.

ZOME 8513
Laboratory Methods in Parasitology. One (1) credit.

The most refined laboratory methods and techniques specially those concerning each candidate's special problem.

ZOME 8514
Laboratory Methods in Parasitology. Two (2) credits.

The most refined laboratory methods and techniques specially those concerning each candidate's problems.

ZOME 8515
Laboratory Methods in Parasitology. Three (3) credits.

The most refined laboratory methods and techniques specially those concerning each candidate's special problems.

ZOME 8516
Laboratory Methods in Parasitology. Four (4) credits.

The most refined laboratory methods techniques specially those concerning each candidate's special problems.

ZOME 8517
Laboratory Methods in Parasitology. Five (5) credits.

The most refined laboratory methods and techniques specially those concerning each candidate's special problem.

ZOME 8518
Laboratory Methods in Parasitology. Six (6) credits.

The most refined laboratory methods techniques specially those concerning each candidate's problem.

ZOME 8519
Laboratory Methods in Parasitology. Seven (7) credits.

The most refined laboratory methods and techniques specially those concerning each candidate's special problem.

ZOME 8520
Laboratory Methods in Parasitology. Eight (8) credits.

The refined laboratory methods and techniques specially those concerning each candidate's special problem.

ZOME 8525
Graduate Seminar. One (1) credit.

Gathering and organization of scientific information as well as public presentation of observations.

ZOME 8595
Master Thesis. Six (6) credits.

A research proposal and the carrying out of the work concerned as required for an original investigation. Compilation of the data and its presentation. The credits will be awarded upon the presentation and approval of the thesis.

ZOME 8599
Doctoral Dissertation. Fifteen (15) credits.

A research proposal and the carrying out of the corresponding techniques. Compilation and analysis of the data as well as writing the thesis for its final presentation. The investigation should conclude with an original paper to be published. The credits will be awarded upon the presentation and approval of the thesis.

Department of Pharmacology and Toxicology

Master of Science with specialty in Pharmacology (M.S.)
Doctor of Philosophy with specialty in Pharmacology (Ph.D.)

Master of Science with specialty in Toxicology (M.S.)
Doctor of Philosophy with specialty in Toxicology (Ph.D.)

PHAR 8015
Cellular Neurobiology an Integrative Approach. Three (3) credits.

PHAR 8500
Pharmacology. Five (5) credits.

This course includes lectures on the nature and application of the more important drugs and general principles of Pharmacology. Laboratory exercises, designed to illustrate some of the lectures, are performed.

PHAR 8502
Introduction to Neurobiology. Three (3) credits.

This course summarizes basic concepts on the structure and physiological activity of the nerve and other excitable cells, as well as the mechanism of intercellular communication and the principles that appear to govern the integration of nerve cells into Nervous System.

PHAR 8503
Muscles: Biophysics, Physiology, and Pharmacology. Three (3) credits.

This course is an introduction to Biophysics, Physiology, and Pharmacology of Muscle. It summarizes basic concepts on structure and energetics of muscle contraction. A general outlook on Physiology will also be included.

PHAR 8504
Molecular Pharmacology and Biophysics of Excitable Tissue. Three (3) credits.

This course will consist of information lectures, discussions, seminars, and laboratories experiments related to the molecular mechanisms by which drugs change the electrical properties of excitable tissues. Considering the

direct participation of the students on laboratory work, a limited numbers of applications will be accepted.

PHAR 8505
Topics in Pharmacology. One (1) credit.

This course will provide for the discussion of special topics, covered by one or more members of the staff or visiting scientists. The topics to be covered must be approved by the Department's Graduate Faculty. This course can be taken more than once.

PHAR 8506
Topics of Pharmacology. Two (2) credits.

This course will provide for the discussion of special topics, covered by one or more members of the staff or visiting scientists. The topics to be covered must be approved by the Departmental Graduate Faculty. This course can be taken more than once.

PHAR 8507
Topics of Pharmacology. Three (3) credits.

This course will provide for the discussion of special topics, covered by one or more members of the staff or visiting scientists. The topics to be covered must be approved by the Departmental Graduate Faculty. This course can be taken more than once.

PHAR 8508
Topics of Pharmacology. Four (4) credits.

This course will provide for the discussion of special topics, covered by one or more members of the staff or visiting scientists. The topic to be covered must be approved by the Departmental Graduate Faculty. This course can be taken more than once.

PHAR 8509
Topics of Pharmacology. Five (5) credits.

This course will provide for the discussion of special topics, covered by one or more members of the staff or visiting scientists. The topics to be covered must be approved by the Departmental Graduate Faculty. This course can be taken more than once.

PHAR 8510
Topics of Pharmacology. Six (6) credits.

This course will provide for the discussion of special topics, covered by one or more members of the staff or visiting scientists. The topic to be covered must be approved by the Departmental Graduate Faculty. This course can be taken more than once.

PHAR 8511
Smooth Muscle. Three (3) credits.

This course will provide for the discussion of control mechanisms of smooth muscle organs, myogenic and neurogenic. Pharmacology of drugs affecting these control mechanisms, with emphasis on site and mode of action, will be studied.

PHAR 8512
Neuropharmacology. Three (3) credits.

The first half of this course will deal with the Biochemistry and Neuropharmacology of the Mammalian Central Nervous System. The second half will emphasize the special situations prevailing in developing and deferented neurons.

PHAR 8513
Pharmacology Seminar. One (1) credit.

This course is designed so that, with the assistance of the faculty, graduate students will present and discuss papers from the scientific literature. It must be taken each semester by departmental studies.

Grading System: Passed (P), Not Passed (NP)

PHAR 8514
Heart Physiology and Pharmacology. Two (2) credits.

Lectures and demonstrations.

PHAR 8516
Statistics for Bioassays. One (1) credit.

PHAR 8517
Hormonal Actions. One (1) credit.

PHAR 8518
Renal Pharmacology. Two (2) credits.

Renal transport processes as they apply to the handling of pharmacological agents will be described. An overview of method currently employed in the field of Renal Pharmacology will be provided. Particular attention will be given to the use of clearance and renal micropunture studies to determine the site of action along the nephron of various agents.

PHAR 8519
Cellular Neurobiology: Integrative Approach. Three (3) credits.

This course provides a cellular approach to Neurobiology. It begins with a general description of the unique properties of neural cells and the advances toward an understanding several nervous system functions. In this course, integration of the Biochemistry, Anatomy, Physiology, and Pharmacology is emphasized.

PHAR 8520
Basic Language for Computers. Two (2) credits.

Introduction to the Computer Language Basic. The student will learn to read, write, and make useful programs. The emphasis will be on applications to biomedical research.

PHAR 8525
Pharmacological Methods. Three (3) credits.

The purpose of this course is to expose the students to the theoretical and practical aspects of methods being used in pharmacological research.

PHAR 8527
Modes of Action of Antibiotics. Two (2) credits. Pre-requisites: BCHM 8500.

The purpose of this course is to prepare the students to analyze and critically understand the more recent findings in the field of pharmacology of antibiotics. The mechanisms by which antibiotics work, at molecular level, is studied. Interactions of antibiotics with the various biochemical targets for drug action and the molecular basis of bacterial resistance to drugs are also analyzed.

Changed from 1 to 2 credits since 1st sem. 2007-2008. Old title: Antibiotics-Mode of Action (Changed since 1st sem. 2007-2008).

PHAR 8532
Physical Instrumentation. Two (2) credits.

The course includes in its First Part lectures and laboratory exercises about electronic circuits. On the Second Part, demonstrations of instruments used in different laboratories will be included.

PHAR 8595
Master's Thesis. Six (6) credits.

This course is the required research for the Master of Science in Pharmacology Degree. It is taken with the approval of the thesis advisor.

PHAR 8599
Doctoral Dissertation. Fifteen (15) credits.

This course is the required research for the Doctor of Philosophy in Pharmacology Degree. It is taken only with the approval of the thesis advisor.

TOXI 8501
Basic Toxicology. Three (3) credits.

Discussion of the origin action, mechanism of death, signs and symptoms, MLD, metabolism, prognosis of the common poisons from human tissues. Interpretation of these analytical results on a clinical and/or forensic basic.

TOXI 8502
Advanced Toxicology Techniques. Two (2) credits.

Use of special and recently developed instruments in the analysis for the common and the rate poison in human ante-mortem and post-mortem tissue, including study of distribution and metabolism.

TOXI 8508
Problems in Forensic Toxicology. Five (5) credits.

Can be taken again with credit. Two semesters. The program is flexible and planned with special regard to the student's background and orientation in Toxicology. This course is limited to candidates for the Doctor's Degree

in Toxicology and is designed to test the ability of the advanced student to solve some of the more difficult problems in Forensic, Clinical, or Industrial Toxicology. These will not be the same problems as covered for thesis.

TOXI 8509
Seminar in Toxicology. One (1) credit.

Reading and discussion of the recent scientific literature related to the advances of Toxicology.

Old title: Journal Club (changed since 1st Semester 2004-2005)

TOXI 8515
Special Topics. Two (2) credits.

Designation under which from year to year could be registered different courses offered by visiting professors. They will be announced with a detailed description of the course, credits assigned, and professor in charge.

TOXI 8595
Research for Master's Thesis. Six (6) credits.

TOXI 8599
Doctoral Dissertation. Fifteen (15) credits.

This dissertation for Ph.D. hours to be arranged.

PROGRAMS SHARED BY THE SCHOOL OF MEDICINE AND THE SCHOOL OF HEALTH PROFESSIONS (JOINT DEGREE PROGRAMS)

COURSE DESCRIPTIONS

GRADUATE COURSES

INCL 6005
Introduction to Clinical Research. One (1) credit.

The main objective of the course is to educate students in the essential aspects of clinical research and the basic processes of building patient-oriented research studies. This course provides the basic concepts of clinical research starting with the purpose of clinical studies. The history of fundamental studies and the researchers that made an impact in the field around the world and in Puerto Rico are discussed. In addition, this course will include the fundamentals of study conception, design, and conduct of clinical research with emphasis in different clinical settings and analyses. Management, ethics, funding, and regulatory aspects are discussed. The course will be offered through lectures, class discussions, computer demonstrations, and practices.

INCL 6006
Introduction to Health Services Research. One (1) credit.

This course presents the key principles, methodologies, and processes pertaining to health services research. It examines the multidisciplinary nature of health services research, through the discussion of studies from the research literature. It presents an overall picture of the area covered by health services research (utilization, costs, quality, accessibility, organization, financing, and outcomes of health care services) and the use of research outcomes for public policy analysis. The main instructional strategies will be case studies, group discussions, and independent study.

Grading System: Passed (P), Not Passed (NP)

INCL 6007
Gender Considerations in Clinical Research. One (1) credit. Pre-requisite: INCL 6005.

Through lectures, seminars, group discussions and student presentations this course will give students the opportunity to discuss differences in the composition of diseases between men and women. Topics such as: Underrepresentation of Women in Clinical Trials, Gender-Related Analysis Definition, Gender Framework for Health Research, Gender Variables that must be taken into Account in Research, NIH Guidelines on Including Women and Minorities in Clinical Trials, and How to Incorporate Women in Studies, will also be presented. Students will be able to assess the status of research on gender differences and it is expected that they prepare a critical analysis on gender-related clinical research.

INCL 6016
Application of Informatics in Research. One (1) credit.

The course focuses on three central knowledge areas: Principles and Applications of Informatics in Clinical Research, Database Management Systems and Web Resources, and Managing the Integration of Informatics in Clinical Research. This course provides informatics tools necessary for the practice of clinical research. These include web applications and research resources such as Medline (Online Medical Library), MD Consult, NLM (National Library of Medicine), and NIH (National Institutes of Health) sites. In addition the course will discuss the use of search engines and appropriate use of computer technology, including visual display of quantitative information and professional presentation tools.

INCL 6025
Bioethics and Regulatory Issues in Clinical Research. Two (2) credits.

In this course the historic framework that supports the ethical, legal, and regulatory aspects of research will be discussed. The development, enactment, and enforcement of all applicable principles, regulations and laws that govern the research enterprise will be discussed, interpreted, and analyzed. The course provides a spectrum of trends with a broad base on the ethical, legal, and regulatory aspects that govern the practice of clinical research. These aspects will be discussed based on the actual definitions and situations that will provide the participants with perspectives of the research process in its multiple manifestations. The course will emphasize principle based ethics, and it will be offered through lectures, group discussions, and individual and group presentations.

INCL 6035
Epidemiology in Clinical Research I. Two (2) credit. Co-requisite: INCL 6041.

The objective of this course is to foster the understanding and use of scientific methods in clinical research which will lead to valid conclusions and interpretation of clinical and study results. The Clinical Epidemiology course will cover topics such as measures of disease frequency, measures of association, causation, study designs in epidemiologic research and the analysis and interpretation of study results with special emphasis in the evaluation of bias, confounding variables and interactions in the estimation of association. Students will have an active participation in the learning process.

INCL 6041
Biostatistic in Clinical Research I. Two (2) credits.

This course will give the opportunity to applied descriptive and inferential statistics. It is intended for students without previous statistical training. Topics include elementary probability theory, an introduction to statistical distributions, point and interval estimation, and hypothesis testing. Basic data analysis techniques will be introduced using statistical programs for personal computers. The material will be covered using the following instructional strategies: lectures, computer laboratory demonstrations, and practices.

INCL 6042
Biostatistic in Clinical Research II. Two (2) credits. Pre-requisite: INCL 6041.

This course is a continuation of Biostatistics in Clinical Research I. Through conferences and group discussions the student will refine the knowledge and skills in biostatistical inference and methods for clinical research. This course focuses on the study of more than two groups via analysis of variance and nonparametric tests. Classical regression and correlation analysis, logistic regression, ordinal

logistic regression, and nominal logistic regression are also discussed. It also includes and introduction to survival analysis. A statistical computer program, STATA TM will be used for data entry, graphical, and statistical analysis.

INCL 6045
Introduction to Bioinformatics and Medical Genomics. One (1) credit. Pre-requisites: INCL 6016, INCL 6041.

This course provides an overview of topics in Genomic Medicine and its clinical applications at an introductory level. Students will solve problems involved in the analysis of biological data such as DNA/protein sequences, genomic data, gene expression data, and proteomics data and how to address problems in clinical research with these new technologies. The course reviews basic Molecular Biology, the central dogma of Molecular Biology, genetics and its application to populations. The use of Molecular Biology and genomic databases for biological research, through the internet using Bioinformatics will be presented. An overview of genomics and proteomics applied to clinical research, pharmacogenomics, and data analysis will be given. Ethical issues in clinical research involving genomics will be discussed.

INCL 6046
Epidemiology in Clinical Research II. Two (2) credits. Pre-requisites: INCL 6035, INCL 6041.

The objective of this course is to foster the understanding that clinical studies are valid and useful to the extent that errors in study design are minimized or control (i.e. calculation of sample size and estimation of power; research questions, hypothesis formulation and concordance with study type; avoidance and control of selection and information bias), standardized data collection protocols and appropriate analyses are implemented. Epidemiologic studies of the natural history of illness, evaluation of diagnostic and screening tests, randomized and non-randomized studies of therapeutic strategies will be compared with emphasis on threats to validity and the methods to prevent or control them. Specific topics will include measures of validity and reliability, collection of unbiased data, and the evaluation and adjustment of confounded observations using bi-variable and multi-variable analyses.

INCL 6055
Clinical Trials. Two (2) credits. Pre-requisites: INCL 6035, INCL 6041.

This course is an introduction to the subject of clinical trials. It is designed for individuals interested in the scientific, policy, and management aspects of clinical research. through lectures and group discussions the clinical trials, protocol document, study design, treatment allocation, randomization and stratification, quality control, sample size requirements, stopping of trials and sequential design, patient consent, and interpretation of results, will be covered. Students will design a clinical investigation in their own field of interest, write a concept sheet for it, and write reviews critiquing recent published medical literature.

INCL 6056
Clinical Research Protocol Development. Two (2) credits. Pre-requisites: INCL 6035, INCL 6041.

The goal of this course is to systematically teach the process by which one takes a conceptual idea for a clinical research project and converts it into an NIH-style research protocol or grant application. Students will start from their own research question and build a short formal protocol throughout the course. Key elements of clinical research design, such as articulation of testable hypotheses, consideration of inclusion and exclusion criteria for study subjects, determination of the number or subjects needed, etc., will be reinforced throughout the course. Students will also develop the skills to differentiate between effective and ineffective proposal writing. Fundamentals of good technical writing skills will be taught in the course but the primary emphasis will be on the structure and elements of an outstanding protocol. At the end of the course students will have developed a written short version of a realistic protocol.

INCL 6065
Scientific Communication. Two (2) credits.

Through lectures and class discussions this course will provide experience and improvement in written communication. The course objective is that the students develop the skills to write a research proposal in order to obtain funding for research. Students will learn to write all of the elements of a scientific research proposal, including the abstract, introduction, statement of the problem, research design

and methods, analyses, timeline, budget, and budget justification. Topics will include figure-table-text links, references, sentence parts, and word functions, among others. Students will learn to write with clarity, accuracy, comprehensiveness, and correctness, using the computer as a writing assistant. Students will apply the knowledge acquired by preparing a well-written research proposal.

Grading System: Passed (P), Not Passed (NP)

INCL 6075
Bioanalytical Methods in Clinical Research. Two (2) credits. Pre-requisites: INCL 6005, INCL 6016, INCL 6041.

This course will offer the students the review of the most relevant and popular methods applied today in clinical research studies. It will be focused on the scientific basis, rationale, potential applications and limitations of current analytical methodology. Some of the areas that will be covered include: Essentials of Quality Control, Normative Values, UV-VIS Spectroscopy, Gas Chromatography, High Performance Liquid Chromatography, ELISA (Immuno-assays), Flow Cytometry, Genetic Analysis, Metabolic Studies, Application of Molecular Biology Methods, Mass Spectrometry, and Kinetic Analysis (including an Introduction to Pharmacokinetics). The practical sessions will include demonstrations, visits to laboratories, and problem sets allowing the analysis and interpretation of data.

INCL 6085
New Frontiers in Clinical Research. One (1) credit.

This is a seminar series for the dissemination of the latest issues in Clinical Research. Distinguished clinical researchers will be invited to present their work. The speakers will provide some of their publications which will be required reading for the students. This course will provide students with the skills to interpret and critically appraise research articles.

Grading System: Passed (P), Not Passed (NP)

INCL 6095
Clinical Research. Six (6) credits. Pre-requisites: INCL 6056, INCL 6065.

This course is designed for the Postdoctoral Clinical Research student to apply his/her research skills in order to perform and complete his/her approved research project. The student will be able to apply the scientific skills required for the execution of his/her research project. They will also apply their writing skills as required for manuscript preparation and submission for publication in a peer reviewed journal. In addition, they will submit an abstract and present their findings in a national or international scientific forum.

Grading System: Passed (P), Not Passed (NP)

SCHOOL OF MEDICINE FACULTY

ACEVEDO, WILLIAM - Physical Medicine, Rehabiliation, & Sport Medicine; Assistant Professor; MD, Universidad Central del Caribe, School of Medicine, 1987.

ADAMSONS, KARLIS - Obstetrics & Gynecology; Professor; MD, George- August- Universitaet Gottingen, 1952; PHD, Columbia University in the City of New York, 1956.

ALICEA, EDWIN - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1992

ALLENDE, MYRIAM – Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1974.

ALMODOVAR, PABLO – Dermatology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1968.

ALONSO-SERRA, HÉCTOR – Pediatrics; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1989.

APONTE, ORLANDO – Anesthesiology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 2000.

AQUINO, EDNA - Microbiology & Medical Zoology; Assistant Professor; PHD, University of Puerto Rico-Medical Sciences Campus, 2000.

ARROYO-MUÑIZ, MARITZA - Internal Medicine; Professor; MD, Dom Rep - Free- Standing Inst. 1977.

ARRUZA, JOHN – Anesthesiology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1990.

AVILÉS-RODRÍGUEZ, TERESITA – Surgery; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1972.

AYALA-TORRES, SYLVETTE – Pharmacology; Assistant Professor; PHD, University of Texas Medical Branch at Galveston, 1998.

AZIZE, YAMILA - Obstetrics & Gynecology; Professor, PHD, University of Pennsylvania, 1980.

BACO, FRANCIS - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus 1981

BAEZ-BERMEJO, ADRIANA - Pharmacology Professor; PHD, Spain - Non- Medical School, 1977. MS

BAEZ-DÍAZ, LUIS - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1976

BANCH-PIERETTI, HÉCTOR - Internal Medicine; Associate Professor; MD, Universidad Nacional Pedro Henriquez Urena (Unphu), 1976.

BANERJEE, DIPAK - Biochemistry & Nutrition; Professor; PHD, India - Non- Medical School, 1976; MS.

BARRETO, JENNIFER – Anatomy; Assistant Professor; PHD, University of Puerto Rico - Rio Piedras Campus, 2001.

BARRIOS, NILKA – Pediatrics; Professor; MD, Universidad Central del Caribe, School of Medicine, 1981.

BASILIO, CARLOS - Biochemistry & Nutrition; Professor; MD, Chile, Free- Standing Inst., 1956.

BEAUCHAMP-BAEZ, BELINDA – Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1986.

BERNSTEIN, JAIME - Physiology & Biophysics; Professor; PHD, Canada - Non- Medical School, 1973.

BIDOT-SAN ANTONIO, MARÍA - Internal Medicine; Assistant Professor; MS

BILLOCH-DE JOGLAR, OLGA – Pediatrics; Associate Professor; MD; University of Puerto Rico - Medical Sciences Campus, 1973.

BLAGBURN, JONATHAN - Physiology & Biophysics; Other; PHD, UK - Non- Medical School, 1982.

BLANCO-BLAGBURN, ROSA - Anatomy; Professor; PHD, UK - Non- Medical School, 1987.

BODON-DE HIDALGO, QUEENIE - Microbiology & Medical Zoology; Associate Professor; MS,

BOLANOS, BENJAMIN - Microbiology & Medical Zoology; Associate Professor; PHD, Duke University, 1983.

BONET, NYDIA – Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1978.

BONILLA, MELVIN – Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1986.

BORDEWYK, ROBERTO - Radiological Sciences; Assistant Professor, MD, University of Puerto Rico - Medical Sciences Campus, 1981.

BORREGO-CONDE, LILLIAN - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus,1997.

BRITT, ANDRES – Pharmacology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1989

BURGOS, JAVIER - Obstetrics & Gynecology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1998.

BURGOS, LUISA - Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1971.

BURGOS-CALDERÓN, RAFAEL - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1965.

BURKE-RAMÍREZ, PETRA - Internal Medicine; Professor, MD, University of Puerto Rico - Medical Sciences Campus, 1970.

BUXÓ-TIRADO, CARLOS – Anesthesiology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus,2000.

CABRERA-BEAUCHAMP, CARMEN - Surgery- Urology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1982.

CÁCERES, WILLIAM - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1987.

CADILLA-VÁZQUEZ, CARMEN - Biochemistry & Nutrition; Professor; PHD, University of Tennessee-Knoxville, 1986; MS,

CALDERÓN- RODRÍGUEZ, RAFAEL - Internal Medicine; Assistant Professor; MD, 1979.

CAMUÑAS-CÓRDOVA, JOSÉ - Family Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1987.

CANINO, GLORISA - Pediatrics; Professor; PHD, Temple University, 1974.

CARDONA, VÍCTOR - Anesthesiology; Assistant Professor; MD, 1992.

CARDONA-ALICEA, ALBERTO - Surgery; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1988.

CARLO, JOSÉ - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1978.

CARRERO-NIEVES, EVELYN - Anesthesiology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1982.

CARRIÓN, ENRIQUE - Pediatrics; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1993.

CASAL, JESÚS - Internal Medicine; Assistant Professor; MD, Universidad Central del Caribe School of Medicine, 1989.

CASANOVA-PELOSI, CYNTHIA - Psychiatry; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1975.

CASILLAS, EMILIO - Surgery- Otolaryngology; Assistant Professor; MD, Spain - Free- Standing Inst., 1969.

CASTELLVI-ARMAS, MARÍA - Anesthesiology; Assistant Professor; MD, Ponce School of Medicine, 1986.

CASTRODAD, DAVID - Anesthesiology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1989.

CINTRÓN-RODRÍGUEZ, ANA - Physical Medicine, Rehabilitation, & Sport Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1980

CLAUDIO, PEDRO - Family Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 2000.

CLIMENT, CONSUELO - Pathology; Professor, MD, Spain - Free- Standing Inst., 1974.

COLLAZO, PEDRO - Radiological Sciences; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1990.

COLÓN, JULIO - Pathology; Professor; PHD, Chicago Medical School at Rosalind Franklin U- Med & Sci., 1959.

COLÓN, LILLIAN - Pathology; Professor; MD, Universidad Central del Caribe School of Medicine, 1980.

COLÓN-DE MARTÍ, LUZ - Psychiatry; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1977.

COLÓN-GONZÁLEZ, GLORIA - Pediatrics; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1985.

COLÓN-MULERO, ANGEL - Internal Medicine, Assistant Professor; MD, 1986.

COLÓN-NEGRÓN, EDGAR - Radiological Sciences; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1984.

COLÓN-RODRÍGUEZ, NELSON - Physical Medicine, Rehabilitation, & Sport Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus,1986.

COMAS- URRUTIA, ARSENIO - Obstetrics & Gynecology; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1961.

CORA-MORALES, ELSA - Biochemistry & Nutrition; Professor; PHD, University of Puerto Rico - Medical Sciences Campus, 1984; MS.

CÓRDOVA, HÉCTOR - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1981.

COREY, SUSAN - Pharmacology; Associate Professor; PHD, State University of New York Upstate Medical University, 1971.

CORREA-RIVAS, MARÍA - Pathology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1988.

COX, RAFAEL - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1966.

CRESPO, MARÍA - Physiology & Biophysics; Professor; DMEDSC, PHD, University of Puerto Rico - Medical Sciences Campus, 1993.

CRUZ, MAGDALENA - Obstetrics & Gynecology; Other, MA, University of Puerto Rico- Central Administration, 1991.

CRUZ-CORREA, MARCIA - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1990.

CRUZ-JIMÉNEZ, MARICARMEN - Physical Medicine, Rehabilitation, & Sport Medicine; Assistant Professor, MD, Universidad Central del Caribe School of Medicine, 1994.

CRUZ-MENDIETA, NORMA - Surgery; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1976.

CRUZ-RODRÍGUEZ, RAÚL - Internal Medicine; Associate Professor; MD, Universidad Central del Caribe School of Medicine, 1983.

CRUZADO, NIBALDO - Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1975.

CRUZADO-CEBALLOS, RICARDO - Radiological Sciences; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1998.

CUADRADO, MARIANELA - Physical Medicine, Rehabilitation, & Sport Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1999.

DÁVILA-CARLOS, MARÍA - Pediatrics; Assistant Professor; MD, Universidad Central del Caribe, School of Medicine, 2000.

DE JESÚS, YOHANA - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1981.

DE JESÚS-GARCÉS, ORLANDO - Surgery- Neurosurgery; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1987

DE LA VEGA, ALBERTO - Obstetrics & Gynecology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1984.

DE MELLO, WALMOR - Pharmacology; Professor; MD, Universidade Federal do Rio de Janeiro, 1955; PHD, 1964..

DEFENDINI, EFRAÍN - Surgery; Professor; MD, University of Maryland School of Medicine, 1954.
DEL VALLE, ANTONIO - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1992.

DELGADO-OSORIO, HÉCTOR - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1963.

DELIZ-ROLDÁN, BRENDA - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 2000.

DÍAZ, CLEMENTE - Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1973.

DÍAZ, DIANA - Psychiatry; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1993.

DÍAZ, MANUEL - Anatomy; Assistant Professor; PHD, University of Puerto Rico- Medical Sciences Campus, 2003.

DÍAZ-RESTO, MIRIAM - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1982.

DÍAZ-ALCALÁ, JOSÉ - Pharmacology; Associate Professor; MD, Universidad Central del Caribe School of Medicine, 1990.

DÍAZ-HERNÁNDEZ, ANA - Internal Medicine, Other; MA, 1976

DÍAZ-PRIMERANO, ANA - Microbiology & Medical Zoology; Professor; DSC, 1981

DÍAZ-RODRÍGUEZ, RUBÉN - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1977.

DOMÍNGUEZ, DIMARIS - Anesthesiology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1998.

DUNBAR, DONALD - Anatomy; Professor; PHD, University of Oregon, 1980.

ECHEVARRÍA, WIHELMA - Pediatrics; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1995.

ESCABÍ, JOSÉ - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1992.

ESCOBALES, NELSON - Physiology & Biophysics; Professor; PHD, University of Puerto Rico - Medical Sciences Campus, 1982.

ESPINO-HERNÁNDEZ, ANA - Microbiology & Medical Zoology; Assistant Professor; PHD, 1997.

ESPINOSA-LÓPEZ, ÁNGEL - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1973.

ESQUILÍN-RIVERA, INÉS - Pediatrics; Professor, MD, University of Puerto Rico - Medical Sciences Campus, 1989.

FACUNDO-ROSADO, AMÉRICA - Internal Medicine; Associate Professor; PHD, University of Massachusetts-Amherst, 1992.

FEBO-RODRÍGUEZ, IRMA - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1986.

FELICIANO, MELBA - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1978.

FERNÁNDEZ, DANIEL - Anesthesiology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1997.

FERNÁNDEZ-REPOLLET, EMMA - Pharmacology; Professor; PHD, University of Puerto Rico - Medical Sciences Campus, 1979.

FERNÁNDEZ-SEIN, ALICIA - Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1975.

FERNÁNDEZ-SIFRE, CARLOS - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1981.

FIGUEROA, JAVIER - Internal Medicine; Instructor; MD, University of Puerto Rico - Medical Sciences Campus, 1992.

FIGUEROA-GUZMÁN, LUZ - Dermatology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1979.

FIGUEROA-RIVERA, NITZA - Obstetrics & Gynecology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 2000.

FIGUEROA-VALLES, NAYDA - Radiological Sciences; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1976; MS.

FRONTERA, WALTER - Physical Medicine, Rehabilitation, & Sport Medicine; Professor; PHD, Boston University School of Medicine, 1986; MD, University of Puerto Rico – Medical Sciences Campus, 1979.

GALDÓN-RIVERA, GLADYS - Family Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1980.

GALERA, ÁNGEL - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1987.

GÁNDARA-GONZÁLEZ, MARÍA - Psychiatry; Assistant Professor; MD, Universidad Santiago de Compostela1971

GARCÍA, SIXTO - Ophthalmology; Professor; PHD, University of Puerto Rico - Medical Sciences Campus, 1976; MD, Universidad Complutense de Madrid, 1967.

GARCÍA-ARIZ, MANUEL - Surgery- Orthopedic, Associate Professor, MD, Universidad Santiago de Compostela, 1974.

GARCÍA-DÍAZ, HAYDEE - Pediatrics; Professor; MD; University of Puerto Rico - Medical Sciences Campus, 1975.

GARCÍA-FRAGOSO, LOURDES - Pediatrics; Associate Professor; MD, Universidad Central del Caribe School of Medicine, 1992.

GARCÍA-GARCÍA, INÉS - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1988.

GEIL-SCHULTE, KENNETH - Internal Medicine; Assistant Professor; MD, University of Kentucky College of Medicine, 1976.

GERARD, MELISSA - Internal Medicine; Assistant Professor; PHD, University of California, San Francisco, School of Medicine, 1999; MA, 1994.

GÓMEZ, ADA - Pediatrics; Associate Professor, MD, University of Puerto Rico - Medical Sciences Campus, 1971.

GÓMEZ, YOLANDA - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1985.

GONZÁLEZ, CARLOS - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1979.

GONZÁLEZ, JOSÉ - Dermatology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1975.

GONZÁLEZ, MARÍA - Pediatrics; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1980.

GONZÁLEZ-DE PIJEM, LILLIAM - Pediatrics; Professor; MD, Universidad de Barcelona, 1970.

GONZÁLEZ-CARABALLO, ZULMA - Surgery; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1974.

GONZÁLEZ-DE RIVAS, MARÍA - Pediatrics, Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1980.

GONZÁLEZ-KEELAN, CARMEN - Pathology; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1979.

GONZÁLEZ-MANRIQUE, MIGUEL - Psychiatry; Professor; MD, Universidad de Barcelona, 1971.

GONZÁLEZ-MÉNDEZ, RICARDO - Radiological Sciences; Professor; PHD, Stanford University School of Medicine, 1987.

GONZÁLEZ-NAVERRETE, GLADYS - Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1979; JD, 1999.

GONZÁLEZ-RÍOS, MARÍA - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1978.

GONZÁLEZ-RIVERA, MIGUEL - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1993.

GONZÁLEZ-RODRÍGUEZ, ANARDA - Pathology; Professor; MD, Universidad de Zaragoza, 1977.

GONZÁLEZ-SÁNCHEZ, JUAN - Emergency Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1986.

GONZÁLEZ-SANTONI, RICARDO - Family Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1986.

GONZÁLEZ-TEJERA, GLORIA - Psychiatry; Associate Professor; MD, Mexico - Free- Standing Inst., 1978.

GORBEA-ALONSO, HÉCTOR - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1977.

GRACIA-LÓPEZ, SANDRA - Radiological Sciences; Assistant Professor; MD, Ponce School of Medicine, 1981.

GUERRIOS, LOURDES - Surgery- Urology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1990.

GUTIÉRREZ-NUÑEZ, JOSÉ - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1976.

HAWAYEK, JOSÉ - Obstetrics & Gynecology; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1972.

HECHAVARRIA-GÓMEZ, ROSA - Physical Medicine, Rehabilitation, & Sport Medicine; Other; MS, 1994.

HENN, CARMEN - Ophthalmology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1984.

HERREÑO-SAENZ, DIÓGENES - Pharmacology; Associate Professor; PHD, University of Puerto Rico - Medical Sciences Campus, 1986.

HILLYER, GEORGE - Pathology; Professor; PHD, University of Chicago, 1972.

HUERTAS-GOLDMAN, SARAH - Psychiatry; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1974.

INSERNI-MILAM, JAIME - Surgery- Neurosurgery; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1983.

ITURRINO, LUIS - Psychiatry; Assistant Professor; MD, Universidad de Salamanca, 1963.

JACKSON-MOYA, IRIS - Psychiatry; Associate Professor; PHD, Columbia University in the City of New York, 2000.

JIMÉNEZ, BRAULIO - Biochemistry & Nutrition; Professor; PHD, University of Puerto Rico- Central Administration, 1981.

JIMÉNEZ-RIVERA, CARLOS - Physiology & Biophysics; Associate Professor; PHD, University of New Mexico School of Medicine, 1986.

JIMÉNEZ-VELÁZQUEZ, IVONNE - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1982.

JOGLAR-IRIZARRY, FERNANDO - Surgery; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1998.

JOHNSON, CHARLES - Internal Medicine; Professor; MD, Virginia Commonwealth University School of Medicine, 1958.

JORGE-RIVERA, JUAN - Anatomy; Associate Professor; PHD, Brandeis University, 1997.

KENSLER, ROBERT - Anatomy; Professor; PHD, SUNY at Stony Brook, 1978.

KICLITER, ERNEST - Anatomy; Professor; PHD, State University of New York Upstate Medical University, 1973.

KOZEK, WIESLAW - Microbiology & Medical Zoology; Professor; PHD, Tulane University of Louisiana, 1969.

KRAISELBURD, EDMUNDO - Microbiology & Medical Zoology; Professor; MA, PHD, SUNY at Buffalo, 1972.

KUFFLER, DAMIEN - Physiology & Biophysics; Professor; PHD, University of California- Los Angeles, 1975.

LARAS, LINDA - Obstetrics & Gynecology; Assistant Professor; MD, Universidad de Valencia, 1981.

LAVERGNE, JULIO - Microbiology & Medical Zoology; Professor; PHD, University of Texas Health Science Center-San Antonio, 1979.

LEAL-CAPOTE, OSCAR - Internal Medicine; Assistant Professor; MD, Universidad Nacional Pedro Henriquez Urena (Unphu), 1979.

LEBRÓN-ARZON, FRANCISCO - Anesthesiology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 2000.

LOJO, JUAN - Surgery; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1972.

LÓPEZ, CARMEN - Physical Medicine, Rehabilitation, & Sport Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1977.

LÓPEZ, JOSÉ - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1954.

LÓPEZ, WILFREDO - Obstetrics & Gynecology; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1989.

LÓPEZ-ENRIQUEZ, ALBERTO - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1979.

LÓPEZ-ENRIQUEZ, REYNOLD - Surgery; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1971.

LÓPEZ-GONZÁLEZ, FRANCISCO - Surgery- Orthopedic; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1995.

LÓPEZ-MALPICA, FERNANDO - Internal Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1974.

LOZADA, CARMEN - Family Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1992.

LUBE-CAPÓ, JEANNETTE - Pediatrics; Associate Professor; MD, Mexico - Free- Standing Inst., 1978.

LUCIANO-ROMÁN, CARLOS - Internal Medicine; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1985.

LUGO, THOMAS - Internal Medicine; Instructor; MD, University of Puerto Rico - Medical Sciences Campus, 1991.

LUGO-CALZADA, LISETTE - Pediatrics; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1986.

LUGO-GARCÍA, NIDZA - Anatomy; Professor; MPH, University of Puerto Rico- Central Administration, 1970; PHD, University of Puerto Rico - Medical Sciences Campus, 1982.

LUGO-LEBRÓN, IRAIDA - Family Medicine; Other; MSW, 1978.

LUGO-LUGO, EDWIN - Surgery- Orthopedic; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1984.

LUGO-SOTO, CARMEN - Pediatrics; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1961.

LUGO-VICENTE, HUMBERTO - Surgery; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1979.

MALDONADO, AWILDA - Internal Medicine; Assistant Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1982.

MALDONADO, JULIA - Anesthesiology; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1979.

MARCOS, MARÍA - Pathology; Associate Professor; MD, Universidad de Navarra, 1987.

MARGARIDA-JULIA, MARÍA - Internal Medicine; Professor; PHD, Massachusetts School of Professional Psychology, 1986; MED,

MARÍN, ANÍBAL - Family Medicine; Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1966. MPH, 1957.

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GARCÍA-BLANCO, MARIANO A. - Department of Microbiology & Medical Zoology; Adjunct Professor; PhD, Yale University, 1988.

GARCÍA-CASTIÑEIRAS, SIXTO - Department of Biochemistry, Joint Appointment; Department of Ophthalmology; Professor; MD, Complutense (Madrid), 1967; PhD, University of Puerto Rico – Medical Sciences Campus, 1976.

GERENA-LÓPEZ, YAMIL - Department of Pharmacology and Toxicology, Adjunct Professor; PhD, (Pharmacology) University of Puerto Rico – Medical Sciences Campus, 2005; Post-Doctoral: Molecular Biology and Immunology of Malaria, University of Puerto Rico - MSC, 2005-2006.

GÓMEZ-GARZÓN, DIANA S. - Department of Biochemistry, Adjunct Professor; Assistant Professor, Science & Technology Department, Metropolitan University; PhD, Department of Biochemistry, University of Puerto Rico – Medical Sciences Campus, 2002.

GONZÁLEZ, FERNANDO A. - Department of Biochemistry, Adjunct Professor; Professor, Department of Chemistry, UPR-RPC; PhD, Biochemistry – Cornell University, 1989; Post-Doctoral: Biochemistry, Cornell University, 1990; Molecular Biology and Biochemistry, Howard Hughes Medical Institute Research Laboratory, University of Massachusetts Medical Center, 1992.

HERREÑO-SÁENZ, DIÓGENES - Department of Pharmacology and Toxicology; Associate Professor; PhD, University of Puerto Rico-Medical Sciences Campus, 1986; PostDoctoral: Toxicology and Chemical Carcinogenesis, National Center for Toxicological Research, 1988-1994.

HUNSPERGER, ELIZABETH A. - Department of Microbiology & Medical Zoology; Adjunct Professor; PhD, Colorado State University, 2002.

HILLYER, GEORGE V. - Department of Biochemistry; Joint Appointment; Professor, Department of Pathology; PhD, Tübingen (Germany), 1957.

JIMÉNEZ-RIVERA, CARLOS A. - Department of Physiology; Associate Professor; PhD, University of New Mexico - Medical School, 1986; Post-Doctoral: Neurophysiology, Institute Cellular Physiology (UNAM), 1986; Neuropharmacology, Dallas Health Science Center, 1987; Neurophysiology, Hahnemann University Medicine School, 1989.

JIMÉNEZ-VÉLEZ, BRAULIO D. - Department of Biochemistry; Professor; PhD, University of Puerto Rico - Mayagüez, 1981; Post-Doctoral: Medical Toxicology, Oak Ridge National Laboratory, 1982-1984.

JORGE-RIVERA, JUAN C. - Department of Anatomy; Associate Professor; PhD, Brandeis University, 1997; Post-Doctoral: Neuroendocrinology, Dartmouth University, 1997-2000.

KENSLER, ROBERT W. - Department of Anatomy; Professor; PhD, SUNY - Stony Brook, 1978; Post-Doctoral: Muscle Physiology and Structural Biology, Harvard University, 1977-1979.

KOZEK, WIESLAW J. - Department of Microbiology and Medical Zoology; Professor; PhD, Tulane University, 1969; Post-Doctoral: University of Chicago, 1969-1971; University of Florida, 1971-1972.

KRAISELBURD, EDMUNDO N. - Department of Microbiology and Medical Zoology; Professor; PhD, State University of New York - Buffalo, 1973.

KUFFLER, DAMIEN - Department of Physiology; Joint Professor; PhD, UCLA, 1975.

LAVERGNE, JULIO A. - Department of Microbiology and Medical Zoology; Professor; PhD, University of Texas Health Science Center, 1979.

MARTÍNEZ-MARTÍNEZ, IDALI - Department of Microbiology and Medical Zoology; Associate Professor; PhD, Rutgers University, 1995.

MEJÍAS-TORRES, IDA A. - Department of Biochemistry; Adjunct Professor; PhD, University of Puerto Rico – Medical Sciences Campus, 2000.

MELÉNDEZ-APONTE, LOYDA M. - Department of Microbiology and Medical Zoology; Professor; PhD, Emory University & CDC, 1990; Post-Doctoral: Infectious Diseases, Emory University, 1990-1992.

MILLER-STEIN, MARK W. - Department of Anatomy; Professor; PhD, University of Connecticut, 1980; Post-Doctoral: Neurophysiology, University of Hawaii, 1982; Neurophysiology, Hebrew University, 1984; Neurophysiology, UCLA, 1986; Molecular Neurology, Columbia University, 1990.

MIRANDA-GONZÁLEZ, JORGE D. - Department of Physiology; Associate Professor; PhD, Baylor College of Medicine - Houston, TX, 1996; Post-Doctoral: Neural Regeneration, University of Miami School of Medicine, 1996-1998.

MUÑOZ-JORDÁN, JORGE LUIS - Department of Microbiology & Medical Zoology; Adjunct Professor; PhD, the Rockefeller University, 2001.

NEGRÓN-VEGA, LISANDRA - Department of Biochemistry; Adjunct Professor; PhD, University of Puerto Rico – Medical Sciences Campus, 2007.

ORTIZ- ROQUE, JOSE G. - Department of Pharmacology and Toxicology; Professor; PhD, University of Connecticut, 1982; Post-Doctoral: Pharmacology, Yale University, 1982-1983.

OTERO, MIGUEL - Department of Microbiology & Medical Zoology; Adjunct Professor; PhD, University of Puerto Rico – Río Piedras Campus, 1998; Post-Doctoral: HIV research on cell-mediated Anti-HIV drug resistance (Dr. J.R. Rodríguez Medina Laboratory), UPR-MSC, 1998-1999; HIV research on pathogenesis of HIV (Dr. Roger J. Pomerantz), Thomas Jefferson University, 2000-2002; DNA based vaccine development (Dr. David Weiner), University of Pennsylvania, 2000-2004.

PÉREZ-ACEVEDO, NIVIA L. - Department of Anatomy; Assistant Professor; PhD, University of Puerto Rico - Río Piedras Campus, 2001; Post-Doctoral: Neuroendocrinology, University of Puerto Rico - Río Piedras Campus, 2003.

PRESTON, ALAN M. - Department of Biochemistry; Professor; PhD, Purdue University, 1971; Post-Doctoral: Vertebrate Physiology, University of Missouri, 1971-1972; Human Nutrition, Lincoln University, 1972-1974.

QUIRK, GREGORY J. - Department of Anatomy & Neurobiology, Adjunct Professor; Department of Psychiatric, Professor; PhD, SUNY Health Science Center (Lab. R.U. Muller), 1990; Post-Doctoral: Department of Physiology, University of Honduras Medical School – Tegucigalpa, Honduras; 1992-1993. Center for Neural Science, NYU (Lab. J.E. LeDoux) – New York, 1993-1997.

RIVERA-GONZÁLEZ, RAÚL - Department of Microbiology and Medical Zoology; Associate Professor; MS, University of Puerto Rico - Medical Sciences Campus, 1998.

ROBLEDO-BURGOS, IRAIDA E. - Department of Microbiology and Medical Zoology; Associate Professor; PhD, University of Puerto Rico - Río Piedras Campus, 2000.

RODRÍGUEZ-BONANO, NYDIA M. - Department of Microbiology and Medical Zoology; Adjunct Professor; PhD, University of Puerto Rico – Medical Sciences Campus, 2002.

RODRIGUEZ-DEL VALLE, NURI - Department of Microbiology and Medical Zoology; Professor; PhD, University of Puerto Rico-Medical Sciences Campus, 1978; Post-Doctoral: Immunoparasitology Laboratory, University of Puerto Rico - Río Piedras Campus, 1987-1988.

RODRÍGUEZ-MEDINA, JOSÉ R. - Department of Biochemistry; Professor; PhD, Brandis University, 1986; Post-Doctoral: Biology, National Cancer Institute-NIH, 1986-1989.

RODRÍGUEZ-ORENGO, JOSÉ F. - Department of Biochemistry; Professor; PhD, Texas A&M University, 1989; Post-Doctoral: Chemistry, Cornell University, 1989-1991; Biochemical Pharmacology, St. Jude Children's Research Hospital, 1995.

ROSENTHAL, JOSHUA JOSEPH CHADBOURNE - Department of Biochemistry; Adjunct Professor; PhD, Stanford University, 1996.

SANTACANA-VÁZQUEZ, GUIDO E. - Department of Physiology; Professor; PhD, University of Puerto Rico - Medical Sciences Campus, 1982; Post-Doctoral: Cardiovascular, University of Puerto Rico - Medical Sciences Campus, 1982-1983.

SARIOL-CURBELO, CARLOS A. - Department of Microbiology and Medical Zoology; Adjunct Professor; MD, Institute of Medical Sciences, Havana, Cuba, 1987; Microbiology Major, Institute of Tropical Medicine Pedro Kouri, Havana, Cuba, 1992; MS, Institute of Tropical Medicine Pedro Kouri, Havana, Cuba, 1994; Post-Doctoral: Molecular Gastroenterology, University of Tübingen, 1999-2000.

SEGARRA, ANNABELL C. - Department of Physiology; Professor; PhD, New York University, 1988; Post Doctoral: Sex, steroids, and Nerve Regeneration, New York University, 1988-1989; Neuroendocrinology, Rockefeller University, 1989-1997.

SERRANO-BRIZUELA, ADELFA E. - Department of Microbiology and Medical Zoology; Professor; PhD, University of Georgia, 1987; Post-Doctoral: Molecular Biology of Parasites, Harvard University, 1988-1991.

SILVA-ORTIZ, WALTER I. - Department of Physiology; Professor; PhD, Mount Sinai School of Medicine - CUNY, 1986.

SOSA-LLORÉNS, MARÍA A. - Department of Anatomy; Associate Professor; PhD, University of Florida, 1993; Post-Doctoral: Neurobiology, University of Puerto Rico-Medical Sciences Campus, 1993-1996.

SPECHT-MAST, PHILIP C. - Department of Pharmacology and Toxicology; Associate Professor; PhD, State University of New York - Syracuse, 1972; Post-Doctoral: Pharmacology, State University of New York - Downstate Medical Center, 1971-1973.

TORRES-BAUZÁ, LUIS J. - Department of Microbiology and Medical Zoology; Professor; PhD, University of Puerto Rico-Medical Sciences Campus, 1981; Post-Doctoral: Microbiology and Molecular Biology Clinical Microbiology, Temple University School of Medicine, 1980-1981.

TORRES-RAMOS, CARLOS A. - Department of Physiology; Assistant Professor; PhD, University Texas Medical Brach - Galveston, 1996; Post-Doctoral: Molecular Genetics, University of Texas Medical Branch-Galveston, 1996-1999.

TURNQUIST, JEAN E. - Department of Anatomy; Professor; PhD, University of Pennsylvania, 1975.

VÁZQUEZ-ANDINO, GUILLERMO J. - Department of Microbiology and Medical Zoology; Professor; MD, Jefferson University, 1974; Post-Doctoral: Infectious Disease Fellowship, Virginia Commonwealth University, 1977-1979; Internal Medicine, San Juan City Hospital - Residence, 1975-1977; Internal Medicine, San Juan City Hospital - Interned, 1974-1975.

ZUAZAGA-DE ORTIZ, CONCHITA - Department of Physiology; Professor; PhD, University of Minnesota, 1974.



School of Dental Medicine

HISTORY

The School of Dentistry (now School of Dental Medicine) of the Medical Sciences Campus was founded in 1957. It was first fully accredited by the Council on Dental Education of the American Dental Association in 1961 and has maintained its accredited status continuously ever since. Its most recent accreditation was granted in 2005. The School prepares dentists who effectively join the profession as members of a broader health team concerned with community welfare and who are aware of their social responsibilities as educators and professionals in the community. The School is responsible for developing in its students those professional competencies related to continued personal and professional improvement. These include, among others, competencies related to communication, establishing good professional and personal interrelations, leadership and management, the application of the scientific method to problem solving, and the exercise of the highest standards of professional ethics.

Three departments offer the School's academic programs. The Ecological Sciences Department stresses the study of human behavior, attitude patterns, and social phenomena in relation to the practice of dentistry. The principal frame of reference is the Puerto Rican community. The department is structured in two sections, Pediatric Dentistry- Orthodontics and Community Dentistry. It also serves as liason with the Faculty of Biosocial Sciences and School of Public Health. In the advanced dental education programs, the Department offers a Pediatric Dentistry and Orthodontics Residency Program.

The curriculum in the Restorative Sciences Department emphasizes the interrelationships between the biological and mechanical principles involved in the rehabilitation of oral health. The Department consists of two sections, i.e.: Operative and Prosthodontics. In the advanced dental education programs, the Department offers a Prosthodontics and General Practice Residency Program.

The Surgical Sciences Department curriculum focuses on the study of concepts, principles, and procedures related to the diagnosis and treatment of diseases of bone and/or soft tissues of the oral cavity. The department is organized four sections, i.e.: Endodontics-Periodontics, Oral Surgery, Diagnostic Sciences, and Oral Biology. In the advanced dental education programs, the Department offers an Otal and Maxillofacial Surgery Residency Program.

Based on a philosophy of lifelong learning, the School also offers a Continuing Education Program for practicing dentists. The program addresses relicensure requirements, as they are established by law in Puerto Rico.

Promoting research and progressive scholarship among faculty and students is also one of the School's goals. Research efforts reinforce and complete teaching in the search for new knowledge. The School recognizes its responsibility to augment and update scientific knowledge by encouraging faculty to report research findings.

The School also encourages the participation of its human resources and programs in community enterprises. It fosters civic spirit and pride, as well as leadership among faculty and students. Dental services to the community are provided in the clinic by students under the direct supervision of Faculty. Such services are commensurate with the academic needs of the students and, therefore, conform to the educational philosophy of the School. The welfare of the patient is paramount in rendering these services.

MISSION AND GOALS

The School of Dental Medicine's mission is the training of dentists who will become an integral part of the multidisciplinary team of health professionals, who will meet the health needs of the people of Puerto Rico. It assumes leadership regarding teaching and research on the prevailing conditions of oral health of the community.

In the fulfillment of its mission, the School of Dental Medicine is committed to three complementary activities: teaching, research, and service. Its teaching role is accomplished by offering a Doctor of Dental Medicine

Program which educates competent graduates in the practice of general dentistry advanced education programs, and a solid Continuing Education Program geared to dentists in Puerto Rico, the Caribbean Basin, and Latin America. The curricula stresses critical thinking and sensibility to bioethical issues.

As part of its mission, the School of Dental Medicine also fosters the search for scientific knowledge and the improvement of the practice of the profession through research in dental sciences. Services are another important component of the School's mission and are aimed at fostering the well-being of the patient and the community, strengthening academic programs, and supporting research efforts. Services are offered at the primary, secondary, and tertiary levels, both intramurally and extramurally, with particular attention to prevention and education.

In fulfilling its mission, the School of Dental Medicine pursues the following goals:

- Train general dentists with the knowledge, skills, and attitudes to effectively serve the oral health needs of the population with emphasis in the Puerto Rican community.
- Provide services to the Puerto Rican population geared towards oral health promotion and prevention as a component of the general health of the individual.
- Contribute to the advancement of knowledge through research in the various areas of dentistry, as well as dental education.
- Update and improve the knowledge and skills of dentists by means of a sound Continuing Education Program.
- Provide an organizational climate that promotes excellence in the educational process, as well as the maximum development of the academic community.
- Train specialists in the field of Dentistry to contribute to the improvement of the oral health of the Puerto Rican, Latin American, and Caribbean Basin populations.

ORGANIZATION AND ADMINISTRATION

The School of Dental Medicine is one of the six schools of the Medical Sciences Campus. It has three departments, i.e.: Ecological Sciences, Restorative Sciences, and Surgical Sciences. The Dean, assisted by the Associate Dean, is responsible for the planning, development, coordination, and evaluation of the Doctor of Dental Medicine Program and graduate programs in General Dentistry, Oral and Maxillofacial Surgery, Prosthodontics, Pediatric Dentistry, and Orthodontics.

Assistant deans in the areas of clinical instruction and student affairs are responsible for the development of strategies for the advancement of these areas, which are implemented by the departments. The Dean is also assisted by staff in the areas of curriculum, strategic planning and development, research, and continuing education.

LOCATION AND FACILITIES

The School of Dental Medicine occupies the first floor and part of the ground floor of the Campus main building. The freshman and sophomore multidisciplinary laboratories are located on the ground floor, along with a modern simulators laboratory, stock and dispensing rooms, student lounge, and locker rooms. This level also houses the School's administrative offices, a multidisciplinary laboratory for dental students, laboratories for advanced studies and dental research, a central sterilizing room, and all dental clinics.

The main clinic area is equipped with 98 dental units and chairs for individual clinical training in general dental procedures. The adjacent central sterilizing room and stock dispensing room serve all clinical areas of the School and the multidisciplinary laboratories.

In addition to the main clinic area, there are special clinic areas devoted to specialty areas such as oral surgery, oral diagnosis, oral radiology, and graduate clinics.

The basic sciences multidisciplinary laboratories, the Library, and the Animal Resources Center located in other areas of the Main Building, are shared with other schools of the Medical Sciences Campus.

ACADEMIC PROGRAMS
DOCTOR OF DENTAL MEDICINE PROGRAM

The program leading to the degree of Doctor of Dental Medicine (D.M.D.) is a four-year program designed

to prepare general practitioners. The curriculum is based on competencies and is organized around four integrated curricular areas. The areas are defined according to the knowledge, skills, and values necessary to achieve the competencies:

Biomedical Sciences includes fundamental knowledge of the development, structure, function ,and mechanism of diseases of the human body. Assessment and Diagnosis comprises the knowledge, skills, and values related to the assessment of normal structures and diagnosis of the abnormalities, diseases and dysfunctions of the orofacial complex in the child, adolescent, adult, geriatric, and special patient. Prevention and Treatment includes the knowledge, skills, and values related to the prevention and treatment of abnormalities, diseases, and dysfunctions of the orofacial complex of the child, adolescent, adult, geriatric and special patient. Professional Development and Management of the Dental Practice promotes the development of the individual as a professional and his role in the community. It includes, among others, the concepts of practice management, ethical and legal aspects of the profession, exposure control and risk management, and human resources management.

Admission Requirements

Candidates for admission to the freshman class must present evidence of successful completion of at least two full academic years of work in an accredited college or university, with a minimum grade point average of 2.50 (in a scale of 4.00) in both sciences and general courses, which must be completed by the end of the first semester of the academic year prior to admission. This work must comprise not less than 90 semester hours or 135 quarter hours including the following:

Spanish	12 semester or 18 quarter hours
English	12 semester or 18 quarter hours
Biology and Zoology	8 semester or 12 quarter hours
Physics	8 semester or 12 quarter hours
General Chemistry	8 semester or 12 quarter hours
Organic Chemistry	8 semester or 12 quarter hours
Social and Behavioral Sciences (Sociology, Psychology, Political Sciences, Economics, Anthropology, or Ethics)	6 semester or 9 quarter hours

- All requirements specified above must be completed by the end of the second semester of the academic year prior to admission. In case of applicants who have approved Honor Spanish or English Courses with a grade of B or above per semester, the Admissions Committee will consider upon request, to reduce the requirements to six semester credits.
- The Biology, Zoology, Physics, Chemistry, and Social Sciences requirements must be met in addition to the basic courses required by the University of Puerto Rico Río Piedras Campus. Basic courses in physical sciences, biological sciences, and social sciences offered by that campus may not be substituted for the particular credit-hours stipulated in this list.
- A general and a specific grade point average in sciences of a least 2.50 (in a 4.0 scale), is mandatory. All requirements must be completed no later than the second semester prior to admission. At the time of application, each required course must be approved with at least 2.00.
- All sciences courses should include both, lectures and laboratory instruction. It is advisable that students choose elective subjects; that will enhance their intellectual background and a provide a well rounded education. Biochemistry, Molecular Biology, Histology, Physiology, Anatomy, Microbiology, Genetics, Psychology, and Ethics courses are highly recommended.
- Instruction at the School of Dental Medicine may be conducted in English or Spanish. Thus, students should be fluent in speaking, reading, and writing both languages.
- Candidates for admission to the University of Puerto Rico School of Dental Medicine are subject to evaluation on four main criteria, academic performance, dental admission test scores, geographic area of residence, and personal attributes.

Academic Performance

Academic performance is measured through the academic grade point average obtained during pre-dental studies; a final grade of al least C (in a 4.0 scale) is mandatory in every required course b. the number of repetitions, withdrawals, deficient or failing grades, as evidenced in the official transcript.

Dental Admission Test

The candidate must take the Dental Admission Test (D.A.T.) offered by the Council on Dental Education of the American Dental Association prior to the application deadline. These examinations are given twice a year, usually in October and April, at centers in the United States and the University of Puerto Rico, School of Dental Medicine. The testing program is designed to measure general academic ability, comprehension of scientific information, and perceptual ability. It is recommended that students prepare thoroughly prior to taking the exam. Test results are reported as an academic average and a perceptual average. The candidate must obtain a minimum score of twelve (12) in each one of the two averages (academic and PAT). In cases in which the student does not obtain the minimum acceptable score, the Committee will evaluate the candidate's record and may require him/her to take the whole examination again to qualify as a candidate. It is highly recommended to take the D.A.T. one year prior to the school´s application deadline so that if necessary, the students can retake the exam in time for the same year´s application. Admission test results are valid for up to three years.

Geographic Area of Residence

The School of Dental Medicine, is the result of the commitment of the Commonwealth of Puerto Rico to improve and safeguard the health of its citizens. The UPR recognizes its responsibility in preparing personnel to meet the dental health challenges of the island. Therefore, initial priority is given to residents of Puerto Rico.

Personal Attributes

After an initial screening of the three admission criteria the Admissions Committee selects applicants to be interviewed. Besides the interview, other criteria such as letters of recommendation and broadness of educational and life experiences are taken into consideration for admission. Candidates must obtain letters of recommendation from the Pre-dental Committee of the college of origin, or its equivalent, and from one of his college instructors.

Applications Process

The application to the School of Dental Medicine is processed through the American Association of Dental Schools Application Service (AADSAS). It must be received by AADSAS no later than December 1st of the year preceding admission. The application request card may be obtained from the Central Office of Admissions of the Medical Sciences Campus or directly from:

American Association of Dental School
Application Service
1625 Massachusetts Ave., N.W., Suite 600
Washington, DC 20036-2212
Web site: **http://portal.aadsasweb.org**

The candidate must complete the General Application Form for the Medical Sciences Campus. This application form may be obtained from the Central Office of Admissions of the Medical Sciences Campus and should be returned to that office no later than December 1st. In addition, the candidate must submit the following documents to the Central Office of Admissions on/or before the application deadline:

An official transcript from each institution of higher education attended.
A recent 2" x 2" photograph.
Two letters of recommendation and/or evaluation forms as specified.
A certified check or money order payable to the University of Puerto Rico for the amount of $20.00 to cover the nonrefundable application fee.

The application form for the Dental Admissions Test may be obtained from the Central Office of Admissions or directly from:

American Dental Association Department of Testing Service
211 East Chicago Avenue, Suite 6600
Chicago, IL 60611

For further information and/or assistance write to:

School of Dental Medicine
Medical Sciences Campus, UPR
GPO Box 365067
San Juan, Puerto Rico 00936-5067
or call (787) 758-2525 Ext. 1113, 1008, 2251

The School of Dental Medicine will send notice of admission or admission denial. Admitted students should present this notice at registration time. They must send their written acceptance of admission along with the required deposit of $100.00 and, prior to enrollment, must comply with the requirements specified in the letter of admission.

A candidate for admissions who is not accepted and decides to reapply must submit the following documents:

- A new AADSAS Application Form
- A recent official transcript from all colleges attended
- Any other documentation requested by the Central Admission´s Office

Any additional significant information for the Admissions Committee to consider should also be submitted.

Graduation Requirements

A student is eligible for graduation under the curriculum requirements in effect at the time of admission to the School of Dental Medicine. Students who do not satisfy graduation requirements within the established period of time corresponding to their curriculum, and students who reenroll after a period of absence, will be bound by the requirements applicable to the class with which they graduate.

In order to receive a degree, candidates must approve all courses and have a general grade point average of 2.50, an have approved the National Board Dental Examination I and II. Students with an average of 3.30 to 3.49, graduate Cum Laude; those who achieve 3.50 to 3.99 graduate Magna Cum Laude; and those with 4.00 graduate Summa Cum Laude. In order to be eligible for graduation with honors (Cum Laude), students must have completed at least 85% of the credit hours required for graduation at the University of Puerto Rico Medical Sciences Campus.

DOCTOR OF DENTAL MEDICINE (DMD)

TOTAL HOURS: 4,437
Biomedical Sciences: 726 Hours

CBIO 7100	Biochemistry	81
CBIO 7110	Gross Anatomy	108
CBIO 7120	General Histology	80
CBIO 7130	Neuroanatomy	60
CBIO 7140	Oral Histology and Embryology	40
CBIO 7150	Microbiology	84
CBIO 7160	Basic Human Physiology for Dental Students	92
CBIO 7170	General Systemic Pathology	57
CBIO 7180	Oral Pharmacology and Therapeutics	74
CBIO 7190	Integration of Biomedical Sciences into Dental Practice	50

Assessment and Diagnosis: 357 Hours

EVDI 7105	Introduction to Assessment and Diagnosis of the Patient	38
EVDI 7115	Human Development and Behavioral Management	44
EVDI 7125	Dental Anatomy and Functional Occlusion	127
EVDI 7135	Dental & Craniofacial Imaging	20
EVDI 7245	Development of the Orofacial Complex	16
EVDI 7255	Oral Pathology	28
EVDI 7265	Oral Diagnosis and Treatment Planning	57
EVDI 7275	Assessment and Diagnosis of the Child and Adolescent	27

Prevention and Treatment: 2956 Hours

PRET 7106	Cardiology	12
PRET 7116	Preventive Dentistry	44

PRET 7126	Introduction to Restorative Dentistry and Principles of Intracoronal Restorations	210
PRET 7136	Clinical Application on Dental Skills	54
PRET 7216	Treatment for the Child and the Adolescent	79
PRET 7246	Removable Prosthodontics	253
PRET 7257	Periodontics	55
PRET 7266	Oral Surgery	24
PRET 7276	Fixed Prosthodontics	250
PRET 7286	Apprehension and Pain Control	22
PRET 7296	Endodontics	76
PRET 7306	Implant Dentistry Clinical Rotation	20
PRET 7316	Dental Care for the Special Patients	28
PRET 7326	Review for the National Board Dental Examination Part II	54
PRET 7336	Advanced Oral Surgery	20
PRET 7346	Clinical Occlusion and Tempero Mandibular Dysfunction Management	20
PRET 7356	Medical Emergencies	16
PRET 7366	Implant Dentistry	12
PRET 7376	Geriatric Dentistry	12
PRET 7386	Oral Surgery Clinical Rotation	49
PRET 7396	Oral Diagnosis Clinical Rotation	69
PRET 7308	Periodontics Clinical Rotation	64
PRET 7318	Endodontics Clinical Rotation	47
PRET 7328	Pediatric Dentistry Clinical Rotation	55
PRET 7338	Orthodontics Clinical Rotation	60
PRET 7348	Preventive Dentistry Clinical Rotation	40
PRET 7358	Operative Dentistry Clinical Rotation	86
PRET 7368	Fixed Prosthodontics Clinical Rotation	60
PRET 7378	Oral Radiology Clinical Rotation	39
PRET 7388	Removable Prosthodontics Clinical Rotation	90
PRET 7398	Dental Assistant Utilization Program	36
PRET 7400	Comprehensive Care Clinic	1000

Professional Development: 254 Hours

DESP 7117	Introduction to Professional Development I	12
DESP 7127	Introduction to Professional Development II	22
DESP 7237	Evaluation of Scientific Literature and Epidemiology	20
DESP 7247	Introduction to Community Dentistry	20
DESP 7357	Professional Development III	60
DESP 7467	Dental Practice Externship	120
Electives		144

ADVANCED DENTAL EDUCATION PROGRAMS

The Advanced Education Programs are designed for the preparation of well qualified dental specialists in the oral health fields most needed by the Puerto Rican population. The collaboration with the Iberoamerican countries in the preparation of dental specialist is another responsibility that the School accepts as part of its mission.

The advanced dental education programs are administered by the Office of the Assistant Dean for Graduate Dental Education. The Assistant Dean for Graduate Dental Education has been delegated, through the Assistant Dean, the management of all aspects related to the evaluation of the programs, coordination of the accreditation processes, and admission, promotion, and graduation processes in collaboration with the directors of the programs.

Requirements for Admission

All candidates to the Advanced Education Programs must comply with the following requirements:

- A degree of Doctor of Dental Surgery (D.D.S.) or Doctor of Dental Medicine (D.M.D.), or equivalent from an accredited dental school.
- Official transcripts from all institutions of higher education attended and photocopies of the

diplomas or certificates received. Candidates accepted should present the originals upon admission to the program.

- Must have passed the first and second part of the National Dental Boards prior to beginning the program.
- Must be fluent in English and Spanish.
- A complete application should be received no later than October 1st for admission to the program beginning July 1st of the next calendar year.
- Applicants must have a general grade point average established by each program:

Program	Minimum GPA
Orthodontics	3.00
Pediatric Dentistry	3.00
Prosthodontics	2.60
Oral & Maxillofacial Surgery	3.00
GPR	2.50

Foreign Students

Foreign Students must comply with the following additional requirements:

- Must have their diplomas, school transcripts, and all other pertinent documents certified as official by the Ministry of Education or similar agency in their country of origin, or by the U.S. Embassy in those countries where these services are available.
- Must have legal proof of financial support. An affidavit or sworn statement, as well as bank records are required for the processing of the Student´s VISA. The University of Puerto Rico does not provide scholarships, stipends or financial aid to foreign students.
- The approval of the National Board Dental Examinations Part I and Part II is waived for foreign candidates.
- Candidates must present evidence of approval of the TOEFL exam when applying to all Advanced Education Specialty/Programs.
- Foreign candidates are encouraged to participate in the six -months internships education course or in a similar educational program in an accredited institution prior to application.
- Application forms fully completed and all required documents must be submitted in duplicate to:

  Office of the Assistant Dean for
  Graduate Dental Education
  University of Puerto Rico
  School of Dental Medicine
  Medical Sciences Campus
  University of Puerto Rico
  GPO Box 365067
  San Juan, Puerto Rico 00936-5067

For further information and/or assistance call: (787) 758-2525 ext. 1121, 2509.

Criteria for Admission

Criteria for admission to the Advanced Education Specialty Programs are stated below. Each program determines the weight given to each criterion.

- Academic Performance in Pre-Dental Education
- Dental Education General Point Average
- Interview and/or letters of recommendation
- National Dental Boards Examination
- Professional Experience & Academic Activities
- Research Experience
- Extracurricular Activities

Each program director appoints an admission committee that evaluates all completed applications and interviews those candidates that meet the requirements established by the residency program. Once candidates have been interviewed, the results are sent to the Office the Assistant Dean for Graduate Dental Education.

The Office of the Assistant Dean for Graduate Dental Education appoints and Admissions and Promotions Committee comprised of the Director of the Office of Graduate Programs, the Dean for Student Affairs, program´s directors or their representatives, graduate students, and/ or a representative from the Counseling and Guidance Office. All applications are reviewed by the committee. Before submitting a final recommendation for admission to the Dean of the School of Dental Medicine.

Program	Length of Curriculum	Maximum Time Allowed for the Completion of the Degree
Post DMD Certificates:		
General Dentistry	1	1.5
General Dentistry (optional 2nd year)	1	1.5
Pediatrics Dentistry	2	3
Oral & Maxillofacial Surgery	4	6
Prosthodontics	3	4.5
Orthodontics	3	4.5
MSD in:		
Pediatrics Dentistry	3	4
Oral & Maxillofacial Surgery	5	6
Prosthodontics	4	5.5
Orthodontics	3	4.5

General Requirements

All advanced education program students must attend the program on a full-time basis. The maximum number of years for completion of each degree is as follows:

Graduation Requirements

Residents must satisfactorily pass all required courses and have a minimum grade point average of 3.00, as certified by the Registrar, and comply with the rules and regulation of the School of Dental Medicine, those of the clinical sites and the Resident´s Contractual Agreement.

POSTDOCTORAL CERTIFICATE IN GENERAL DENTISTRY (GPR)

First Year Program

The General Practice Residency (GPR) program of the University of Puerto Rico School of Dental Medicine (UPRSD) is a fully accredited residency-training program sponsored by the School of Dental Medicine, Medical Sciences Campus, and affiliated to the University District Hospital in San Juan and the Hospital of the University of Puerto Rico in the municipality of Carolina. Ample experiences are provided in the hospital setting, enabling the graduate to work more efficiently as an integral part of the institutional health team. In addition, students practice at the Postgraduate Clinic of the School of Dental Medicine and at the Puerto Rico Community Network for Clinical Research on AIDS (PR Co NCRA), an agency dedicated to provide care for HIV/AIDS patients. This program has been training residents in advanced general dentistry and delivering comprehensive dental care since July 1988.

The GPR program is designed to provide advanced training in clinical dentistry and applied basic and medical sciences, and to refine the skills necessary for the generalist to provide comprehensive patient care with a high level of competency for all populations groups. It prepares the residents to manage total oral health by providing instruction and experience in the delivery of care to a wide range of ambulatory and hospitalized patients.

The general practice residency training is provided primarily in the context of patient care, in which most of the resident´s time is devoted to direct delivery of oral health care. The program consists of 12 consecutive months of both core and elective components. Clinical work is supplemented by formal educational activities to assure that students achieve program goals and objectives and derive maximum educational value from clinical experiences. Students must pass all courses in the study program in order to qualify for certification.
The program´s three major components are: academic, hospital rotations, and dental services. These include:

Academic
- Lectures - 4 hours/week
- Seminars - 1 hour/week
- Journal club - 1 hour/week
- Case presentations and discussions - 1 hour/week
- Physical Diagnosis Course - 3 hours/week/1st trimester

Hospital Rotations
- Emergency Medicine - 2 weeks
- Internal Medicine - 2 weeks
- Anesthesiology - 3 weeks
- Oral and Maxillofacial Surgery - 1 week
- Emergency Service - approximately 5 days per month

Dental Services

Hospital Dental Clinics - 4 days per week throughout the year for outpatient and inpatient care.
Consultations - 1 hour/week, or as required in emergency cases.
School of Dental Medicine Dental Clinic - 1 day per week.

Graduation Requirements

Residents must satisfactory pass all required courses and have a minimum grade point average of 3.00, as certified by the Registrar.

INTERSHIP IN GENERAL PRACTICE RESIDENCY (SPECIAL SIX-MONTH TO A YEAR PROGRAM)

In addition to the first year Postdoctoral Program in General Practice Residency (G.P.R.), the School of Dental Medicine (S.D.M.) offers a six-month to a year special program, which is not conducive to a degree or diploma. Students receive a certificate of the program. This program is designed for foreign dentists interested in the regular postdoctoral education program.

PROG 9515 - (Section 005) - Professional Studies in Dentistry - 0 crs.

POSTDOCTORAL CERTIFICATE IN GENERAL DENTISTRY

TOTAL CREDIT HOURS: 33 SEMESTER C.H. +10 TRIMESTER C.H.

PROG 9108	Physical Diagnosis	3 tr
PROG 9107	Conscious Sedation for Dental Patients	3 tr
PHAR 8515	Pharmacology and Therapeutics	2
PROG 9105	Oral and Maxillofacial Surgery Clinic	2
PROG 9111	Comprehensive Patient Care Clinic I	2
PROG 9112	Comprehensive Patient Care Clinic II	2
PROG 9113	Clinical Sciences Seminar I	2
PROG 9114	Clinical Sciences Seminar II	2
PROG 9117	Gerodontology	2 tr
PROG 9101	Patient Care Clinic I	2
PROG 9102	Patient Care Clinic II	2
PROG 9121	Dental Literature Review I	2
PROG 9122	Dental Literature Review II	2
PROG 9106	Hospital Protocol	2 tr
PROG 9115	Internal Medicine Rotation	0 tr
PROG 9100	Anesthesiology Rotation 4	
PROG 9116	Emergency Rotation	0
PROG 9135	Implant Dentistry for General Practice Residents	3
PROG 9145	New Endodonthic Techniques	3
PROG 9155	Oral Health and HIV	3

POSTDOCTORAL CERTIFICATE IN GENERAL DENTISTRY (SECOND OPTIONAL YEAR)

The University of Puerto Rico School of Dental Medicine offers, to interested first year residents, the opportunity to continue studies leading to a General Practice Residency Program Certificate-Second Year. This second year has been designed to offer training with the purpose of widening the experiences and instruction in the clinical areas and offer courses in dental implants, endodontics, research, statistics, and teaching. Didactic and clinical experiences are also provided in practice administration, research and teaching. Students are required to write a research proposal before graduation and to assume supervisory responsibilities with senior students and first year GPR residents. The academic year will consist of 52 weeks (July 1st to June 30th).

Admission Requirements

All candidates to the Advanced Education Programs must hold a Post Doctoral Certificate in General Dentistry granted by an accredited institution.

Graduation Requirements

Residents must satisfactorily pass all required courses and have a minimum grade point average of 3.00, as certified by the Registrar.

POSTDOCTORAL CERTIFICATE IN GENERAL DENTISTRY (SECOND OPTIONAL YEAR)

TOTAL CREDIT-HOURS:
21 SEMESTER C.H. + 11TRIMESTER C.H.

EDSU 6501 or EDSU 6503	Systematic Planning of Instruction / Principles of Curriculum Design and Development	3tr
PDOC 9005	Statistical Analysis Applied to Dental Sciences	3tr
PEDO 9436	Research Methods for Residents	2tr
PROG 99136	Advanced Implant Dentistry for General Practice Residents	3
PROG 9146	Advanced Endodontic Techniques	3
PROG 9151	General Patient Care Clinic I	2
PROG 9152	General Patient Care Clinic II	2
PROG 9156	Advanced Oral Health and HIV	3
PROG 9161	Advanced Concepts in Clinical Sciences I	2
PROG 9162	Advanced Concepts in Clinical Sciences II	2
PROG 9175	Clinical Elective for Second Year Residents	0
PROG 9185	Clinical Supervision Rotation	2
PROG 9185	Administration of Oral Health Services	3tr
PROG 9187	Journal Club	2

POSTDOCTORAL CERTIFICATE IN ORAL AND MAXILLOFACIAL SURGERY

The Postdoctoral Certificate in Oral and Maxillofacial Surgery Program was established in July, 1963. The program consists of a minimum of four consecutive years (48 months) of progressive educational experiences and may lead to a master's degree if candidate fulfills additional requirements. It meets the requirements of the Council on Dental Education of the American Dental Association and the requirements for examination and certification by the American Board of Oral and Maxillofacial Surgery. The program uses the facilities and resources of the School of Dental Medicine and is affiliated to the University District Hospital, the Pediatric University Hospital and the San Juan Municipal Hospital. Two residents are accepted every year.

The first year of the program exposes residents to fundamental knowledge related to the evaluation of patients in the hospital environment. On call duty every third night at the emergency room, work with medically compromised patients at the outpatient clinic, a physical diagnosis course with second year medical students, seminars, literature reviews and case presentations, and an advanced pathology course provide basic knowledge and skills for oral and maxillofacial surgery diagnosis and treatment. Residents are also introduced to basic research concepts, biostatistics, and scientific methodology so that they may apply them in future situations along their professional lives.

The second year consists of rotations in the medical departments of Anesthesiology (4 months), Internal Medicine (2 months), and Neurosurgery (2 months). During the second year, residents also participate in the outpatient clinic and in seminars, literature reviews, and a case presentation course.

The third year includes rotations in Tumor Service (1 month), Trauma Service (2 months), and the Surgical Intensive Care Unit (1 month) of the General Surgery Department. Residents also have elective rotations in the Oto Head and Neck Surgery Department (1 month) and in Dermatology (1 month). On the third year, residents work towards the mastery of basic oral and maxillofacial surgery principles, evaluation of the medically compromised patient, treatment of complicated odontectomies, periodontal surgery, dental implants, benign tumors of the oral cavity, fractures of the facial skeleton, debridement and suturing of oral and facial lacerations, and mastering intravenous sedation techniques.

The fourth year seeks to refine surgical techniques. Residents are expected to treat conditions such as congenital and acquired anomalies of the mouth and face, develop expertise in reconstructive procedures of the maxillofacial area, understand and apply the principles of bone grafting, skin transplantation, and the use of alloplastic implants; as well as evaluation and treatment of facial plastic surgical procedures (cosmetic surgery). Each resident must complete a significant publishable research project on a clinical subject related to oral and maxillofacial surgery.

The program consists of 48 consecutive months of full time study. The following courses must be approved in order to obtain certification. The faculty may add or eliminate courses to meet particular circumstances. Participation is encouraged in other relevant courses. For

detailed information regarding available courses and/or rotations, contact the School of Dental Medicine. Interested candidates must submit and application through the Postdoctoral Application Support Service (PASS) in addition to the application form provided by the School of Dental Medicine.

Graduation Requirements

Residents must pass all required courses satisfactorily and have a minimum grade point average of 2.75, as certified by the Registrar.

INTERNSHIP IN ORAL AND MAXILLOFACIAL SURGERY (SPECIAL SIX-MONTH TO A YEAR INTERNSHIP PROGRAM)

Residents the four year Post-Doctoral Program in Oral and Maxillofacial Surgery, the School of Dental Medicine offers a six-month to a year special program which is not conductive to a degree, certificate, or diploma. Students receive an official letter of completion of the program. The program provides interested foreign dentists, the basic didactic and clinical experiences related to the latest concepts, diagnostic methods, modalities of treatment, and surgical techniques in the field of Oral and Maxillofacial Surgery.

- PROG 9515 - (Section 001)-Professional Studies in Dentistry - 0 crs.

POSTDOCTORAL CERTIFICATE IN ORAL AND MAXILLOFACIAL SURGERY

TOTAL CREDIT HOURS: 74 SEMESTER C.H. + 5 TRIMESTER C.H.

CIOM 9511	Seminars, Review of Literature Case Presentations I	4
CIOM 9512	Seminars, Review of Literature Case Presentations II	4
CIOM 9521	Seminars, Review of Literature Case Presentations III	4
CIOM 9522	Seminars, Review of Literature Case Presentations IV	4
CIOM 9531	Seminars, Review of Literature Case Presentations V	4
CIOM 9532	Seminars, Review of Literature Case Presentations VI	4
CIOM 9541	Seminars, Review of Literature Case Presentations VII	4
CIOM 9542	Seminars, Review of Literature Case Presentations VIII	4
CIOM 9611	Hospital Procedures I	2
CIOM 9612	Hospital Procedures II	2
CIOM 9621	Hospital Procedures III	2
CIOM 9622	Hospital Procedures IV	2
CIOM 9631	Hospital Procedures V	2
CIOM 9632	Hospital Procedures VI	2
CIOM 9641	Hospital Procedures VII	2
CIOM 9642	Hospital Procedures VIII	2
MEDI 9300	Physical Diagnosis	3
CIOM 9460	General Anesthesia Rotation	3
CIOM 9830	Theory and Practice of Deep Sedation General Anesthesia	3
CIOM 9731	Cosmetic and Reconstructive Surgery of the Maxillofacial Region I	2
CIOM 9741	Cosmetic and Reconstructive Surgery of the Maxillofacial Region II	2
CIOM 9742	Cosmetic and Reconstructive Surgery of the Maxillofacial Region III	2
PEDO 9436	Research Methods for Residents	2 tr
PDOC 9005	Statisticals Analysis Applied to the Dental Sciences	3 tr
CIOM 9847	Research Completion Project	6
BIOR 9005	Advanced Oral Biology Core Course	5

The following additional courses are also required for certification:

- Advanced Cardiac Life Support (ACLS)
- Advanced Trauma Life Support (ATLS)

Required Rotations 12 Month Total

	Month
Neurosurgery	2
General Surgery	4
General Anesthesia	4
Medicine	2

Requirement to fulfill master's degree:

CIOM 9840	Thesis	6

POSTDOCTORAL CERTIFICATE IN PROSTHODONTICS

The Postdoctoral Certificate in Prosthodontics Program was established in October, 1990. The program consists of a minimum of three consecutive years (33 months) of progressive educational experiences leading to a Postdoctoral certificate in Prosthodontics. The program also offers the opportunity to obtain a Master of Science in Dentistry (M.S.D.) degree, with the completion of additional requirements. It meets the accreditation requirements of the Council on Dental Education of the American Dental Association and the prerequisites for examination and certification by the American Board of Prosthodontics. The program uses the resources of the University of Puerto Rico School of Dental Medicine and is affiliated to the University District Hospital.

The first year provides students the fundamental knowledge related to the treatment of prosthodontic patients. Residents work with healthy and medically compromised patients and participate in seminars, treatment planning boards, lectures, laboratory experiences, and formal courses in pathology, statistics, research protocols, pharmacology, and gerontology.

Most of the second year of the program, is devoted to clinical experiences in the areas of fixed, removable, and maxillofacial prosthodontics, temporomandibular joint related disorders, and prosthetic reconstruction with dental implants. The third year of the program focuses on clinical experiences, teaching and the completion of a research project.

Other program activities include clinical instruction, lecturing to undergraduate students, journal club, cleft palate and lip team conferences, basic cardiac life support courses, continuing dental education courses, and presentation of a table clinic at the annual meeting of the College of Dental Surgeons of Puerto Rico. Strong emphasis is given to research experiences; a research project and a paper for publication are also required for graduation.

GRADUATION REQUIREMENTS

The resident must pass all courses satisfactorily and have a minimum grade point average of 3.00, as certified by the Registrar.

INTERSHIP IN PROSTHODONTICS (SPECIAL SIX-MONTH TO A YEAR PROGRAM)

Besides the three year Postdoctoral Program in Prosthodontics, the S.D.M. offers a six-month to a year special program, which is not conducive to a degree, certificate or diploma. This program may be a six-month or a year rotation. Students receive an official letter of completion of the program. The program is designed for foreign students interested in the regular postdoctoral education program.

- PROG 9515 - (Section 004)-Professional Studies in Dentistry - 0crs.

POSTDOCTORAL CERTIFICATE IN PROSTHODONTICS

TOTAL CREDIT HOURS: 127 SEMESTER C.H. +7 TRIMESTER C.H.

REST 9001	Complete Dentures Seminar I	2
REST 9002	Complete Dentures Seminar II	2
REST 9011	Removable Partial Dentures Seminar I	2
REST 9012	Removable Partial Dentures Seminar II	2
REST 9021	Fixed Partial Dentures Seminar I	2
REST 9022	Fixed Partial Dentures Seminar II	2
REST 9031	Maxillofacial Prosthetics Seminar I	2
REST 9032	Maxillofacial Prosthetics Seminar II	2
REST 9041	Biomedical Sciences Seminar I	2
REST 9042	Biomedical Sciences Seminar II	2
REST 9051	Dental Implants I	2
REST 9052	Dental Implants II	2
REST 9061	Research Project I	.5
REST 9062	Research Project II	.5
REST 9071	Post Graduate Prosthodontics Clinic I	9
REST 9072	Post Graduate Prosthodontics Clinic II	9
REST 9095	Introduction to Prosthodontics Laboratory	2
REST 9081	Occlusion Seminar I	2
REST 9082	Occlusion Seminar II	2
BIOR 9005	Advanced Oral Biology Core Course	5
PDCO 9005	Statistical Analysis Applied to the Dental Sciences	3 tr
PROG 9117	Gerodontology	2 tr

PEDO 9436	Research Methods for Residents	2 tr
REST 9003	Complete Dentures Seminar III	2
REST 9004	Complete Dentures Seminar IV	2
REST 9013	Removable Partial Dentures Seminar III	2
REST 9014	Removable Partial Dentures Seminar IV	2
REST 9023	Fixed Partial Dentures Seminar III	2
REST 9024	Fixed Partial Dentures Seminar IV	2
REST 9033	Maxillofacial Prosthetics Seminar III	2
REST 9034	Maxillofacial Prosthetics Seminar IV	2
REST 9043	Biomedical Sciences Seminar III	2
REST 9044	Biomedical Sciences Seminar IV	2
REST 9063	Research Project III	.5
REST 9064	Research Project IV	.5
REST 9073	Post Graduate Prosthodontics Clinic III	9
REST 9074	Post Graduate Prosthodontics Clinic IV	2
REST 9083	Occlusion Seminar III	2
REST 9084	Occlusion Seminar IV	2
REST 9101	Treatment Planning and Therapy Seminar I	2
REST 9102	Treatment Planning and Therapy Seminar II	2
REST 9103	Treatment Planning and Therapy Seminar III	2
REST 9104	Treatment Planning and Therapy Seminar IV	2
REST 9105	Treatment Planning and Therapy Seminar V	2
REST 9106	Treatment Planning and Therapy Seminar VI	2
REST 9075	Post Graduate Prosthodontics Clinic V	9
REST 9076	Post Graduate Prosthodontics Clinic VI	9

Requirements to fulfill master´s degree:

PEDO 9500	Development of Research Project	3
PEDO 6560	Statistical Inference in Dentistry	3tr

Requirements to fulfill master´s degree:

PEDO 9500	Development of Research Project	3
PEDO 6560	Statistical Inference in Dentistry	3tr

POSTDOCTORAL CERTIFICATE IN PEDIATRIC DENTISTRY

The program of advanced education in Pediatric Dentistry is designed to prepare specialists to cope with the oral health problems of children and adolescents. The educational experiences are aimed at expanding competency in the areas of behavior management, treatment of handicapped children, preventive and interceptive treatment of malocclusion, dental practice in the hospital setting, conscious sedation, general anesthesia, biostatistics, clinically applied basic sciences, dental education, and application of modern concepts of prevention, and comprehensive dental treatment. The program meets the accreditation requirements of the Commission on Dental Accreditation and the requirements for examination and certification by the American Board of Pediatric Dentistry.

The program consists of two (2) consecutive full-time years beginning July 1st through June 30th, leading to a Postdoctoral Certificate in Pediatric Dentistry. The program also offers the opportunity to obtain a Master of Science in Dentistry (M.S.D.) degree, with the completion of additional academic requirements. Instruction and clinical practice are conducted at the School of Dental Medicine, and the Pediatric Hospital. Formal courses of instruction are provided in related subjects by means of seminars, lectures, discussions, and practical exercises.

Required clinical experiences include advanced pediatric dentistry clinic, special pediatric dentistry clinic, physical diagnosis and interceptive orthodontics. Residents spend one month, at the pediatric anesthesia, and pediatric emergency wards and participate in the meeting of the cleft-palate team at the Pediatric University Hospital. Experiences in the operating room and in conscious sedation are also required.

Community extramural experiences include Pediatric Dentistry Community Track of Cantera, a low income area in the city of San Juan. The Cantera Community Track runs parallel to the regular program and empha-

sizes oral health promotion and prevention, as well as restorative treatment.

Students enrolled in the program are required to participate full time and are strongly discouraged from engaging in private practice while in the program. Admission to the program is open to qualified graduates of dental schools accredited by the Council on Dental Education and, to graduates of foreign dental schools who intend to return to their countries of origin as teachers and/or researchers.

The structure and content of the Pediatric Dentistry program follows the guidelines for advanced education programs established by the Council on Dental Education and the American Board of Pediatric Dentistry. The program is subject to review by these groups so that graduates may receive the corresponding privileges.

The Postdoctoral Program in Pediatric Dentistry is guided by three fundamental responsibilities of the University, which are: (a) the expansion of knowledge through research, (b) the dissemination of such knowledge through teaching, and (c) the application of resources to the solution of social problems and needs.

Patients are selected to provide students with a variety of clinical experiences in the areas of interceptive orthodontics, growth and development, syndromes, developmental defects and genetic abnormalities, as well as social and behavior management problems.

The outstanding strengths of the program are:

- The availability and variety of a pool of medically compromised children with dental problems.
- The availability and extensive use of medical consultation during treatment of these children.
- The comprehensive treatment of malocclusion through orthodontic therapy.

The varied backgrounds of the program's full time, clinical, science, and basic science faculty make it possible for the dentist seeking advanced Pediatric Dentistry training to obtain a broad based education.

Graduation Requirements

Resident must pass all required courses satisfactorily and have a minimum grade point average of 3.00, as certified by the Registrar.

INTERNSHIP IN PEDIATRIC DENTISTRY (SPECIAL SIX-MONTH TO A YEAR PROGRAM)

Besides the three year Postdoctoral Program in Pediatric Dentistry, the S.D.M. offers a six-month to a year special program, which is not conductive to a degree, certificate or diploma. This program may be a six-month or a year rotation. Students receive an official letter of completion of the program. The program is designed for foreign students interested in the regular postdoctoral education program.

- PROG 9515 - (Section 003)-Professional Studies in Dentistry - 0crs.

POSTDOCTORAL CERTIFICATE IN PEDIATRIC DENTISTRY

TOTAL CREDIT HOURS: 38 TRIMESTER C.H. + 10 SEMESTER C.H.

PEDO 9400	Advanced Pediatric Dentistry Seminar	2
PEDO 9404	Interceptive Orthodontics Seminar	2
PEDO 9408	Advanced Pediatric Dentistry Clinic	3
PEDO 9411	Special Pediatric Dentistry Clinic	2
PEDO 9414	Problems of Handicapped Children	4
PEDO 9436	Research Methods for Residents	2
PDOC 9005	Statistical Analysis Applied to the Dental Sciences	3
PEDO 9439	Pediatric Physical Diagnosis	3 sem
PEDO 9407	Anesthesiology Clerkship	2
PEDO 9409	Advanced Pediatric Dentistry Clinic	3
PEDO 9412	Special Pediatric Dentistry Clinic	3
PEDO 9416	Dental Education	2
PEDO 9424	Interceptive Orthodontics Clinic	2
PEDO 9428	Current Literature Review	2
PROG 9107	Conscious Sedation for Dental Patients	3
BIOR 9005	Advanced Oral Biology Core Course	5 sem

MEDI 7400	Pediatrics	2 sem

Electives:

At least two are required

PEDO 9446	Baby Bottle Tooth Decay Outreach Program	3
PEDO 9447	Community Oral Health	3
REST 9061	Research Project I	.5 sem
REST 9062	Research Project II	.5 sem

Requirements to fulfill master's degree:

PEDO 9500	Development of Research Project	3 sem
PEDO 6560	Statistical Inference in Dentistry	3

POSTDOCTORAL CERTIFICATE IN ORTHODONTICS

The Postdoctoral Certificate in Orthodontics Program consists of three continuous full time years of academic experiences designed to prepare qualified dentists for specialized practice in Orthodontics. The Program meets the requirements of the Council on Dental Education of the American Dental Association and the requirements for examination and certification of the American Board of Orthodontics.

The Program consists of a series of didactic, clinical, and research activities, which are speciafically designed to develop in residents the competencies necessary to excel in the field of Orthodontics. Upon completion of program requirements, a degree of Master of Dental Science and a Postdoctoral Certificate in Orthodontics will be conferred. In those cases in which the student has fulfilled all requirements except the approval of the thesis, only a Postdoctoral Certificate in Orthodontics will be granted.

The program includes traditional training in different types of malocclusions and new treatment modalities such as: treatment of severe craniofacial anomalies, surgical orthodontics, adult and pre-prosthetic orthodontics, pre-surgical orthopedics for cleft lip and palate, functional appliance therapy, and temporomandibular joint disorders.

Graduation Requirements

Residents must pass all required courses satisfactorily and have a minimum grade point average of 3.00, as certified by the Registrar.

INTERNSHIP IN ORTHODONTICS SPECIAL XI-MONTH TO A YEAR PROGRAM

Besides the three-year Postdoctoral Certificate in Orthodontics Program, the School of Dental Medicine offers a special program which is not conducive to a degree, certificate, or diploma. Students receive letter of completion upon finishing the program. The program, seeks to provide interested foreign dentists with basic didactic and clinical experiences related to the latest concepts, diagnostic methods, and treatment modalities in the field of Orthodontics.

- PROG 9515 - (Section 0020) - Professional Studies in Dentistry - 0 crs.

POSTDOCTORAL CERTIFICATE IN ORTHODONTICS

TOTAL CREDIT-HOURS: 108.5 SEMESTER C.H. + 8 TRIMESTER C.H.

First Year

ORTO 9101	Orthodontic Literature Review I	1
ORTO 9102	Post Graduate Orthodontic Laboratory I	3
ORTO 9103	Orthodontic Post Graduate Clinic I	8
ORTO 9104	Craniofacial Growth and Development	2
ORTO 9105	Orthodontic Diagnosis and Treatment Planning I	10
ORTO 9106	Principles of Biomechanics in Orthodontics	1
ORTO 9107	Case Presentation Seminar I	2
BIOR 9005	Advanced Oral Biology Core Course	5
PEDO 9436	Research Methods for Residents	2tr
ORTO 9201	Orthodontic Literature Review II	2
ORTO 9202	Post Graduate Orthodontic Laboratory II	2

ORTO 9203	Orthodontic Post Graduate Clinic II	8
ORTO 9205	Orthodontic Diagnosis and Treatment Planning II	2
ORTO 9206	Orthodontic Dental Materials	1
ORTO 9207	Case Presentation Seminar II	2
ORTO 9208	Orthodontics Interdisciplinary Seminar I	2
PDOC 9005	Statistical Analysis Applied to the Dental Sciences	3 tr

Second Year

ORTO 9301	Orthodontic Literature Review III	2
ORTO 9303	Orthodontic Post Graduate Clinic III	8
ORTO 9304	Craniofacial Anomalies Seminar I	2
ORTO 9307	Case Presentation Seminar III	2
ORTO 9308	Orthodontic Interdisciplinary Seminar II	2
PEDO 6560	Statistical Inference in Dentistry	3 tr
REST 9061	Research Project I	.5
ORTO 9401	Orthodontic Literature Review IV	2
ORTO 9403	Orthodontic Post Graduate Clinic IV	8
ORTO 9404	Craniofacial Anomalies Seminar II	2
ORTO 9407	Case Presentation Seminar IV	2
ORTO 9408	Orthodontic Interdisciplinary Seminar III	2
REST 9062	Research Project II	.5

Third Year

ORTO 9501	Orthodontic Literature Review V	2
ORTO 9503	Orthodontic Post Graduate Clinic V	8
ORTO 9507	Case Presentation Seminar V	2
ORTO 9508	Orthodontic Interdisciplinary Seminar IV	2
REST 9063	Research Project III	.5
ORTO 9601	Orthodontic Literature Review VI	2
ORTO 9603	Post Graduate Orthodontic Clinic VI	8

Required to fulfill master's degree:

ORTO 9611	Thesis	10

Course Descriptions
Faculty

SCHOOL OF DENTAL MEDICINE

COURSE DESCRIPTIONS

First Professional Level: Doctor of Dental Medicine (DMD)

CBIO 7100
Biochemistry. Eighty one (81) hours.

This is a lecture-type course with the purpose of facilitating the learning of basic biochemical concepts and knowledge that would allow the students to understand, at the molecular level, the normal and pathological processes that occur in human beings.

CBIO 7110
Gross Anatomy. One hundred and eight (108) hours.

The course presents human macroscopic anatomy with an emphasis on regions and topics of concern to the dental curriculum. Head and neck are treated in the greatest detail, followed by the proximal segments of the upper limb, focusing particularly on the brachial plexus and thoracic viscera. Abdominopelvic viscera are presented as an overview. Images (radiographs, CT, MRI) and clinical relevance are incorporated, especially in head and neck and to a lesser degree in coverage of thorax. The peripheral nervous system is treated with special focus on pathways of pain sensation. Instructional methods are structured lectures, in power point, followed by supervised dissection of cadaveric specimens.

CBIO 7120
General Histology. Eighty (80) hours.

This course is intended to provide the dental student with a thorough knowledge of the normal microscopic structure of cells, tissues and organs. Throughout the course, special emphasis is placed in the correlation of structure and function at both, light and electron microscopes levels. A series of lectures are devoted to the topic of Cell Biology in order to provide the student with the basic ultrastructural knowledge to understand and integrate the details of function and molecular structure learned in other courses such as Biochemistry, Physiology, Pathology, Immunology and Pharmacology.

CBIO 7130
Neuroanatomy. Sixty (60) hours.

The course is a complete presentation of basic human Neuroanatomy with more emphasis given to cranial nerves and mechanisms of tactile sensation. Principal instructional methods are lectures and laboratories, which focus on study of prosections of brain specimens.

CBIO 7140
Oral Histology and Embryology. Forty (40) hours. Pre-requisite: CBIO 7120.

This course is designed to provide the student with sufficient knowledge in the development and histology of those parts of the face and mouth that he will encounter throughout his career in Dentistry. Emphasis will be placed on the clinical applications areas which will be studied throughout the course. The course is based on lectures and laboratory with microscopic exercises.

CBIO 7150
Microbiology. Eighty four (84) hours.

The course emphasizes fundamental principles of the genetics, growth, metabolism and death of microbes. These principles are balanced with medical and dental aspects of host-parasite relations, immunologic phenomena, and the biological and clinical manifestations induced by major pathogens. Stress is placed on organisms related to dental caries and periodontal and periapical diseases. Further, the student should understand the influence of microorganisms and associated biologic phenomena have on patient health. The course is based on lectures, laboratory exercises and clinical correlations.

CBIO 7160
Basic Human Physiology for Dental Students. Ninety two (92) hours. Pre-requisites: CBIO 7100, CBIO 7110, CBIO 7120, CBIO 7130, CBIO 7140, CBIO 7150.

The course will offer basic physiological knowledge necessary to understand the essential facts and concepts of human physiology, in order to be able to make clinical judgments on a rational scientific basis. The course will be offered using different teaching modalities which include lecture and group discussions.

CBIO 7170
General Systemic Pathology. Fifty seven (57) hours. Pre-requisites: CBIO 7100, CBIO 7110, CBIO 7120, CBIO 7130, CBIO 7140, CBIO 7150.

General and Systemic Pathology is a lecture-type course, which will present the knowledge of fundamental disease processes that affect the cells, tissues and organ systems of the body.

CBIO 7180
Oral Pharmacology and Therapeutics. Seventy four (74) hours.

Oral Pharmacology and Therapeutics emphasizes basic aspects of Pharmacology with emphasis on dental applications. It is delivered by the faculty of the Department of Pharmacology and Toxicology of the Medical Sciences Campus School of Medicine, with the collaboration of several faculty of the School of Dentistry. This course is intended to acquaint the student with the basic principles of Pharmacology emphasizing the mechanisms of action, secondary effects and drug interactions and prescriptions and drugs in common use Dentistry and Medicine. The course is taught using lectures and clinical correlations.

CBIO 7190
Integration of Biomedical Sciences into Dental Practice. Fifty (50) hours.

The purpose of this course is to provide the dental student with the opportunity to correlate basic science courses and topics with the dental clinical management of patients presenting medical conditions. The course will be conducted using the Case Based Learning Strategy.

CBIO 7300
Remedial Course for National Board Dental Examination Part I. Zero (0) credit. Pre-requisites: Approved Third Year.

This is an independent study course for students who have not approved the National Board Dental Examination Part I after finalizing their Junior Year. Approval of Part I of this exam is required for promotion to Senior Year. This course will offer an intensive study period to prepare for this exam.

Grading System: Passed (P), Not Passed (NP)

DESP 7117
Introduction to Professional Development I. Twelve (12) hours.

This introductory course using lectures and seminar, expose the student to the general characteristics that defines the dentists as a health professional. It will also expose the student to the dentist role in community health and to health and basic infection control concepts.

Grading System: Passed (P), Not Passed (NP)

DESP 7127
Introduction to Professional Development II. Twenty two (22) hours.

The course will provide the dental student with an understanding of the health management of patients following universal precautions and reducing to the least the probability of cross-contamination or exposure to any infectious disease or health hazard. The course will introduce the occupational hazards in the dental environment and will provide an understanding of the importance of ergonomics in the dental setting. The course will provide the student with concepts related to the ethics in the treatment of patients and the legal aspects of federal and state laws related to infection control and risk management. The methodology of the course includes lectures, discussion, use of audiovisual aids, presentation of topics by students, projects performed by students and "hand-on" exercises in the clinical setting.

DESP 7237
Evaluation of Scientific Literature and Epidemiology. Twenty (20) hours.

The purpose of this course for the dental students is to develop the basic skills necessary to interpret scientific literature. The course topics are presented through three general components: Research Design, Biostatistics, and Epidemiology. The course is conducted using lectures, exercises and group discussion.

DESP 7247
Introduction to Community Dentistry. Twenty (20) hours.

This course offers the students the opportunity to analyze the community concept as the focus of attention and analysis for health care. It presents public health as an integral model for the interpretation of health concepts and health priorities in the community. In addition, team work is emphasized as essential in community health problem-solution oriented strategies.

DESP 7357
Professional Development III. Sixty (60) hours. Pre-requisites: DESP 7117, DESP 7127.

This course has two components. The First Part is concerned with the discussion and analysis of those laws which govern the dentist's professional relationship with the Commonwealth of Puerto Rico, with the patient, and with colleagues. It also introduces the dental student to a series of ethical issues within Dentistry and provides the opportunity to apply ethical principles to clinical situations. The Second Part of the course provides the necessary knowledge and skills to promote effective management of a dental practice. It will develop in the dental student the basic skills to relate effectively with peers, staff and patients; to apply the principles of management and to develop strategies to establish and maintain a dental practice.

DESP 7405
History of Dentistry. Twenty four (24) hours. Pre-requisites: Approved Third Year Curriculum.

This is an elective course directed to Fourth Year students. The course will cover the subjects of pre-history and history of the human beings from the perspective of Dentistry. Also, the development of the dental profession and its contribution to the improvement of mankind will be discussed. This course will be offered through lectures, group discussions, student's presentations, analysis and discussion of documentaries, as well as, visits to museums and historical and archaeological sites, among others.

DESP 7406
Management and Financial Aspects of the Dental Practice. Twenty four (24) hours. Pre-requisites: Approved the Third Year of the curriculum.

This is an elective course which will expand and elaborate on the topics taught in the required Private Practice Administration course. The students will also acquire knowledge and develop skills in areas such as basic economics, credit, financial planning, insurance, marketing contracts and related laws for the optimum functioning in the administration of the dental offices. The course consists of topic presentations, lectures, group discussion exercises and individual practice.

DESP 7407
Prepaid Plans in Dentistry. Thirty six (36) hours. Pre-requisites: Approved Third Year of studies.

This course will provide the dental students with an understanding of the prepaid dental plans in the practice of Dentistry. It will introduce the past, present and future of prepaid plans, including background information and understanding of the health insurance industry profile and the regulation agencies in Puerto Rico. The course will provide students with concepts related to dental coverage, policies and dental provider's agreement, including quality assurance and dental managed care. The methodology of the course includes lectures, discussion panels, laboratory experiences, and presentation of projects performed by students. The laboratory will provide students with the opportunity to practice the theory presented in the course utilizing a dental computer program, as well as practicing in a dentist's office.

DESP 7411
Research Experiences in Dentistry. Thirty six to one hundred and twenty (36-120) hours. Pre-requisites: Third Year approved.

This course provides dental students the opportunity to explore a variety of research experiences. These experiences include activities in research laboratories, dental schools or other institutions in Puerto Rico, the United States or other countries. Knowledge and skills in research methods are developed through active participation in research activities under the supervision of a mentor.

DESP 7467
Dental Practice Externship. One hundred and twenty (120) hours. Pre-requisites: First, Second and Third Year approved.

This extramural dental experience course is directed to the senior dental students. The course is designed with the purpose that students develop awareness and better understanding of dental health problems in Puerto Rico as well as positive attitude and willingness to contribute to the solution of such problems. At the end of the course they will understand different primary dental health care services modalities being given to underserved populations. In addition, the student will be able to deliver services and apply the experiences gained to refine, integrate and enhance knowledge, skills and attitudes necessary to perform comprehensive patient care. This experience may also encourage the student to consider serving in underserved areas in the future, and develop their cultural competence in the delivery of oral health care.

EVDI 7105
Introduction to Assessment and Diagnosis of the Patient. Thirty eight (38) hours.

Through lectures and class discussions, this course is intended to introduce the student to the art of history taking and patient interviewing. The student will develop skills in communication that will enable him or her to establish the proper rapport with the patient and arrive at an initial assessment. The student will also be introduced to some aspects of gathering clinical data such as recording vital signs. The course will also offer the theory and practice of basic cardiac life support (CPR) and its protocols. At the end of the course, the student will have the opportunity to practice his/her interviewing skills with real standardized patients in a clinical setting.

EVDI 7115
Human Development and Behavioral Management. Forty four (44) hours. Pre-requisite: DESP 7117.

This course will study primarily the human being in his life cycle. It recognizes the human being as an integral self with equal intensity in the psychosocial and biophysiologic aspects. Understanding these two dimensions is of vital importance in the process of establishing a treatment plan that satisfies the patient bio-psychosocial needs. In the Second Part of the course, knowledge regarding human growth and development will be applied to the behavioral management of the patient. This will establish an effective dentist-patient relationship, resulting in an uplifting clinical and interpersonal dental experience for both the patient and the dentist. In addition to seminars and lectures, Problem Based Learning will be used as a primary instructional strategy during this course.

EVDI 7125
Dental Anatomy and Functional Occlusion. One hundred and twenty seven (127) hours.

This is a two part course consisting of lectures and demonstrations concurrent with laboratory sessions. In the First Part of the course, the students will have the opportunity to learn the morphology and anatomy of the human teeth, their function and their immediate associated parts. The student will reconstruct in wax the coronal portion of permanent maxillary and mandibular teeth following the correct contour and morphology. The Second Part consists of a series of presentations on the basic knowledge of occlusion. The student will mount study casts in a semi-adjustable articulator and wax-up opposing posterior quadrants on the casts. The cast will be waxed to a functional occlusion using a modified addition waxing technique according to the setting of the articulator.

EVDI 7135
Dental & Craniofacial Imaging. Twenty (20) hours. Pre-requisite: CBIO 7110. Co-requisite: EVDI 7125.

This is a lecture and seminar course designed to familiarize the student with the physical nature of X-Ray radiation, radiation health, types of radiographs, radiographic techniques, and radiographic interpretation for the practice of Oral and Maxillofacial Radiography. Concepts of radiographic processing techniques, quality evaluation, and rectification procedures will be discussed.

EVDI 7245
Development of the Orofacial Complex. Sixteen (16) hours. Pre-requisites: CBIO 7110, CBIO 7120, CBIO 7140, CBIO 7160.

This course is designed to provide the sophomore dental student with basic knowledge in physical growth and development of the craniofacial complex. This field

constitutes essential knowledge for the practice of Dentistry specially in the areas of Orthodontics and Pedodontics. The course includes lectures and discussion of topics from recent scientific literature.

EVDI 7255
Oral Pathology. Twenty eight (28) hours. Pre-requisite: CBIO 7170.

Through lectures and group discussion of individually assigned subjects, clinical and microscopic documentation of oral diseases are analyzed. It includes oral manifestation of systemic diseases in the following categories: (1) Disturbances in development and growth, including neoplasia; (2) Diseases of microbial origin, including dental caries; (3) Injuries and repair; (4) Disturbances in metabolism, including nutrition; and (5) Diseases of specific systems, such as bones and joints, blood and blood-forming organs, periodontium, skin, nerves, and muscles.

EVDI 7265
Oral Diagnosis and Treatment Planning. Fifty seven (57) hours. Pre-requisites: First Year Curriculum, and Second Year Curriculum (weeks 1 to 20).

This is an integrated course with the participation of faculty from the Restorative and Surgical Sciences Departments. The main goal of the course is to initiate students in the development of the diagnosis and treatment planning competency. Concepts will be presented through lectures, seminars, and case presentations. These concepts include extra and intraoral examinations, charting, records and diagnosis aids. Theory and practice in the development of a treatment plan is also included in the course.

EVDI 7275
Assessment and Diagnosis of the Child and Adolescent. Twenty seven (27) hours. Pre-requisites: EVDI 7115, EVDI 7245.

This is a lecture, discussion and laboratory integrated course with the participation of faculty from the Orthodontics and Pediatric Sections focused on the evaluation and diagnosis of the child and adolescent patient. The concept of parental consent, history taking, orofacial exam, habits, etiology of malocclusion, radiology and caries assessment in children as well as detection and report of signs of abuse and neglect will be presented.

PRET 7106
Cariology. Twelve (12) hours.

This is a lecture and seminar type course which will discuss fundamental biological, epidemiological and clinical aspects of dental caries. The knowledge provided in the Cariology course is essential for understanding the rational behind preventive, diagnostic, and therapeutic methods for the control of dental caries.

PRET 7116
Preventive Dentistry. Forty four (44) hours. Pre-requisite: CBIO 7100.

The concepts of prevention, philosophy of Preventive Dentistry, levels of prevention and primary preventive measures are discussed in this course. Emphasis is given in the maintenance of oral hygiene by education, products, and techniques. Oral prophylaxis instrumentation techniques and application of nutritional concepts as part of primary prevention and oral health maintenance are also presented in the course. This course is presented by lectures, seminars, laboratories, and clinical experience.

PRET 7126
Introduction to Restorative Dentistry and Principles of Intracoronal Restorations. Two hundred and ten (210) hours. Pre-requisites: CBIO 7170, EVDI 7125, PRET 7106.

This course consists of a series of lectures and laboratories with natural and ivorine teeth, dental simulator, patient and clinical experiences intended to provide the students with the basic knowledge and skills necessary for an adequate performance in the field of Operative Dentistry during their clinical practice. This course will cover the basic treatment of carious lesion that need to be restored with composite resin, amalgam, cast gold and porcelain dental materials. It has been designed to address from the minimal invasive interventions to more complex situations of severely affected teeth. Includes fissure sealants, vital bleaching techniques and an overview on new materials for preventive and aesthetics considerations. Emphasis will be given to the principles of cavity preparation and restoration of individual teeth under preventive philosophy and preservation of tooth structure.

PRET 7136
Clinical Application on Dental Skills. Fifty four (54) hours. Pre-requisites: EVDI 7125, EVDI 7135, PRET 7106, PRET 7116.

This course will introduce the student to the clinic by experiences in three areas: Radiology, Preventive Dentistry, and Functional Occlusion. In the Dental Imaging Rotation Radiograph, taking, processing, mounting and interpretation will be performed. In the area of Preventive Dentistry, the student will perform oral prophylaxis procedures. Diagnostic casts will be prepared and mounted in a semi-adjustable articulator in the area of Functional Occlusion.

PRET 7216
Treatment for the Child and the Adolescent. Seventy nine (79) hours. Pre-requisite: EVDI 7275.

This is an integrated course involving faculty from the sections of Pediatric Dentistry and Orthodontics which includes lectures, demonstration and laboratory exercises. It encompasses all contemporary concepts in managing the oral health of children and adolescents. The course begins during the last months of the sophomore year and extends through the first semester to adequately bridge the gap between pre-clinical and clinical levels.

PRET 7246
Removable Prosthodontics. Two hundred and fifty three (253) hours. Pre-requisite: EVDI 7125.

This lecture and laboratory preclinical course provides dental students with the knowledge of the clinical and the laboratory procedures necessary to be able to construct removable complete and partial dentures. The teaching material is presented in a sequential and integrated manner combining and relating it to other laboratory and clinical procedures which are pertinent in Removable Prosthodontics. Preventive techniques in design couple with sound biomechanical principles in the construction of RPD are stressed in this course. Students are also required to do independent study to expand their knowledge and to correlate the laboratory with the clinical environment.

PRET 7257
Periodontics. Fifty five (55) hours. Pre-requisites: First Year Curriculum, EVDI 7245, EVDI 7255, EVDI 7265.

This is a lecture and discussion course which presents students the general concepts of the theoretical basis of periodontal practice and the science and art of the surgical procedures. During the course the student will be able to integrate the philosophy of comprehensive treatment of various periodontal, dental restorative, endodontic, orthodontic, prosthodontic, and medical measures that are necessary to treat periodontal problems. It is expected that students formulate plans to suit the physical, psychological, and financial needs of the individual patient.

PRET 7266
Oral Surgery. Twenty four (24) hours.

Through lectures and group discussion is expected that students will learn the basic principles of undergraduate Oral Surgery. The student is introduced to the subject in a progressive sequence, from the first meeting with the patient to the removal of teeth. Problems and complications related to the patient are presented.

PRET 7276
Fixed Prosthodontics. Two hundred and fifty (250) hours. Pre-requisite:EVDI 7125.

This course through lectures, discussion, laboratory, and clinical practice presents the principles of fundamentals in Fixed Prosthodontics. All basic crown and fixed prosthodontics dental preparations and restoration techniques are discussed, studied, demonstrated and done in order to prepare the student for an optimal clinical performance in the comprehensive treatment of dental patients. The mechanical, biological and dental material considerations related to Fixed Prosthodontics will be emphasized based on the concept that a dental restoration is a biological necessity.

PRET 7277
Pediatric Dental Treatment. Thirty two (32) hours. Pre-requisites: First Year Curriculum, EVDI 7275.

This course is designed to provide the sophomore dental student with all the contemporary concepts in managing the oral health of non medical compromised children and adolescents. It includes topics of restorative techniques, pulpal therapy in primary and mixed dentition, space maintenance, behavior management and local anesthesia

techniques applied to pediatric dentistry. Emphasis is made in the importance to integrate all information compiled through the diagnostic records and the clinical exam in order to design and deliver a comprehensive treatment to the patients. The course includes lectures, demonstrations, assigned readings and laboratory exercises.

PRET 7286
Apprehension and Pain Control. Twenty two (22) hours. Pre-requisites: CBIO 7110, CBIO 7130, CBIO 7180, EVDI 7135.

Through lectures, discussion, and clinical demonstrations, students are introduced in the application of the psychological and chemical modalities for the prevention and treatment of pre-operative and post-operative patient apprehension and pain control.

PRET 7296
Endodontics. Seventy six (76) hours. Pre-requisites: First Year Curriculum, EVDI 7255.

This course for dental sophomore students consists of a series of lectures, seminars, demonstrations and laboratory exercises related to the prevention and treatment of pulpal and periapical diseases. The rationale and armamentarium for conventional root canal therapy, vital pulp therapy, apexification, management of pulpal disorders of traumatic origin and endodontic surgical procedures are discussed in this course. Laboratory includes exercises to perform conventional root canal therapy in acrylic teeth. This course is required for the Endodontics Clinical Rotations and the Comprehensive Care Clinic.

PRET 7306
Implant Dentistry Clinical Rotation. Twenty (20) hours. Pre-requisites: Second Year approved. Co-requisites: PRET 7366.

In this course, Dental Medicine student has the opportunity to deal with the clinical and practical aspects of dental implants. Students will integrate Biomedical Sciences and the Theory of Implant Dentistry to the clinical disciplines in order to carry out the necessary diagnostic and therapeutic skills to perform dental implant restorative treatments. The student will develop the skills for the prosthetic dental implant restoration of a simple dental implant case. It is expected that Dental Medicine students recognize dental implants as a primary line of treatment for the management of partial or total edentulism.

PRET 7308
Periodontics Clinical Rotation. Sixty four (64) hours. Pre-requisites: Approval of First and Second Year.

This course will comprise 64 student/patient contact hours, divided in 23 clinical rotations during the Junior Year. During the course the students will be able to integrate into a philosophy of comprehensive treatment the various periodontal, dental, restorative, endodontic, orthodontic, prosthodontic, and medical measures that are necessary to treat periodontal conditions. They will develop the capability and flexibility of formulating plans to suit the physical, psychological, and financial needs of the individual patient. In addition, they provide the initial phase of treatment that will include prophylaxis and oral hygiene instructions with four quadrants of scaling and root planning and a periodontal reevaluation to two periodontal patients.

PRET 7316
Dental Care for the Special Patients. Twenty eight (28) hours.

In the treatment for the special patients the dentist faces many features different from the normal. It is important to understand the basic differences from the normal in order to provide a comprehensive care to this population. This course is designed to provide the undergraduate dental student the basic theoretical knowledge necessary as background for the dental care of the disable patient. The course consists of lectures and discussion sessions on topics related to various physical, mental and emotional handicapping conditions.

PRET 7318
Endodontics Clinical Rotation. Forty seven (47) hours. Pre-requisites: First and Second Year Curriculum.

This course is designed to provide the students with enough patient experience for the development of clinical competence in the field of Endodontics. The clinical experience will substantiate the background of theoretical Endodontics especially in the treatment of pathological pulpal and periapical problems.

PRET 7326
Review for the National Board Dental Examination Part II. Fifty four (54) hours. Pre-requisites: First and Second Year approved.

This is a review course to prepare students for the National Board Dental Examination Part II. Short lectures on the topics covered in the examination, discussion of board type questions, and practice exams will be provided. At the end of the course a practice test will be administered.
Grading System: Passed (P), Not Passed (NP)

PRET 7328
Pediatric Dentistry Clinical Rotation. Fifty five (55) hours. Pre-requisites: EVDI 7275, PRET 7216.

This is a clinical course of one year duration. Students will apply the knowledge and will continue developing skills and techniques regarding Dentistry for the child and adolescent patient presented during the Sophomore didactic course. During this course each student will rotate through the Pediatric Dental Clinic as outlined on the clinical rotation schedule. Two new cases and one recall patient will be assigned by means of the course coordinator.

PRET 7336
Advanced Oral Surgery. Twenty (20) hours. Pre-requisite: PRET 7266.

This course presents advanced and complicated topics about Oral and Maxillofacial Surgery. The Junior students are exposed to the special considerations that should be taken in the diagnosis, management and treatment of Oral and Maxillofacial Pathology, trauma, tempero mandibular joint/tempero mandibular dysfunction, dentofacial deformities and pre-prosthetic surgery. Lectures, case presentations, and discussions are used as the main teaching method.

PRET 7338
Orthodontic Clinical Rotation. Sixty (60) hours. Pre-requisites: EVDI 7275, PRET 7216.

This course will provide the student with a series of clinical experiences that will give them the opportunity to apply the basic knowledge and skills acquired during the Pre-Clinical Orthodontic Training. This course is also intended to give the student the opportunity to develop optimal performance in diagnostic and clinical skills in the prevention, interception, and correction of carefully selected malocclusions in the primary and mixed dentitions.

PRET 7346
Clinical Occlusion and Tempero Mandibular Dysfunction Management. Twenty (20) hours. Pre-requisite: EVDI 7125.

This course will be concerned with basic Anatomy and Physiology of the Stomatognathic System and methods of examining the patient in pain and dysfunction. The course will be offered through lectures and discussion, and the method for solving occlusal problems cases will be illustrated. Procedures for diagnosing temporomandibular joints, occlusal, mandibular muscle, vascular and cranial nerve pathology or dysfunction will be outlined. Different types of temporomandibular joints internal derangement and arthritis will be described and methods of diagnosing them will be presented.

PRET 7348
Preventive Dentistry Clinical Rotation. Forty (40) hours. Pre-requisite: PRET 7116.

This is a clinical course where the students expose the patients to the primary preventive procedures they need and are available today, in the control of caries and periodontal disease. Students are expected to apply all the preventive methods and procedures learned in prior preventive dentistry courses.

PRET 7356
Medical Emergencies. Sixteen (16) hours. Pre-requisites: First and Second Year approved.

The advances in Modern Medicine allow the medically ill patients to live longer and healthier lives; but at the same time, these patients will look for dental care, exposing the dentist to a more medically compromised population. The dentist must be prepared to understand and manage this kind of patient. He must be prepared to evaluate; prevent and manage medical emergency situations that may arise during dental treatment. This course is designed to train the dental students in the evaluation prevention and management of a wide variety of medical

emergencies, through lectures, demonstrations; emergency room rotations, live workshop and emergency drills.

PRET 7358
Operative Dentistry Clinical Rotation. Eighty six (86) hours. Pre-requisites: Approval of First and Second Year.

This course provides the Third Year student with the initial clinical experiences in Operative Dentistry necessary for the development of the competencies expected of graduates. Students will apply and integrate the knowledge acquired in the pre-clinical courses while performing operative procedures with patients in a clinical setting. The course has a duration of one year and is required for the promotion of the student to the Senior Year Comprehensive Care Clinic. During the year the student will perform clinical activities in clinical rotations.

PRET 7366
Implant Dentistry. Twelve (12) hours. Pre-requisites: First and Second Year Curriculum.

This course is an introduction to Dental Implantology as a treatment modality in the management of partial or total Edentulism. It integrates the basic sciences and clinical disciplines in order to present the scientific basis of successful treatment with dental implants. Covers the biological and biomechanical principles of successful treatment with osseointegrated implants. Includes the surgical protocol used for the successful and predictable insertion of dental implants, the evaluation and selection of patients , and treatment planning when considering patients for prosthetic treatment. Treatment options, limitations and possible complications when treating patients with dental implants are also presented. Maintenance of patients with prosthetic treatment over dental implants is also presented. This content is presented through lectures with digital audiovisual aids, case presentations, demonstrations, clinical practice, and laboratory.

PRET 7368
Fixed Prosthodontics Clinical Rotation. Sixty (60) hours. Pre-requisites: EVDI 7125, PRET 7276.

The Third Year clinical course in Fixed Partial Prosthodontics is designed to provide the Junior dental student the clinical experience which will qualify him/her to proficiently select, perform and explain the psychomotor, bio-mechanics and analytical procedures used in this discipline. Emphasis is given to the consideration of the patient as a whole in which optimum oral health is attained and maintained. The Junior Year student will be expected to develop the knowledge, skills, and attitudes necessary to diagnose, prevent, and treat diseases of the hard tissue of teeth, restore of missing parts of individual teeth with intra-coronal and/or extra-coronal restorations and replace one or more teeth with fixed and/or removable appliances.

PRET 7376
Geriatric Dentistry. Twelve (12) hours. Pre-requisites: First and Second Year Curriculum.

This course offers the student knowledge, skills and values required for the provision of oral health care to older adults; adults who are affected by physical, social, psychological and/or biological changes associated with aging, with or without concomitant disease. Depending upon the degree of impairment, older adults may be classified as functionally independent, frail, or functionally dependent. The course is conducted through lectures, discussion and case presentations.

PRET 7378
Oral Radiology Clinical Rotation. Thirty nine (39) hours. Pre-requisites: Approval of First and Second Year Curriculum.

This course is designed to provide the student with enough patient experience for the development of clinical competence in the field of Oral Radiology. The clinical experience will substantiate the background of theoretical Oral Radiology especially in the identification of normal and abnormal structures.

PRET 7386
Oral Surgery Clinical Rotation. Forty nine (49) hours. Pre-requisites: First and Second Year Curriculum.

This course is designed to provide the students with enough patient experience for the development of clinical competence in the field of Oral Surgery. The clinical experience will substantiate the background of theoretical Oral Surgery especially in the treatment of simple and complicated extractions and Pre-Prosthetic Surgery.

PRET 7388
Removable Prosthodontics Clinical Rotation. Ninety (90) hours. Pre-requisites: First and Second Year Curriculum.

This clinical course is designed to provide the Junior dental students the opportunity to develop proficiency in their analytic and psychomotor skills in the treatment of patients needing removable complete and partial dentures. Students are encouraged to integrate the theory and practice learned in the pre-clinical years with this clinical experience. The importance of holistic approach to treatment, in which optimum oral health is attained and maintained, is emphasized. The patients are selected from a general pool generated by the screening of the diagnostic section and accepted by the Removable Prosthodontics Section. This clinic works in close relations with other clinic, when necessary, to assure that all aspects of patient treatment are considered.

PRET 7396
Oral Diagnosis Clinical Rotation. Sixty nine (69) hours. Pre-requisites: Approval of First and Second Year Curriculum.

This course is designed to provide the students with enough patient experience for the development of clinical competence in the field of Oral Diagnosis and the development of a treatment plan. The student will examine, gather, record, and evaluate information that contributes to the identification of abnormalities of the head and neck region that relates to the total health of the patient. The purpose of this information is to establish a diagnosis to formulate a rationale treatment plan.

PRET 7398
Dental Assistant Utilization Program. Thirty six (36) hours. Pre-requisites: DESP 7127.

This course is designed to develop the necessary skills to work effectively with a chairside dental assistant utilizing the principles and operations of Dental Auxiliary Utilization (DAU); sit-down four-handed dentistry, ergonomic principles, instrument transfer techniques, tray delivery system for specific dental treatment procedures, and interpersonal relations with the dental team.

PRET 7400
Comprehensive Care Clinic. One thousand (1,000) hours. Pre-requisites: Third Year clinical rotations, approved the First Part of the National Board Dental Examination.

The Fourth Year Comprehensive Care Clinic is designed to provide the senior dental student the experience of comprehensive care treatment. In this course, the student will apply and integrate the knowledge and skills acquired during the previous three (3) years of studies, under faculty supervision.

PRET 7405
Oral Health Promotion in a Special Community. Thirty six (36) hours. Pre-requisites: Approved First, Second, and Third Year.

This is an elective course designed for dental students to provide clinical education in a disavantaged community. Its purpose is to sensitize students towards the community´s sociocultural characteristics. Students are expected to develop skills to understand the community and its priorities towards oral health, design and implement a preventive clinical-education program in the selected community, and report the results of the intervention. Educational activities include visits to the community, videos, meetings with communiity leaders, and with members of the Oral Health Division of the Department of Health.

PRET 7406
Restoration of Endodontically Treated Teeth. Twenty four (24) hours. Pre- requisites: Third Year Curriculum.

This course consists of a series of lectures involving all the present techniques for restoration of endodontically treated teeth. All of these techniques will be practiced in the laboratory, on extracted teeth. Students will also practice these techniques in some patients under the supervision of a faculty member.

PRET 7407
Dental Photography. Twenty four (24) hours. Pre-requisites: Third Year curriculum approved.

This course introduces the student to the use of dental photography in several areas such as: treatment planning,

record keeping, continuing education, staff education, dental insurance and others. The course covers topics related to the combination of digital technology and photography and the use of digital photography for patient education. The educational strategies to be used are lectures, demonstrations, and discussions.

PRET 7408
Effective Tobacco Control Interventions for Patients in the Dental Office. Twenty four (24) hours. Pre-requisites: Approved Third Year of the curriculum.

This course provides the student the basic knowledge necessary for including brief tobacco control interventions for patients in their dental practice. The students have the opportunity of visiting a Smoking Cessation Clinic during the evaluation of patients. The purpose of this visit is to show them the diagnostic approach with these patients. This course will be conducted with the use of conferences, clinical visits, and student presentations.

PRET 7409
Sports Dentistry. Twenty four (24) hours. Pre-requisites: Approved Third Year curriculum.

This is an elective course for senior students which includes demonstrations and laboratory exercises as well as lectures from invited faculty and students. All contemporary concepts in managing oral health in sports, including prevention and treatment of sport related injuries and recommended treatment in common and/or advanced athletes are considered.

PRET 7410
Clinical Experiences in Dental Treatment. Forty to eighty (40-80) hours. Pre-requisites: Third Year approved.

This course will provide the student the opportunity to provide dental care, under the supervision of a senior dental professional, in a hospital or health center environment. Emphasis will be placed on providing dental care to medically compromised patients. Students will have the opportunity to attend medical rounds, dental case presentations, clinical seminars, and lectures.

PRET 7415
Nitrous Oxide Inhalation Sedation in Dentistry. Forty eight (48) hours. Pre-requisites: Third Year curriculum approved.

The course is designed to teach the student the use of N2O inhalation sedation for control of pain and apprehension in General Dentistry Practice. The instructional strategies to be used are: lecture, group discussions, clinical demonstration and supervised clinical practice.

PRET 7416
Use of Microscope in Dentistry. Twelve (12) hours. Pre-requisites: Third Year Curriculum.

This course is designed to develop knowledge and skills in the use of the dental clinical microscope in the different disciplines of Dentistry. The student will also have the opportunity to do a simple clinical procedure utilizing the microscope.

PRET 7419
The Dentist in the Hospital Environment. Thirty six (36) hours. Pre-requisites: Third Year curriculum approved.

This course is designed for senior dental students to develop knowledge and skills to comprehend hospital organization, protocol procedures and professional requirements in order to participate as a member of the health team, and provide optimal patient care.

POST-GRADUATE PROGRAMS COURSES

BIOR 9005
Advanced Oral Biology Core Course. Five (5) credits.

The discipline of Oral Biology deals with the structural development and functions of the oral tissues, their interrelationships, and their relation to other organ systems in both healthy and disease stages. The intent of this course is to provide a basis and a logical educational bridge between the Biomedical Sciences and the Clinical Practice of Dental Specialties.

CIOM 9404
Trauma. Four (4) credits.

Clinical course offered to Third Year students in Oral and Maxillofacial Surgery. It covers evaluation and treatment of patients with traumatic injuries about the face, head, and neck with or without any other body trauma. Includes the rationales of total patient care.

CIOM 9405
Trauma. Four (4) credits.

Evaluation and treatment of patients with traumatic injuries about the face, head, and neck with or without any other body trauma. Includes the rationales of total patient care.

CIOM 9406
Seminar. One (1) credit.

Formal presentation of seminars on selected subjects by the residents, journal clubs, presentation of clinical cases, morbidity conferences, panel discussions, and special conferences by faculty members.

CIOM 9407
Seminar. One (1) credit.

Formal presentation of seminars on selected subjects by the residents, journal club, presentation of clinical cases, morbidity conferences, panel discussions, and special conferences by faculty members.

CIOM 9408
Seminar. One (1) credit.

Formal presentation of seminars on selected subjects by the residents, journal club, presentation of clinical cases, morbidity conferences, panel discussions, and special conferences by faculty members.

CIOM 9409
Seminar. One (1) credit.

Formal presentation of seminars on selected subjects by the students, journal clubs, presentation of clinical cases, morbidity conferences, panel discussions, and special conferences by faculty members.

CIOM 9410
Seminar. One (1) credit.

Formal presentation of seminars on selected subjects by the students, journal clubs, presentation of clinical cases, morbidity conferences, panel discussions, and special conferences by faculty members.

CIOM 9411
Seminar. One (1) credit.

Formal presentation of seminars on select subjects by the students, journal clubs, presentation of clinical cases, morbidity conferences, panel discussions, and special conferences by faculty members.

CIOM 9412
Hospital Procedures. Two (2) credits.

Includes the total treatment of a patient in a hospital environment. Stresses operating room decorum and emergency treatment protocols.

CIOM 9413
Hospital Procedures. Two (2) credits.

The Second Semester of the course is continuation at a more advanced level of instruction, taking into consideration the experience acquired during the First Semester in the course CIOM 9412.

CIOM 9414
Advanced Oral Maxillofacial Surgery. Two (2) credits.

This is a continuation of the First Year course "Hospital Procedures" at a more advanced level where the student is assigned patients of higher complexity in all phases of Oral and Maxillofacial Surgery including Orthognathic Surgery.

CIOM 9415
Advanced Oral Maxillofacial Surgery. Two (2) credits.

Clinical course offered in the Second Semester of the Second Year. It is a continuation of course CIOM 9414 at a more advanced level.

CIOM 9418
Oral and Maxillofacial Surgery for Exchange Students. One to seven (1-7) credit(s).

It consists of an internship in the Oral and Maxillofacial Surgery Post-Doctoral Program of a resident coming from another institution which maintains a formal relationship of exchange of students with our campus. The main purpose of this course is to offer didactic and clinical experiences in a different environment from the institution they came from.

CIOM 9460
General Anesthesia Rotation. Three (3) credits.

Four (4) months rotation on the General Anesthesia Department of the School of Dentistry where the Oral and Maxillofacial Surgery resident performs as if he were a first General Anesthesia resident. The physiology and pharmacology of anesthetics agents is presented. Practical and didactic instruction on techniques and management of hospitalized and out patients.

CIOM 9501
Seminars Literature Review Case Presentation. Four (4) credits.

Presentation by resident and faculty seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9502
Seminars Literature Review Case Presentation. Four (4) credits.

Formal presentation by the faculty and residents of seminars, scientific journals, and clinical cases.

CIOM 9511
Seminars, Review of Literature Case Presentations I. Four (4) credits.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9512
Seminars, Review of Literature Case Presentations II. Four (4) credits. Pre-requisite: CIOM 9511.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9521
Seminars, Review of Literature Case Presentations III. Four (4) credits. Pre-requisite: CIOM 9512.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9522
Seminars, Review of Literature Case Presentations IV. Four (4) credits. Pre-requisite: CIOM 9521.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9531
Seminars, Review of Literature Case Presentations V. Four (4) credits. Pre-requisite: CIOM 9522.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9532
Seminars, Review of Literature Case Presentations VI. Four (4) credits. Pre-requisite: CIOM 9531.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9541
Seminars, Review of Literature Case Presentations VII. Four (4) credits. Pre-requisite: CIOM 9532.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9542
Seminars, Review of Literature Case Presentations VIII. Four (4) credits. Pre-requisite: CIOM 9541.

Presentations by residents and faculty of seminars, journals, and interesting cases related to the practice of Oral and Maxillofacial Surgery.

CIOM 9601
Hospital Procedures. Two (2) credits.

Supervised work in ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in medical-hospital departments.

CIOM 9602
Hospital Procedures. Two (2) credits.

Supervised work in ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in medical-hospital departments.

CIOM 9611
Hospital Procedures I. Two (2) credits.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9612
Hospital Procedures II. Two (2) credits. Pre-requisite: CIOM 9611.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9621
Hospital Procedures III. Two (2) credits. Pre-requisite: CIOM 9612.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9622
Hospital Procedures IV. Two (2) credits. Pre-requisite: CIOM 9621.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9631
Hospital Procedures V. Two (2) credits. Pre-requisite: CIOM 9622.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9632
Hospital Procedures VI. Two (2) credits. Pre-requisite: CIOM 9631.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9641
Hospital Procedures VII. Two (2) credits. Pre-requisite: CIOM 9632.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9642
Hospital Procedures VIII. Two (2) credits. Pre-requisite: CIOM 9641.

Supervised work in the ambulatory clinics, Emergency Room, Operation Room, admitted patients, and rotations in the medical-hospital departments.

CIOM 9731
Cosmetic and Reconstructive Surgery of the Maxillofacial Region I. Two (2) credits. Pre-requisites: Second Year resident's courses approved.

First theoretical and hands-on course for Third Year residents in which the technical details, indications, contraindications, and complications related to Cosmetic and Reconstructive Surgery of the Maxillofacial Region are taught. The following topics will be covered: Cosmetic Anatomy, Facial Implantology, Rhinoplasty, Blepharoplasty, Mentoplasty, Cheiloplasty, Rytidectomies, Collagen Injections and other Materials.

CIOM 9741
Cosmetic and Reconstructive Surgery of the Maxillofacial Region II. Two (2) credits. Pre-requisite: CIOM 9731.

Theoretical and hands-on course for the Senior residents in which the technical details, indications, contraindications, and complications related to Cosmetic and Reconstructive Surgery of the Maxillofacial Region are taught. The following topics will be covered: Cosmetic Anatomy, Facial Implantology, Rhinoplasty, Blepharoplasty, Mentoplasty, Cheiloplasty, Rytidectomies, Collagen Injections and other Materials. The resident will be involved in the treatment of more complicated cases and a higher degree of proficiency will be expected in the treatment of the patients.

CIOM 9742
Cosmetic and Reconstructive Surgery of the Maxillofacial Region III. Two (2) credits. Pre-requisites: CIOM 9731, CIOM 9741.

Theoretical and hands-on course for the Senior residents in which the technical details, indications, contraindications, and complications related to Cosmetic and Reconstructive Surgery of the Maxillofacial Region are taught. The following topics will be covered: Cosmetic Anatomy, Facial Implantology, Rhinoplasty, Blepharoplasty, Mentoplasty, Cheiloplasty, Rytidectomies, Collagen Injections and other Materials. The resident will be involved in the treatment of more complicated cases and a higher degree of proficiency will be expected in the treatment of the patients.

CIOM 9830
Theory and Practice of Deep Sedation-General Anesthesia. Three (3) credits.

Didactic and practical course for Oral and Maxillofacial Surgery residents where they will be taught the theoretical and practical foundations for the safe administration of ambulatory Deep Sedation-General Anesthesia.

CIOM 9840
Thesis. Six (6) credits.

The resident will write and defend a Thesis related to an Oral and Maxillofacial Surgery topic. Completion of this course is a requisite for the M.S.D. degree.

CIOM 9845
Head and Neck Anatomy. Two (2) credits.

Dissection of the area of the head and neck in cadavers. Lectures on dissection techniques, surgical approaches, and surgical Microanatomy.

CIOM 9847
Research Completion Project. Six (6) credits. Pre-requisite: CIOM 9521.

The resident will perform, supervised by a faculty member, research project approved by the Research Committee of the Oral and Maxillofacial Surgery Program. After completing it the resident will make a written request for the presentation of the research project to the program faculty. This presentation will be oral and written in the format approved by the Research Committee of the School of Dentistry. In the oral presentation the resident must show that he/her has a broad and deep knowledge of the researched area, will present and defend all the research details, its results and conclusions.

MEDI 9300
Physical Diagnosis. Three (3) credits.

The course comprises both of the essential processes for the clinical study of disease: the history of the patient's disability, and the complete physical examination. Offered during the Second Semester to Second Year medical students in third three sessions from 1:00 to 5:00 pm on Tuesday and Thursdays. The students will rotate through participating hospitals for the clinical exercise covering the different organ systems.

ORTO 9101
Orthodontic Literature Review I. One (1) credit. Co-requisites: ORTO 9102, ORTO 9104, ORTO 9105, ORTO 9106.

This is a course in which the graduate orthodontic student will be responsible for obtaining from the library or any other resource, reading, critically evaluating, and

presenting to the faculty and their peers, a broad range of scientific articles, dealing with or associated to the art and science of Orthodontics. These articles will be directly related to and complementary with the subject matter of the other Orthodontic courses taken during each semester.

ORTO 9102
Post Graduate Orthodontic Laboratory I. Three (3) credits. Co-requisites: ORTO 9101, ORTO 9105, ORTO 9106.

Intensive technical instruction and lectures in the assembling and manipulation of orthodontic appliances. Appliances are constructed and when necessary the Typodont Technique is utilized. Emphasis is given to band adaptation, wire manipulation, the edgewise orthodontic appliance, and extraoral orthopedic appliances.

ORTO 9103
Orthodontic Post Graduate Clinic I. Eight (8) credits. Co-requisites: ORTO 9101, ORTO 9102, ORTO 9104, ORTO 9105, ORTO 9106, ORTO 9107.

This course is designed to expose the Post-Graduate Orthodontics students to their first clinical experience in this specialty area. It provides the opportunity to learn from different clinical cases which students are expected to diagnose, treat, and follow-up the following three years. The use of fixed edgewise, extraoral, removable, functional, and retentive appliances is emphasized. The student should develop analytical biomechanical and motor skills as they apply specifically to Orthodontics.

ORTO 9104
Craniofacial Growth and Development. Two (2) credits. Co-requisites: ORTO 9101, ORTO 9105, ORTO 9106.

This course is designed to provide the Orthodontic graduate resident with basic knowledge in physical growth and development of the craniofacial complex. Theories of growth, teeth, facial bones, and masticatory as well as expression muscles are reviewed in depth. The field constitutes essential knowledge to the practice of Orthodontics.

ORTO 9105
Orthodontic Diagnosis and Treatment Planning I. Ten (10) credits. Co-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9106, ORTO 9107.

This course is designed to prepare the Orthodontic resident in the processes of taking and analyzing diagnostic records, clinical evaluation and in conjunction with the patient's medical and dental history, be able to design a problem list and treatment objectives. An intense review of the literature will support the decision making process and scientific articles will be assigned on each session. The didactic experience will be performed through daily seminars or conferences during the month of July and seminars during the First Semester.

ORTO 9106
Principles of Biomechanics in Orthodontics. One (1) credit. Co-requisite: ORTO 9102.

The course will have a one year (two semesters; approximately 50% of the material will be covered in each semester) length. It is designed for the First Year Orthodontic graduate students. In depth review of several topics related to the general area of biomechanical principles necessary to perform orthodontic tooth general movements is expected. Basic knowledge related to materials and their clinical use is also included. Mechanics are specifically discussed for the straight wire appliance, the segmented arch technique, and to a lesser extent older approaches as the standard edgewise and the begg appliance.

ORTO 9107
Case Presentation Seminar I. Two (2) credits. Co-requisites: ORTO 9101, ORTO 9102, ORTO 9104, ORTO 9105, ORTO 9106.

During the sessions, the residents will present all their clinical cases to the clinical instructor responsible for the clinic on that day. All diagnostic records will be thoroughly evaluated and a treatment plan will be developed to address the clinical problems presented on each case. The residents will be examined in their knowledge on diagnosis and a treatment planning, scientific literature, treatment modalities, and orthodontic appliances. Based on this experience the resident will be exposed to different

treatment alternatives and will develop a sense of clinical judgment based on a multidisciplinary approach.

ORTO 9201
Orthodontic Literature Review II. Two (2) credits. Pre-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9105, ORTO 9106, ORTO 9107. Co-requisites: ORTO 9202, ORTO 9203, ORTO 9205, ORTO 9206, ORTO 9207, ORTO 9208.

This is a course in which the graduate orthodontic student will be responsible for obtaining from the library or any other resource, reading, critically evaluating, and presenting to the faculty and their peers, a broad range of scientific articles, dealing with or associated to the art and science of Orthodontics. These articles will be directly related to and complementary with the subject matter of the other orthodontic courses taken during each semester.

ORTO 9202
Post Graduate Orthodontic Laboratory II. Two (2) credits. Pre-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9105, ORTO 9106, ORTO 9107. Co-requisites: ORTO 9201, ORTO 9203, ORTO 9205, ORTO 9206, ORTO 9207, ORTO 9208.

Intensive technical instruction and lectures in the assembling and manipulation of orthodontic appliances. Appliances are constructed and when necessary the Typodont Technique is utilized. Emphasis is given to band adaptation, wire manipulation, the edgewise orthodontic appliance and extraoral orthopaedic appliances.

ORTO 9203
Orthodontic Post Graduate Clinic II. Eight (8) credits. Pre-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9105, ORTO 9106, ORTO 9107. Co-requisites: ORTO 9201, ORTO 9202, ORTO 9205, ORTO 9206, ORTO 9207, ORTO 9208.

This course is designed to expose the Post-Graduate Orthodontic students to their first clinical experience in this specialty area. It provides the opportunity to learn from different clinical cases which students are expected to diagnose, treat and follow-up for the following three years. The use of fixed edgewise, extraoral removable, functional and retentive appliances is emphasized. The student should develop analytical biomechanical and motor skills as they apply specifically to Orthodontics. A higher level of proficiency and greater independence levels are expected in this course as compared to ORTO 9103.

ORTO 9205
Orthodontic Diagnosis And Treatment Planning II. Two (2) credits. Pre-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9105, ORTO 9106, ORTO 9107. Co-requisites: ORTO 9201, ORTO 9202, ORTO 9203, ORTO 9206, ORTO 9207, ORTO 9208.

This course is designed to prepare the Orthodontic resident in the processes of taking and analyzing diagnostic records, clinical evaluation and in conjunction with the patient's medical and dental history, be able to design a problem list and treatment objectives. An intense review of the literature will support the decision making process and scientific articles will be assigned on each session. The didactic experience will be performed through daily seminars or conferences during the month of July and weekly seminars during the First Semester.

ORTO 9206
Orthodontic Dental Materials. One (1) credit. Pre-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9105, ORTO 9106, ORTO 9107. Co-requisites: ORTO 9201, ORTO 9202, ORTO 9203, ORTO 9205, ORTO 9207, ORTO 9208.

The course is designed for the First Year Orthodontic graduate students. In depth review of several topics related to the general area of Orthodontic dental materials. Basic knowledge related to structure of mater is reviewed.

ORTO 9207
Case Presentation Seminar II. Two (2) credits. Pre-requisites: ORTO 9101 to ORTO 9107. Co-requisites: ORTO 9201 to ORTO 9203, ORTO 9205, ORTO 9206, ORTO 9208.

During the sessions, the residents will present their clinical cases to the clinical instructor responsible for the clinic on that day. All diagnostic records will be thoroughly

evaluated and treatment plan will be developed to address the clinical problems presented on each case. The residents will be examined in their knowledge on diagnosis and treatment planning, scientific literature, treatment modalities and orthodontic appliances. Based on this experience, the resident will be exposed to different treatment alternatives and will develop a sense of clinical judgment based on a multidisciplinary approach.

ORTO 9208
Orthodontic Interdisciplinary Seminar I. Two (2) credits. Pre-requisites: ORTO 9101 to ORTO 9107. Co-requisites: ORTO 9201 to ORTO 9203, ORTO 9205 to ORTO 9207.

This course is designed to train the Orthodontic graduate residents in the diagnosis, treatment planning, and clinical management of patients undergoing orthognathic or craniofacial surgery. A broad variety of lectures covering the most important aspects of surgical orthodontics including its multi disciplinary management will be presented. Readings will be assigned for each lecture and the residents will actively participate during the presentation. Seminars and interdisciplinary staffings concerning congenital malformations of the jaw with particular emphasis placed on congenital clefts of the lip and palate, craniofacial syndromes and orthognathic surgery cases will be presented. The embryology, etiology and morphology of congenital facial malformations will be discussed. Post-natal growth problems and associated complications in respiration, deglutition, mastication and speech will be studied. Longitudinal growth studies will be presented revealing growth, developmental and functional changes. Treatment modalities and outcomes will be critically evaluated.

ORTO 9301
Orthodontic Literature Review III. Two (2) credits. Pre-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9105, ORTO 9106, ORTO 9107, ORTO 9201, ORTO 9202, ORTO 9203, ORTO 9205, ORTO 9206, ORTO 9207, ORTO 9208. Co-requisites: ORTO 9303, ORTO 9304, ORTO 9307, ORTO 9306.

This is a course in which the graduate Orthodontic student will be responsible for obtaining from the library or any other resource, reading critically, evaluating, and presenting to the faculty and their peers a broad range of scientific articles, dealing with or associated to the art and science of Orthodontics. These articles will be directly related to and complementary with the subject matter of the other orthodontic courses taken during each semester.

ORTO 9303
Orthodontic Post Graduate Clinic III. Eight (8) credits. Pre-requisites: ORTO 9101, ORTO 9102, ORTO 9103, ORTO 9104, ORTO 9105, ORTO 9106,ORTO 9107, ORTO 9201, ORTO 9202, ORTO 9203, ORTO 9205, ORTO 9206, ORTO 9207, ORTO 9208. Co-requisites: ORTO 9301, ORTO 9304, ORTO 9307, ORTO 9308.

This course is designed to expose the postgraduate students to clinical experiences in this specialty area. It provides the opportunity to learn from different clinical cases which students are expected to diagnose, treat, and follow-up for the following two years. The use of fixed edgewise, extraoral removable, functional, and retentive appliances is emphasized. The student should develop analytical biomechanical and motor skill as they apply specifically to Orthodontics. A higher level of proficiency and greater independence levels are expected in this course as compared to ORTO 9203.

ORTO 9304
Craniofacial Anomalies Seminar I. Two (2) credits. Pre-requisites: ORTO 9101 to 9107, ORTO 9201 to 9203, ORTO 9205 to 9208. Co-requisites: ORTO 9301, 9303, 9307, 9308.

This course is designed to train the Orthodontic graduate resident in the diagnosis, treatment planning, and clinical management of patients undergoing orthognathic or craniofacial surgery. A broad variety of lectures covering the most important aspects of surgical orthodontics including its multidisciplinary management will be presented. Readings will be assigned for each lectures and the residents will actively participate during the presentation. Seminars and interdisciplinary staffings concerning congenital malformations of the jaws with particular emphasis placed on congenital clefts of the lip and palate, craniofacial syndromes and orthognathic surgery cases will be presented. The embryology, etiology, and morphology of congenital facial malformations will be discussed. Post natal growth problems and associated

complications in respiration, deglutition, mastication, and speech will be studied. Longitudinal growth studies will be presented revealing growth, developmental, and functional changes. Treatment modalities and outcomes will be critically evaluated.

ORTO 9307
Case Presentation Seminar III. Two (2) credits. Pre-requisites: ORTO 9101 to ORTO 9107, ORTO 9201 to ORTO 9203, ORTO 9205 to ORTO 9208.
Co-requisites: ORTO 9301, ORTO 9303, ORTO 9304, ORTO 9308.

During the sessions, the resident will present their clinical cases to the clinical instructor responsible for the clinic on that day. All diagnostic records will be thoroughly evaluated and treatment plan will be developed to address the clinical problems presented on each case. The residents will be examined in their knowledge on diagnosis and treatment planning, scientific literature, treatment modalities, and orthodontic appliances. Based on this experience the resident will be exposed to different treatment alternatives and will develop sense of clinical judgement based on a multidisciplinary approach.

ORTO 9308
Orthodontic Interdisciplinary Seminar II. Two (2) credits. Pre-requisites: ORTO 9101 to ORTO 9107, ORTO 9201 to ORTO 9203, ORTO 9205 to ORTO 9208. Co-requisites: ORTO 9301, ORTO 9303, ORTO 9304, ORTO 9307.

This course is designed to train the Orthodontic graduate residents to evaluate all the dental aspects that need to be taken into consideration before the diagnosis and treatment planning of a case. A broad variety of lectures reviewing the important aspects of the clinical areas of Periodontics, Endodontics, and Prosthodontics, implants, occlusion and TMJ and their interrelationship with orthodontic treatment will be presented. Readings will be assigned for each lectures and the resident will actively participate during the presentation. Seminars with interdisciplinary staffings will be conducted where emphasis will be placed on the early diagnosis and detection of dental problems that will affect the orthodontic treatment and the adequate treatment sequence that should be followed. Each resident is responsible of presenting a clinical case that requires the multidisciplinary approach.

ORTO 9401
Orthodontic Literature Review IV. Two (2) credits. Pre-requisites: ORTO 9103, ORTO 9303, ORTO 9304, ORTO 9307, ORTO 9308. Co-requisites: ORTO 9403, ORTO 9404, ORTO 9407, ORTO 9408.

This is a course in which the graduate Orthodontic student will be responsible for obtaining from the library or any other resource, reading critically, evaluating and presenting to the faculty and their peers a broad range of scientific articles, dealing with or associated to the art and science of Orthodontics. These articles will be directly related to and complementary with the subject matter of the other orthodontic courses taken during each semester.

ORTO 9403
Orthodontic Post Graduate Clinic IV. Eight (8) credits. Pre-requisites: ORTO 9103, ORTO 9303, ORTO 9304, ORTO 9307, ORTO 9308. Co-requisites: ORTO 9401, ORTO 9404, ORTO 9407, ORTO 9408.

This course is designed to expose the post-graduate Orthodontic students to clinical experiences in this specialty area. It provides the opportunity to learn from different clinical cases which students are expected to diagnose, treat and follow-up for the following 1.5 years. The use fixed edgewise, extraoral removable, functional and retentive appliances is emphasized. The student should develop analytical biomechanical and motor skill as they apply specifically to Orthodontics. A higher level of proficiency and greater independence level is expected in this course as compared to Orthodontic Post-Graduate Clinic III (ORTO 9303).

ORTO 9404
Craniofacial Anomalies Seminar II. Two (2) credits. Pre-requisites: ORTO 9103, ORTO 9303, ORTO 9304, ORTO 9307, ORTO 9308. Co-requisites: ORTO 9401, ORTO 9403, ORTO 9407, ORTO 9408.

This course is designed to train the Orthodontic graduate resident in the diagnosis, treatment planning and clinical management of patients undergoing orthognathic or craniofacial surgery. A broad variety of lectures covering the most important aspects of surgical Orthodontics including its multidisciplinary management will be presented. Readings will be assigned for each lectures

and the residents will actively participate during the presentation. Seminars and interdisciplinary staffings concerning congenital malformations of the jaws with particular emphasis placed on congenital clefts of the lip and palate, craniofacial syndromes and orthognathic surgery cases will be presented. The embryology, etiology and morphology of congenital facial malformations will be discussed. Post natal growth problems and associated complications in respiration, deglutition, mastication and speech will be studied. Longitudinal growth studies will be presented revealing growth, developmental and functional changes. Treatment modalities and outcomes will be critically evaluated.

ORTO 9407
Case Presentation Seminar IV. Two (2) credits. Pre-requisites: ORTO 9103, ORTO 9303, ORTO 9304, ORTO 9307, ORTO 9308. Co-requisites: ORTO 9401, ORTO 9403, ORTO 9404, ORTO 9408.

During the sessions, the residents will present their clinical cases to the clinical instructor responsible for the clinic on that day. All diagnostic records will be thoroughly evaluated and treatment plan will be developed to address the clinical problems presented on each case. The residents will be examined in their knowledge on diagnosis and treatment planning, scientific literature, treatment modalities and orthodontic appliances. Based on this experience the resident will be exposed to different treatment alternatives and will develop a sense of clinical judgment based on a multidisciplinary approach.

ORTO 9408
Orthodontic Interdisciplinary Seminar III. Two (2) credits. Pre-requisites: ORTO 9103, ORTO 9303, ORTO 9304, ORTO 9307, ORTO 9308. Co-requisites: ORTO 9401, ORTO 9403, ORTO 9404, ORTO 9407.

This course is designed to expose the residents to a variety of topics related to the clinical, legal and practical aspects in the field of Orthodontics. A broad variety of lectures covering the topics of Radiology, Arthroscopy, Pharmacology, Dental Emergencies, Psychological Effects of Dental Malocclusion, Infection Control, Total Quality, Ethics, Jurisprudence and Practice Management will be presented. In addition, readings will be assigned for the lectures and the residents will actively participate during the presentation. This course will enable the residents to integrate all the different aspects in the management of an orthodontic case, not only clinically but also medicolegally and ethically. Also, with this course the residents will be aware of what to expect in private practice scenario.

ORTO 9501
Orthodontic Literature Review V. Two (2) credits. Pre-requisites: ORTO 9401, ORTO 9403, ORTO 9404, ORTO 9407, ORTO 9408. Co-requisites: ORTO 9503, ORTO 9507, ORTO 9508.

This is a course in which the graduate Orthodontic student will be responsible for obtaining from the library or any other resource, reading critically, evaluating and presenting to the faculty and their peers a broad range of scientific articles, dealing with or associated to the art and science of Orthodontics. These articles will be directly related to and complementary with the subject matter of the other orthodontic course taken during each semester.

ORTO 9503
Orthodontic Post Graduate Clinic V. Eight (8) credits. Pre-requisites: ORTO 9401, ORTO 9403, ORTO 9404, ORTO 9407, ORTO 9408. Co-requisites: ORTO 9501, ORTO 9507, ORTO 9508.

This course is designed to expose the post-graduate Orthodontic students to clinical experience in this specialty area. It provides the opportunity to learn from different clinical cases which students are expected to diagnose, treat and follow-up for the following year. The use of fixed edgewise, extraoral, functional and retentive appliances is emphasized. The student should develop analytical biomechanical and motor skill as they apply specially to Orthodontics. A higher level of proficiency and greater independence level is expected in this course as compared to Orthodontics Post-Graduate Clinic IV (ORTO 9403).

ORTO 9507
Case Presentation Seminar V. Two (2) credits. Pre-requisites: ORTO 9401, ORTO 9403, ORTO 9404, ORTO 9407, ORTO 9408. Co-requisites: ORTO 9501, ORTO 9503, ORTO 9508.

During the sessions, the residents will present their clinical cases to the clinical instructor responsible for the clinic

on that day. All diagnostic records will be thoroughly evaluated and treatment plan will be developed to address the clinical problems presented on each case. The residents will be examined in their knowledge on diagnosis and treatment planning, scientific literature, treatment modalities and orthodontics appliances. Based on this experience the resident will be exposed to different treatment alternatives and will develop a sense of clinical judgement based on a multidisciplinary approach.

ORTO 9508
Orthodontic Interdisciplinary Seminar IV. Two (2) credits. Pre-requisites: ORTO 9401, ORTO 9403, ORTO 9404, ORTO 9407, ORTO 9408. Co-requisites: ORTO 9501, ORTO 9503, ORTO 9507.

This is a course in which the resident will be exposed to a variety of topics related to the administrative, management and marketing aspects of an Orthodontic Office. A broad variety of topics such as Office Layout and Dental Equipment, Human Resources, Labor Laws, Computer Systems, Dental Insurances, Property Insurances, Investments, Disability Insurance, Accounting, Practice Management, Marketing and Public Health will be discussed. Guest experts on each topic will be invited. This course will enable the residents to be exposed to administrative considerations in establishing an office. Other alternatives such as buying in or out and partnerships will also be explored so that the resident can make an educated decision in terms of the alternatives available to practice Orthodontics.

ORTO 9601
Orthodontic Literature Review VI. Two (2) credits. Pre-requisites: ORTO 9501, ORTO 9503, ORTO 9507, ORTO 9508. Co-requisites: ORTO 9603, ORTO 9611.

This is a course in which the graduate Orthodontic student will be responsible for obtaining from the library or any other resource, reading critically, evaluating and presenting to the faculty and their peers a broad range of scientific articles, dealing with or associated to the art and science of Orthodontics. These articles will be directly related to and complementary with the subject matter of the other orthodontic course taken during each semester.

ORTO 9603
Post Graduate Orthodontic Clinic VI. Eight (8) credits. Pre-requisites: ORTO 9501, ORTO 9503, ORTO 9507, ORTO 9508. Co-requisites: ORTO 9601, ORTO 9611.

This course is designed to expose the post-graduate students to clinical experience in this specialty area. It provides the opportunity to learn from different clinical cases which students are expected to diagnose, treat and follow-up for the following semester. The use of fixed edgewise, extraoral, removable, functional and retentive appliances is emphasized. The student should develop analytical biomechanical and motor skill as they apply specifically to Orthodontics.

ORTO 9611
Thesis. Ten (10) credits. Pre-requisites: ORTO 9501, ORTO 9503, ORTO 9507, ORTO 9508. Co-requisites: ORTO 9601, ORTO 9603.

This course is designed to provide the post-graduate Orthodontic resident with basic knowledge and experience in scientific data analysis, data interpretation and scientific writing. It is expected that the resident will perform these objectives based on data recollected from the scientific project assigned during the first two and a half years of residency. The data will be analyzed and discussed with the Thesis mentor and will follow the strict protocol proposed in the original project proposal. All drafts and the final version of the document will be distributed to the Thesis Committee for evaluation and recommendations. Once the written document is approved by the Thesis Committee, a formal oral defense will be conducted to evaluate the degree of matership of the specific subject by the resident. The written Thesis and the oral defense will follow the specific rules and regulations of the Research Committee of the School of Dentistry, University of Puerto Rico, in order to receive a Master's Degree in Dental Sciences. If the resident fulfills the required expectations by the committee members, they will recommend that a Master's Degree can be granted.

PDOC 9005
Statistical Analysis Applied to the Dental Sciences. Three (3) credits. Pre-requisite: PEDO 9436.

The aim of this course is to develop the skills for analysis and interpretation of scientific research data of the Postdoctoral Program graduates. It enables the resident to conduct data analysis through descriptive statistics and to test research hypothesis. The course meets twice a week in two hours sessions. The strategies used include lecture, demonstrations, and exercises using statistical packages in computers.

PEDO 6560
Statistical Inference in Dentistry. Three (3) credits. Pre-requisites: PEDO 9436, PEDO 9455.

This course devotes the first half to theoretical considerations relevant to the inferential process. It goes then to the critical interpretation of results from computerized analyses in the testing of hypothesis through varied statistical procedures ("T" tests for one and for two tails, with means and percentages; Chi-Square tests; regression analyses, etc.). The procedures for testing hypothesis are conducted in contexts directly relevant to Dentistry. The critical analysis always culminates with a discussion on the inferential implications of the results. The course covers the basic concepts in probability; the theory relevant to sampling, including the sampling distribution as a theoretical concept; and the most commonly applied distributions (normal curve, the Binomial distribution, the Poisson distribution, the Chi-Square distribution). Tests of hypothesis are conducted with data relevant to Dentistry, in order to affirm the above mentioned concepts. Extensive use is made of presentations by the students in a seminar approach that integrates the practice to the theory.

PEDO 9400
Advanced Pediatric Dentistry Seminar. Two (2) credits.

The content and activities in this course are intended to bring the student above the level of the general practitioner in his knowledge and skills in the diagnosis and treatment planning for the usual and the bizarre oral disorders encountered in children. The content is more specifically oriented to the detection and treatment of conditions affecting the primary and young permanent dentition, such as dental caries, developmental anomalies, and traumatic injuries.

PEDO 9402
Advanced Pediatric Dentistry. Two (2) credits.

This is a continuation of course PEDO 9401 at a more advanced level.

PEDO 9404
Interceptive Orthodontics Seminar. Two (2) credits.

Instruction in Interceptive Orthodontic is intended to develop a knowledge of the fundamental processes of growth and development of the craniofacial complex and understanding of the science of cephalometrics and biomechanical principles applied to the procedures commonly used in the interceptive treatment of malocclusion.

PEDO 9405
Interceptive Orthodontic Seminar. One (1) credit.

This is a continuation of course PEDO 9404. Instruction in Interceptive Orthodontic is intended to develop a knowledge of the fundamental processes of growth and development of the craniofacial complex and understanding of the science of cephalometrics and biomechanical principles applied to the procedures commonly used in the interceptive treatment of malocclusion.

PEDO 9406
Interceptive Orthodontic Seminar. One (1) credit.

This is a continuation of course PEDO 9405. Instruction in Interceptive Orthodontic is intended to develop a knowledge of the fundamental processes of growth and development of the craniofacial complex and understanding of the science of cephalometrics and biomechanical principles applied to the procedures commonly used in the interceptive treatment of malocclusion.

PEDO 9407
Anesthesiology Clerkship. Two (2) credits.

The Clerkship in Anesthesiology for residents in Pedodontics has been designed to teach these specialists some basic principles of General Anesthesia. Residents will have the opportunity to develop some skill in the administration

of anesthetics and to expand their general medical knowledge of application in Anesthesiology, pre and postanesthetic management with particular emphasis to the pediatric patient. It will give the resident the opportunity to recognize, understand, and possible manage (if the need arises) some of the problems that occur during the administration of Anesthesia for oral-denture procedures.

PEDO 9408
Advanced Pediatric Dentistry Clinic. Three (3) credits.

The experience and activities in this clinical course are intended to develop in the student skill in the management, diagnosis, and dental treatment of children. Patients are selected to provide the student with a variety of experiences including routine and special procedures such as, those encountered in patients with developmental anomalies of the teeth. Different age groups are also included in this selection in order that the student become associated with the variations in behavior encountered and their management in the Dental Office. A total of twenty patients are required to rendered.

PEDO 9409
Advanced Pediatric Dentistry Clinic. Three (3) credits. Pre-requisite: PEDO 9408.

The experiences and activities in the clinical course are intended to develop in the student skill in the management, diagnosis, and dental treatment of children. Patients are selected to provide the student with a variety of experiences, including routine and special clinical procedures such as those encountered in patients with developmental anomalies of the teeth. Different age groups are also included in this selection in order that the student become associated with the variations in behavior encountered and their management in the Dental Office. This is a continuation of course PEDO 9408.

PEDO 9410
Advanced Pediatric Dentistry Clinic. Two (2) credits.

This is a continuation of course PEDO 9408. The experiences and activities in this clinical course are intended to develop in the student skill in the management, diagnosis, and dental treatment of children. Patients are selected to provide the student with a variety of experiences including routine and special procedures such as those encountered in patients with developmental anomalies of the teeth. Different age groups are also included in this selection in order that the student become associated with the variations in behavior encountered and their management in the Dental Office. A total of twenty patients are required.

PEDO 9411
Special Pediatric Dentistry Clinic. Two (2) credits.

This clinical course is designed to give graduate students of Pediatric Dentistry the opportunity to master competencies in the management of special patients and in all aspects of hospital procedures. The Puerto Rico Medical Center Children's Dental Clinic and the Pediatric Hospital Dental Clinic will be the main workshop for the treatment of handicapping conditions.

PEDO 9412
Special Pediatric Dentistry Clinic. Three (3) credits. Pre-requisite: PEDO 9411.

This clinical course is designed to give the graduate students of Pediatric Dentistry the opportunity to master competencies in the management of special patients and in all aspects of hospital procedures. The Puerto Rico Medical Center Children's Dental Clinic and the Pediatric Hospital Dental Clinic will be the main workshop for the treatment handicapped patients. This is a continuation of course PEDO 9411.

PEDO 9413
Special Pediatric Dentistry Clinic. Two (2) credits.

This course is a continuation of course PEDO 9412. This clinical course is designed to give the graduate students of Pediatric Dentistry the opportunity to master competencies in the management of special patients and in all aspects of hospital procedures. The Puerto Rico Medical Center Children's Dental Clinic and the Pediatric Hospital Dental Clinic will be the main workshop for the treatment of handicapped patients.

PEDO 9414
Problems of Handicapped Children. Four (4) credits.

This course involves the formal study of handicapping conditions, their etiology, diagnosis, and treatment. It includes disorders of physical, systemic, and behavioral origin that are commonly encountered in children and adult patients that require special attention by the dentist. Principal attention is given to the inherent physiologic and psychologic mechanisms of the handicapping conditions studied. Attention is also given to the psychologic and therapeutic procedures employed in the management of handicapped patients. Practical application of the concepts and principles attained in this course is provided for in the special Pediatric Dentistry clinic course at the clinic of the University Dentistry Hospital and Pediatric Hospital.

PEDO 9416
Dental Education. Two (2) credits.

The course is designed to equip potential candidates for teaching in Dental Schools with the basic pedagogical knowledge and skills that are necessary for effective teaching. The course is also opened to faculty members. The philosophy, objectives, and the curriculum for the preparation of dentists are studied with emphasis in the following topics: Pedagogical Principles and their Applications for Teaching in the Dental School; Teaching Methodology in Didactic Course, The Laboratory, and the Clinic, Selection and Utilization of Media; Individualization of Instruction; Evaluation of Student's Progress; Planning for Instruction and Content Organization at Various Levels. The methodology of the course includes lectures, discussion, use of audiovisual materials, presentation of topics by students, and actual teaching and projects performed by students.

PEDO 9419
Advanced Pediatric Dentistry Clinic. Two (2) credits.

This is a continuation of course PEDO 9410. The experiences and activities in this clinical course are intended for the development of skills in the management, diagnosis, and dental treatment of children. Patients are selected to provide the student with a variety of experiences, including routine and special clinical procedures such as those of the teeth. Different age groups are also included in this selection in order that the student become associated with the variation in behavior encountered and their management in the Dental Office. A total of twenty patients are required and they must be rendered a comprehensive oral treatment.

PEDO 9420
Advanced Pediatric Dentistry Clinic. Two (2) credits.

This course is a continuation of course PEDO 9419. The experiences and activities in this clinical course are intended for the development of skills in the management, diagnosis, and dental treatment of children. Patients are selected to provide the student with a variety of experiences, including routine and special clinical procedures such as those encountered in patients with developmental anomalies of the teeth. Different age groups are also included in this selection in order that the student become associated with the variation in behavior encountered and their management in the Dental Office. A total of twenty patients are requested to rendered a comprehensive oral treatment.

PEDO 9421
Advanced Pediatric Dentistry Clinic. Two (2) credits.

This is a continuation of course PEDO 9420. The experiences and activities in this clinical course are intended for the development of skills in the management, diagnosis, and dental treatment of children. Patients are selected to provide the student with a variety of experiences, including routine and special clinical procedures such as those encountered in patients with developmental anomalies of the teeth. Different age groups are also included in this selection in order that the student become associated with the variation in behavior encountered and their management in the Dental Office. A total of twenty patients are required and they must be rendered a comprehensive oral treatment.

PEDO 9422
Interceptive Orthodontics Clinic. One (1) credit.

Instruction in Interceptive Orthodontic is intended to establish an understanding of the fundamental processes of growth and development of the craneofacial complex to serve as basis for comprehensive evaluation of developing malocclusion. Special attention will also

be given to mixed dentition analysis techniques, serial extraction, myofunctional therapy, contributory oral habits, tissue changes incidental to tooth movement, dental and skeletal ages analysis, growth prediction and eruption guidance.

PEDO 9423
Interceptive Orthodontics Clinic. One (1) credit.

Instruction in Interceptive Orthodontic is intended to establish an understanding of the fundamental processes of growth and development of the craneofacial complex to serve as basis for comprehensive evaluation of developing malocclusion. Special attention will also be given to mixed dentition analysis techniques, serial extraction, myofunctional therapy, contributory oral habits, tissue changes incidental to tooth movement, dental materials in the orthodontic practice, dental and skeletal ages analysis, growth prediction and eruption guidance.

PEDO 9424
Interceptive Orthodontics Clinic. Two (2) credits.

Introduction in Interceptive Orthodontic is intended to establish an understanding of the fundamental processes of growth and development of the craneofacial complex to serve as basis for comprehensive evaluation of developing malocclusion. Special attention will be given to mixed dentition analysis techniques, serial extraction, myofunctional therapy, contributory oral habits, tissue changes incidental to tooth movement, dental skeletal ages analysis, growth prediction and eruption guidance.

PEDO 9425
Special Pediatric Dentistry Clinic. Two to five (2-5) credits.

This clinical course is designed for the graduate students of Pediatric Dentistry to master competencies in the management of special patients and in all aspects of hospital procedures. The Puerto Rico Medical Center Children's Dental Clinic and the Pediatric Hospital Dental Clinic will be the main workshop for the treatment of handicapping conditions.

PEDO 9426
Special Pediatric Dentistry Clinic. Two to five (2-5) credits.

This course is a continuation of course PEDO 9425. The clinical course is designed for the graduate students of Pediatric Dentistry to master competencies in the management of special patients and all aspects of hospital procedures. The Puerto Rico Medical Center Children's Dental Clinic and the Pediatric Hospital Dental Clinic will be the main workshop for the treatment of handicapping conditions.

PEDO 9427
Special Pediatric Dentistry Clinic. Two to five (2-5) credits.

This course is a continuation of course PEDO 9426. This clinical course is designed for the graduate students of Pediatric Dentistry to master competencies in the management of special patients and in all aspects of hospital procedures. The Puerto Rico Medical Center Children's Dental Clinic will be the main workshop for the treatment of handicapping conditions.

PEDO 9428
Current Literature Review. Two (2) credits.

PEDO 9429
Research Pediatric Dentistry. Four (4) credits.

PEDO 9434
Interceptive Orthodontics Clinic. One to four (1-4) credit(s).

Instruction in Interceptive Orthodontics is intended to develop a knowledge of the fundamental processes of growth and development of the craneofacial complex and understanding of the science of Cephalometrics and biomechanical principles applying to those procedures commonly used in the interceptive treatment of malocclusion. Special attention will be also given to mixed dentition analysis techniques, serial extraction, myofunctional therapy, contributory oral habits, tissue changes incidental to tooth movement, dental material in the orthodontic practice and dental and skeletal age analysis.

PEDO 9435
Interceptive Orthodontics Clinic. One to four (1-4) credit(s).

This course is a continuation of course PEDO 9434. Instruction in Interceptive Orthodontics is intended to develop a knowledge of the fundamental processes of growth and development of the craneofacial complex, and understanding of the science of Cephalometrics and biomechanical principles applied to the procedures commonly used in the interceptive treatment of malocclusion. Special attention will be also given to mixed dentition analysis techniques, serial extraction, myofunctional therapy, contributory oral habits, tissue changes incidental to tooth movement, dental materials in the orthodontic practice, dental and skeletal age analysis.

PEDO 9436
Research Methods for Residents. Two (2) credits.

This course is designed to familiarize the resident student with the process of designing, planning a research project, develop the library, and writing skills necessary for the preparation of a research proposal. The course will also allow the student to experience the actual doing of the project; develop the necessary research gathering analysis, interpretation and writing involved in the performing and reporting phases of a research project.

PEDO 9437
Human Growth and Development. One (1) credit.

This course has been designed to offer the professional graduated in the area of Pedodontic a general review of the theory and clinical practice, and of the knowledge that is required to understand normal growth and development of infants, children and adolescents in its multiple aspects: physical, metabolic, bone and organs. Factors affecting development at different stages, from conception to maturity will also be analyzed. The course will consist of the oral presentation and analysis of assigned reading material. The material to be assigned is intended to help the professional developed an overall knowledge on human growth and development as well as to help him apply these knowledge on his daily involvement with his patients, including diagnosis.

PEDO 9439
Pediatric Physical Diagnosis. Three (3) credits.

It covers the art and science of taking a good history, making a comprehensive physical examinations, and arriving at a pertinent diagnosis. Emphasis is placed on the Cardio-Pulmonary System.

PEDO 9445
Pediatric Oral Pathology. Two (2) credits.

The dentist who treats children should be proficient in the congenital and acquired pathological conditions that are most prevalent in the early life of the individual. Common conditions, as well as less frequent diseases, including endocrinologic and genetic problems are thoroughly discussed from the standpoint of clinical features, etiology, radiographic, and histological characteristics where applicable, pertinent laboratory tests and prognosis.

PEDO 9446
Baby Bottle Tooth Decay Outreach Program. Three (3) credits.

This course is designed to teach graduates the concepts associated with early childhood caries (ECC), not only from the dental standpoint but with is association to socioeconomical factors. The student through lectures, seminars and field work will be able to understand how disparities in certain groups can become a leading cause of the development of early childhood caries. Through the understanding of this converging factors and the analysis of group composition, graduates will create an outreach program, culturally sensitive, that will assist the community in the prevention of oral disease.

Grading System: Passed (P), Not Passed (NP)

PEDO 9447
Community Oral Health. Three (3) credits.

The aim of this elective course is to provide our graduates the basics of Dental Public Health and the skills necessary to implement community based oral health prevention programs. The course will be conducted using lectures and fieldwork. Students will identify such target areas and programs that can be implemented in order to impact and improve community oral health. It is based largely on the needs of the community that will be assessed first. Efforts will be focused on population needs, in accordance to what is socially appropriate and culturally sensitive. The course is elective and is divided in two areas: the didactic

component introduces to general aspects of Dental Public Health. The Second Part is dedicated to raise the data that sensibly will give us a clear picture of the problems of the community related to dental disease. Students will be required to visit the field community and be away from the Medical Sciences Campus for at least two hours.

Grading System: Passed (P), Not Passed (NP)

PEDO 9500
Development of Research Project. Three (3) credits.

The resident will conduct a research project-individually or as a group work-for a already approved by the school's sub-committee for research.

PROG 9100
Anesthesiology Rotation. Four (4) credits.

This course consists of three (3) weeks rotation through the Anesthesiology Department. During this time the general practice resident will assume all the duties and responsibilities of a First Year Anesthesiology Resident.

PROG 9101
Patient Care Clinic. Two (2) credits.

Provide experiences to improve the competence and confidence of the graduate in the various clinical disciplines, which are integral components of General Dentistry.

PROG 9102
Patient Care Clinic. Two (2) credits. Pre-requisite: PROG 9101.

Provide experience to improve the competence and confidence of the graduate in the various clinical disciplines, which are integral components of General Dentistry.

PROG 9105
Oral and Maxillofacial Surgery Clinic. Two (2) credits.

This course provides practical experience in Oral and Maxillofacial Surgery in both ambulatory and hospitalized patients. T he student will work in the Oral and Maxillofacial Surgery Clinic at the hospital, with emphasis in performing those procedures within the purview of a generalist.

PROG 9106
Hospital Protocol. Two (2) credits.

Dental residents must become familiar with basic hospital protocol, specially that common to all hospitals.

PROG 9107
Conscious Sedation for Dental Patients. Three (3) credits.

This course will cover the available techniques to reduce apprehension in dental patients, this facilitating the performance of the operator and alleviating the tensions of the patients.

PROG 9108
Physical Diagnosis. Three (3) credits.

This course covers the preparation of a complete medical history, the physical examination and the laboratory tests used to evaluate specific disease states of special interest to the dentist.

PROG 9111
Comprehensive Patient Care Clinic I. Two (2) credits.

Develop in the student the knowledge, skills, and attitudes necessary to provide comprehensive dental care to his/her patients.

PROG 9112
Comprehensive Patient Care Clinic II. Two (2) credits.

Develop in the student the knowledge, skills, and attitudes necessary to provide comprehensive dental care to his/her patients.

PROG 9113
Clinical Sciences Seminar I. Two (2) credits.

To expose the student to the most recent literature in all fields of Dentistry and to enhance his/her capacity to critically analyze divergent points of view and to become familiar with the new trends.

PROG 9114
Clinical Sciences Seminar II. Two (2) credits.

To expose the student to the most recent literature in all fields of Dentistry and to enhance his/her capacity to critically analyze divergent points of view and to become familiar with the new trends. A review of the latest concepts in the area of Complete Dentures, Fixed and Removable Denture Operative Dentistry, Occlusion, Pediatric Dentistry, Oral and Maxillofacial Surgery, Preventive Dentistry, Oral Pathology and Orthodontics.

PROG 9115
Internal Medicine Rotation. Zero (0) credit.

The resident will have an opportunity to become acquainted with the medical practice and apply the knowledge learned in the Physical Diagnosis course.

PROG 9116
Emergency Rotation. Zero (0) credit.

Hospital Emergency Room experience affords exposive to a diversity of situations wherein the student becomes familiar with the diagnosis and management of many illnesses and bodily injuries.

PROG 9117
Gerodontology. Two (2) credits.

This course consist of a series of lectures, field trips, and clinical experiences to provide the dental students with the knowledge and skills that are required to understand the needs of geriatric patients and to be able to provide them with better dental care.

PROG 9121
Dental Literature Review I. Two (2) credits.

The resident will be required to present and discuss current articles in the dental literature in order to familiarize themselves with current dental issues as well as to present lectures and seminars to peers.

PROG 9122
Dental Literature Review II. Two (2) credits.

The residents will be required to present and discuss current articles in the dental literature in order to familiarize themselves with current dental issues as well as to present lectures and seminars to peers.

PROG 9135
Implant Dentistry for General Practice Residents. Three (3) credits.

This course review the concepts of osseointegration, biophysics, materials, indications, contraindications, surgical protocols, rehabilitation, and maintenance, with strong emphasis on diagnosis, treatment planning and proper selection of each patient case. The resident, after proper review of concepts, will successfully complete a minimum of one (1) implant case at the end of the residency year. The course will integrate various modalities of teaching methodologies such as lectures, case presentations and discussions, video presentations, hands on laboratory sessions, computer programs, and clinical performance. Finally, the resident will be able to properly select and manage an implant case from the surgical and prosthodontical standpoint.

PROG 9136
Advanced Implant Dentistry for General Practice Residents. Three (3) credits. Pre-requisites: PROG 9135.

This course is designed for Second Year GPR residents with the goal of review the literature concerning dental implants and provide direct clinical supervision in the process of implant placements on patients. The course will give special attention to provide the resident with a level of proficiency in the clinical aspect of dental implantology. Also, the resident will be provide with advanced techniques in implant surgery, colocation and prosthetic rehabilitation.

PROG 9145
New Endodontic Techniques. Three (3) credits.

In this course are presented newest concepts and techniques in endodontic treatment. This one will provide the theory and practice of the use of rotary instruments and new obturation techniques in pulpal therapy. Also, review basic endodontic diagnosis and emergency endodontic treatment by using distance learning methodologies and clinical experiences.

PROG 9146
Advanced Endodontic Techniques. Three (3) credits. Pre-requisites: PROG 9145.

This course will provide the theory and practice of the use of rotary instruments and new obturation techniques in pulpal therapy. The course will also review basic diagnosis and emergency endodontic treatment by using distance learning methodologies, lectures and clinical experiences. The resident must be proficient in the didactic and clinical component of this course with different rotatory systems.

PROG 9151
General Patient Care Clinic I. Two (2) credits.

This course is designed to provide the Second Year resident with enough clinical experiences to develop proficiency at the different disciplines of Dentistry. The course is intended to develop the professional competencies into proficiencies for the advanced level of the Second Year resident and the clinic will offer the scenario for this educational progression. The resident will assume responsibility for the comprehensive oral healthcare delivery of the patient under constant supervision of the attending and/or specialist. All dental disciplines will be contemplated in the rationale for the execution of the patient's treatment plan. Clinical sites will be at the hospital dental clinic, School of Dentistry, and at community dental clinics.

PROG 9152
General Patient Care Clinic II. Two (2) credits. Pre-requisites: PROG 9151.

This course is designed to provide practical experience in the treatment of medically compromised patients. Residents will provide advanced state-of-the-art dental services according to the patient's needs. The resident will also acquire experience in the student supervision and clinical administration. All clinical activities will be measured at a proficiency level.

PROG 9155
Oral Health and HIV. Three (3) credits.

Using lecture presentations, group discussions and clinical experiences, the resident will be provided with the basic knowledge and skills required to adequately treat, in a culturally sensitive manner, oral conditions on HIV patients. The resident will also receive instruction in the diagnosis, medical management, stigma, psychosocial aspects and cultural competency in HIV/AIDS patients.

PROG 9156
Advanced Oral Health and HIV. Three (3) credits. Pre-requisites: PROG 9155.

Through discussions and clinical experiences, the resident will be provided with in depth knowledge and skills required to adequately treat, in a culturally competitive manner, oral conditions on HIV patients and will become acquainted with available funding and management of local and federal monies in the provision of oral health care to the HIV/AIDS population.

PROG 9161
Advanced Concepts in Clinical Sciences I. Two (2) credits.

This course is designed to provide the resident with the educational experiences in critical thinking on dental topics relevant to the profession and to the resident's needs. Subjects to be discussed are advanced concepts in fixed and removable prosthodontics, oral and maxillofacial surgery, pediatric dentistry, dental materials, occlusion, esthetic dentistry, and pathology among others. All disciplines discussed will then be integrated into comprehensive, well designed treatment plans for the benefit of the program's patients after proper presentation by the resident. The course will be offered in the first semester with a continuation in the second semester.

PROG 9162
Advanced Concepts in Clinical Sciences II. Two (2) credits. Pre-requisites: PROG 9161.

In this course the resident will have advanced experience in the use in dental materials and techniques in implants, rotatory instruments and medically compromised patients. The instructional strategies to be used are: lectures, case presentations and class discussions.

PROG 9175
Clinical Elective for Second Year Residents. Zero (0) credits.

This elective course is designed for the resident to identify an area of special interest and develop his/her full potential in such discipline. This area should be in consensus with the Second Year competencies. Once the area is identified, a professor will be chosen as the resident's mentor and, along with the program director, a list of objectives, competencies, and requirements will be devised for compliance by the resident during the entire academic year. The resident will expose their cases during Grands rounds and meetings.

PROG 9185
Clinical Supervision Rotation. Two (2) credits.

In this course the resident will participate as clinical instructor in the disciplines of operative dentistry, removable restorations, fixed restorations, and community dentistry in the predoctoral curriculum and will also supervise First Year GPR residents in the clinic and emergency room.

PROG 9186
Administration of Oral Health Services. Three (3) credits.

Using lectures presentations and distance learning methodologies the residents will acquire knowledge and skills in dental practice management and administration taking into consideration current changes in the Puerto Rico health care delivery system. The federal and local laws and the regulations that govern the dental practice in Puerto Rico will also be studied.

PROG 9187
Journal Club. Two (2) credits.

The Second Year residents will be required to have the ability to critically review relevant scientific literature as a foundation for life- long learning and as a way to adapt to new modifications in a constantly changing health care environment. At the beginning of the course, residents will be given instruction in the art of searching information at the available resources, including the library and information technology. Then, after careful preparation, residents are given reading assignments and articles to critically review such and submit their own decisions regarding a specific topic. The Journal Club meets every week throughout the entire year.

PROG 9515
Professional Studies in Dentistry. Zero (0) credit.

This is a course directed to graduated students in Dentistry. The student selects a specific area of Dentistry in which he/she shows interest in order to deepen his/her knowledge and to develop even more the skills previously acquired. The student is exposed to the most recent literature in all fields of Dentistry and to enhance his/her capacity to critically analyze divergent points of view and to become familiar with the new trends. The theoretical knowledge acquired will be place into practice through clinical work, in a full time basis during the semester. The course is offered through lectures, literature review, seminars, clinical work, laboratory and research. At the end of the course the student will have a deep knowledge of the selected subject and will be able to integrate the acquired concepts and the refined skills to apply them in real clinical situations.
Grading System: Passed (P), Not Passed (NP)

Old Title: Special Projects in Dentistry (Changed since July 1, 2008)

REST 9001
Complete Dentures Seminar I. Two (2) credits.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of complete dentures.

REST 9002
Complete Dentures Seminar II. Two (2) credits. Prerequisite: REST 9001.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of complete dentures.

REST 9003
Complete Dentures Seminar III. Two (2) credits. Prerequisites: REST 9002.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of complete dentures.

REST 9004
Complete Dentures Seminar IV. Two (2) credits. Pre-requisite: REST 9003.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of complete dentures.

REST 9011
Removable Partial Dentures Seminar I. Two (2) credits.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of removable partial dentures.

REST 9012
Removable Partial Dentures Seminar II. Two (2) credits. Pre-requisite: REST 9011.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of removable partial dentures.

REST 9013
Removable Partial Dentures Seminar III. Two (2) credits. Pre-requisite: REST 9012.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of removable partial dentures.

REST 9014
Removable Partial Dentures Seminar IV. Two (2) credits. Pre-requisite: REST 9013.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of removable partial dentures.

REST 9021
Fixed Partial Dentures Seminar I. Two (2) credits.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of fixed partial dentures.

REST 9022
Fixed Partial Dentures Seminar II. Two (2) credits. Pre-requisite: REST 9021.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of fixed partial dentures.

REST 9023
Fixed Partial Dentures Seminar III. Two (2) credits. Pre-requisite: REST 9012.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of fixed partial dentures.

REST 9024
Fixed Partial Dentures Seminar IV. Two (2) credits. Pre-requisite: REST 9023.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of fixed partial dentures.

REST 9031
Maxillofacial Prosthetics Seminar I. Two (2) credits.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of maxillofacial prostheses.

REST 9032
Maxillofacial Prosthetics Seminar II. Two (2) credits. Pre-requisite: REST 9031.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of maxillofacial prostheses.

REST 9033
Maxillofacial Prosthetics Seminar III. Two (2) credits.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of maxillofacial protheses.

REST 9034
Maxillofacial Prosthetics Seminar IV. Two (2) credits.

The student will present at a seminar the theories and procedures involved in the fabrication and follow-up of maxillofacial prostheses.

REST 9041
Biomedical Sciences Seminar I. Two (2) credits.

The student will present at a seminar subjects related to dental materials, medical conditions that could affect dental treatment, and dental equipment. Use of dental equipment and materials will be demonstrated.

REST 9042
Biomedical Sciences Seminar II. Two (2) credits. Pre-requisite: REST 9041.

The student will present at a seminar subjects related to dental materials, medical conditions that could affect dental treatment, and dental equipment. Use of dental equipment and materials will be demonstrated.

REST 9043
Biomedical Sciences Seminar III. Two (2) credits. Pre-requisites: REST 9041, REST 9042.

The student will present at a seminar subjects related to dental materials, medical conditions that could affect dental treatment, and dental equipment. Use of dental equipment and materials will be demonstrated.

REST 9044
Biomedical Sciences Seminar IV. Two (2) credits. Pre-requisites: REST 9041, REST 9042, REST 9043.

The student will present at a seminar subjects related to dental materials, medical conditions that could affect dental treatment, and dental equipment. Use of dental equipment and materials will be demonstrated.

REST 9051
Dental Implants I. Two (2) credits.

The student will learn in seminars and lectures the development and use of dental implants.

REST 9052
Dental Implants II. Two (2) credits. Pre-requisite: REST 9051.

The student will learn in seminars and lectures the development and use of dental implants.

REST 9061
Research Project I. Half (0.50) credit.

The student will develop, perform, and present a research project related to dental prostheses.

REST 9062
Research Project II. Half (0.50) credit.

The student will develop, perform, and present a research project related to dental prostheses.

REST 9063
Research Project III. Half (0.50) credit.

The student will develop, perform, and present a research project related to dental prostheses.

REST 9064
Research Project IV. Half (0.50) credit.

The student will develop, perform, and present a research project related to dental prostheses.

REST 9071
Postgraduate Prosthodontics Clinic I. Nine (9) credits.

The student will perform prosthodontic clinical procedures under supervision of the teaching staff.

REST 9072
Postgraduate Prosthodontics Clinic II. Nine (9) credits. Pre-requisite: REST 9071.

The student will perform prosthodontic clinical procedures under supervision of the teaching staff.

REST 9073
Postgraduate Prosthodontics Clinic III. Nine (9) credits. Pre-requisite: REST 9072.

The student will perform prosthodontic clinical procedures under supervision of the teaching staff.

REST 9074
Postgraduate Prosthodontics Clinic IV. Nine (9) credits. Pre-requisite: REST 9073.

The student will perform prosthodontic clinical procedures under supervision of the teaching staff.

REST 9075
Postgraduate Prosthodontics Clinic V. Nine (9) credits. Pre-requisites: REST 9071, REST 9072, REST 9073, REST 9074.

This course consists of practical experiences for the graduate student in the areas of Complete Dentures, Removable Partial Dentures, Fixed Partial Dentures and Maxillofacial Prosthetics. These experiences are intended to develop proficiency in the management of all types of prosthodontic patients, ranging from routine cases up to difficult cases. The student will also treat patients needing endosseous implants as part of their oral rehabilitation. The student will interact with other specialists (oral surgeons, periodontists) as part of an implant team in the diagnosis and treatment planning of these patients. This course prepares the student for his future practice as a prosthodontist, when he will be treating patients beyond the scope of a general practitioner.

REST 9076
Postgraduate Prosthodontics Clinic VI. Nine (9) credits. Pre-requisites: REST 9071, REST 9072, REST 9073, REST 9074, REST 9075.

This course consists of practical experiences for the graduate student in the areas of Complete Dentures, Removable Partial Dentures, Fixed Partial Dentures and Maxillofacial Prosthetics. These experiences are intended to develop proficiency in the management of all types of prosthodontic patients, ranging from routine cases up to difficult cases. The student will also treat patients needing endosseous implants as part of their oral rehabilitation. The student will interact with other specialists (oral surgeons, periodontists) as part of an implant team in the diagnosis and treatment planning of these patients. This course prepares the student for his future practice as a prosthodontist, when he will be treating patients beyond the scope of a general practitioner.

REST 9081
Occlusion Seminar I. Two (2) credits.

The course consists of a series of lectures and seminars with demonstrations of the theories of occlusion. The student will learn the basic physiologic mechanisms which determine mandibular movement and occlusion.

REST 9082
Occlusion Seminar II. Two (2) credits. Pre-requisite: REST 9081.

The course consists of a series of lectures, seminars, and demonstrations of the theories of occlusion. The student will learn the basic physiologic mechanisms which determine mandibular movement and occlusion.

REST 9083
Occlusion Seminar III. Two (2) credits. Pre-requisite: REST 9082.

The course consists of a series of lectures, seminars, and demonstrations of the theories of occlusion. The student will learn the basic physiologic mechanisms which determine mandibular movement and occlusion.

REST 9084
Occlusion Seminar IV. Two (2) credits. Pre-requisite: REST 9083.

The course consists of a series of lectures, seminars, and demonstrations of the theories of occlusion. The student will learn the basic physiologic mechanisms which determine mandibular movement and occlusion.

REST 9095
Introduction to Prosthodontics Laboratory. Two (2) credits.

The student will learn different laboratory techniques. The student will practice laboratory techniques in complete, partial removable, and fixed partial prostheses.

REST 9101
Treatment Planning and Therapy Seminar I. Two (2) credits.

Diagnosis and treatment planning are the most important procedures to be performed before an oral rehabilitation treatment is considered. At this stage, the prosthodontist considers the strategic significance of all remaining teeth and the quality of the oral tissues, especially those which will be affected by a dental prosthesis. A diagnostic protocol will aid in providing the necessary data that will determine the treatment options for the patient. A thorough knowledge of oral diagnostic techniques will be useful in accomplishing this task. This course is designed to aid the student develop the diagnostic skills necessary for establishing suitable treatment plans for the patient. This course consists of a series of lectures concerning oral examination, periodontal probing, bite registration techniques, face bow transfer, dental articulator mounting, diagnostic wax-up, intraoral photography and treatment planning. The student will prepare his cases for a presentation before the program faculty, residents, and invited guests. The presentation consists of a slide presentation with his case properly mounted on articulator, diagnostic wax-up and/or RPD designs. Once presented, the case will be thoroughly evaluated in a group discussion and a final treatment plan will be established. During treatment of the case, the student may be asked to prepare a presentation on some aspect of the treatment which may be beneficial for the residents and faculty. A final presentation is expected once the treatment has been completed.

REST 9102
Treatment Planning and Therapy Seminar II. Two (2) credits.

Diagnosis and treatment planning are the most important procedures to be performed before an oral rehabilitation treatment is considered. At this stage, the prosthodontist considers the strategic significance of all remaining teeth and the quality of the oral tissues, especially those which will be affected by a dental prosthesis. A diagnostic protocol will aid in providing the necessary data that will determine the treatment options for the patient. A thorough knowledge of oral diagnostic techniques will be useful in accomplishing this task. This course is designed to aid the student develop the diagnostic skills necessary for establishing suitable treatment plans for the patient. This course consists of a series of lectures concerning oral examination, periodontal probing, bite registration techniques, face bow transfer, dental articulator mounting, diagnostic wax-up, intraoral photography and treatment planning. The student will prepare his cases for a presentation before the program faculty, residents and invited guests. The presentation consists of a slide presentation with his case properly mounted on articulator, diagnostic wax-up and/or RPD designs. Once presented, the case will be thoroughly evaluated in a group discussion and a final treatment plan will be established. During treatment of the case, the student may be asked to prepare a presentation on some aspect of the treatment which may be beneficial for the residents and faculty. A final presentation is expected once the treatment has been completed.

REST 9103
Treatment Planning and Therapy Seminar III. Two (2) credits.

Diagnosis and treatment planning are the most important procedure to be performed before an oral rehabilitation treatment is considered. At this stage, the prosthodontist considers the strategic significance of all remaining teeth and the quality of the oral tissues, especially those which will be affected by a dental prosthesis. A diagnostic protocol will aid in providing the necessary data that will determine the treatment options for the patient. A thorough knowledge of oral diagnostic techniques will be useful in accomplishing this task. This course is designed to aid the student develop the diagnostic skills necessary for establishing suitable treatment plans for the patient. This course consists of a series of lectures concerning oral examination, periodontal probing, bite registration techniques, face bow transfer, dental articulator mounting, diagnostic wax-up, intraoral photography and treatment planning. The student will prepare his cases for a presentation before the program faculty, residents and invited guests. The presentation consists of a slide presentation with his case properly mounted on articulator, diagnostic wax-up and/or RPD designs. Once presented, the case will be thoroughly evaluated in a group discussion and a final treatment plan will be established. During treatment of the case, the student may be asked to prepare a presentation on some aspect of the treatment which may be beneficial for the residents and faculty. A final presentation is expected once the treatment has been completed.

REST 9104
Treatment Planning and Therapy Seminar IV. Two (2) credits.

Diagnosis and treatment planning are the most important procedures to be performed before an oral rehabilitation treatment is considered. At this stage, the prosthodontist considers the strategic significance of all remaining teeth and the quality of the oral tissues, especially those which will be affected by a dental prosthesis. A diagnostic protocol will aid in providing the necessary data that will determine the treatment options for the patient. A thorough knowledge of oral diagnostic techniques will be useful in accomplishing this task. This course is designed to aid the student develop the diagnostic skills necessary for establishing suitable treatment plans for the patient. This course consists of a series of lectures concerning oral examination, periodontal probing, bite registration techniques, face bow transfer, dental articulator mounting, diagnostic wax-up, intraoral photography and treatment planning. The student will prepare his cases for a presentation before the program faculty, residents and invited guests. The presentation consists of a slide presentation with his case properly mounted on articulator, diagnostic wax-up and/or RPD designs. Once presented, the case will be thoroughly evaluated in a group discussion and a final treatment plan will be established. During treatment of the case, the student may be asked to prepare a presentation on some aspect of the treatment which may be beneficial for the residents and faculty. A final presentation is expected once the treatment has been completed.

REST 9105
Treatment Planning and Therapy Seminar V. Two (2) credits.

Diagnosis and treatment planning are the most important procedures to be performed before an oral rehabilitation treatment is considered. At this stage, the prosthodontist considers the strategic significance of all remaining teeth and the quality of the oral tissues, especially those which will be affected by a dental prosthesis. A diagnostic protocol will aid in providing the necessary data that will determine the treatment options for the patient. A thorough knowledge of oral diagnostic techniques will be useful in accomplishing this task. This course is designed to aid the student develop the diagnostic skills necessary for establishing suitable treatment plans for the patient. This course consists of a series of lectures concerning oral examination, periodontal probing, bite registration techniques, face bow transfer, dental articulator mounting, diagnostic wax-up, intraoral photography and treatment planning. The student will prepare his cases for a presentation before the program faculty, residents and invited guests. The presentation consists of a slide presentation with his case properly mounted on articulator, diagnostic wax-up and/or RPD designs. Once presented, the case will be thoroughly evaluated in a group discussion and a final treatment plan will be established. During treatment of the case, the student may be asked to prepare a presentation on some aspect of the treatment which may be beneficial for the residents and faculty. A final presentation is expected once the treatment has been completed.

REST 9106
Treatment Planning and Therapy Seminar VI. Two (2) credits.

Diagnosis and treatment planning are the most important procedures to be performed before an oral rehabilitation treatment is considered. At this stage, the prosthodontist considers the strategic significance of all remaining teeth and the quality of the oral tissues, especially those which will be affected by a dental prosthesis. A diagnostic protocol will aid in providing the necessary data that will determine the treatment options for the patient. A thorough knowledge of oral diagnostic techniques will be useful in accomplishing this task. This course is designed to aid the student develop the diagnostic skills necessary for establishing suitable treatment plans for the patient. This course consists of a series of lectures concerning oral examination, periodontal probing, bite registration techniques, face bow transfer, dental articulator mounting, diagnostic wax-up, intraoral photography and treatment planning. The student will prepare his cases for a presentation before the program faculty, residents and invited guests. The presentation consists of a slide presentation with his case properly mounted on articulator, diagnostic wax-up and/or RPD designs. Once presented, the case will be thoroughly evaluated in a group discussion and a final treatment plan will be established. During treatment of the case, the student may be asked to prepare a presentation on some aspect of the treatment which may be beneficial for the residents and faculty. A final presentation is expected once the treatment has been completed.

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LAMOUTTE-INCLÁN, ANDRÉ - Surgical Sciences Department; Assistant Professor, Ad-honorem; DMD, University of Puerto Rico, School of Dentistry, 1976; Certificate in Periodontics, Tufts University School of Dental Medicine, 1979.

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LEÓN-TORRES, ATILANO - Surgical Sciences Department; Associate Professor; BS, University of Puerto Rico, 1971; DMD, University of Puerto Rico, School of Dentistry, 1974; Certificate in Oral and Maxillofacial Surgery, University of Puerto Rico, School of Dentistry, 1977.

LEVY, DANIEL - Ecological Sciences Department; Assistant Professor; DDS, La Universidad del Zulia, 1996; Pediatric Dentistry Certificate, La Universidad del Zulia, 2000; MS, La Universidad del Zulia, 2001; Certificate in Orthodontics, University of Puerto Rico, School of Dentistry, 2005.

LÓPEZ-DÁVILA, ANA REBECA - Ecological Sciences Department; Associate Professor; BA, Goucher College, Maryland, 1987; DMD, University of Puerto Rico, School of Dentistry, 1991; General Practice Residency Certificate, Long Island College Hospital, New York, 1992; Postgraduate Education in Orthodontics, Columbia University, New York, 1996.

LÓPEZ-DEL VALLE, LYDIA M. - Surgical Sciences Department; Associate Professor; BS, University of Puerto Rico, 1977; DMD, University of Puerto Rico, School of Dentistry, 1981.

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LOZA-DE CORO, MARÍA A. - Restorative Sciences Department; Associate Professor; BS, University of Puerto Rico, 1990; DMD, University of Puerto Rico, School of Dentistry, 1994; Certificate in Prosthodontics and MS, Oral Biology, Medical College of Georgia, 1996; American Board of Prosthodontics Diplomate, 2000.

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MORALES-DÍAZ, JOSÉ A. - Ecological Sciences Department; Assistant Professor; BS, University of Puerto Rico, 1978; DMD, University of Puerto Rico, School of Dentistry, 1982; General Practice Residency, Veteran's Administration Center, San Juan, Puerto Rico, 1983; Postdoctoral Certificate in Orthodontics, New York University, 1993.

MORALES-MORALES, JOSÉ A. - Surgical Sciences Department; Professor; BS, University of Puerto Rico, 1970; DMD, University of Puerto Rico, School of Dentistry, 1974; Residency in Oral and Maxillofacial Surgery, University of Puerto Rico, School of Dentistry, 1977.

MORALES-RIVERA, JESÚS M. - Ecological Sciences Department; Assistant Professor, Ad-honorem; BS, Interamerican University of Puerto Rico, 1993; DMD, University of Puerto Rico, School of Dentistry, 1997; Certificate in General Practice Residency, University of Puerto Rico, School of Dentistry, 1998.

MOROU-BERMÚDEZ, EVANGELIA - Surgical Sciences Department; Associate Professor; DDS, University of Athens, 1990; Certificate in Pediatric Dentistry, Eastman Dental Center, Rochester, NY, 1993; Certificate of Advanced Education in General Dentistry, Eastman Dental Center, Rochester, NY, 1995; MS, Eastman Dental Center, Rochester, NY, 1997; PhD, Eastman Dental Center, Rochester, NY, 1999.

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MUÑIZ-ECHEVARRÍA, OSCAR - Surgical Sciences Department; Assistant Professor, Ad-honorem; BS, University of Puerto Rico, 1966; DMD, University of Puerto Rico, School of Dentistry, 1971; Certificate in Oral and Maxillofacial Surgery, University of Puerto Rico, School of Dentistry, 1974; Fellow American Society of Oral and Maxillofacial Surgery, 1981; Fellow Intersociety for Maxillofacial Surgery National, 1980.

NAIM, WADIH - Restorative Sciences Department; Assistant Professor; BS, Our Lady of Jamhour Lebanon, 1977; DMD, St. Joseph School of Dentistry, Lebanon; DMD, Boston University, 1989, Certificate in Prosthodontics, Boston University, 1986.

NÁTER-PRIETO, HÉCTOR - Surgical Sciences Department; Assistant Professor, Ad-honorem; DMD, University of Puerto Rico, School of Dentistry, 1980; Endodontics, Pittsburgh University, 1982.

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ORTIZ-MARTÍNEZ, ARACELI - Surgical Sciences Department; Professor; BS, University of Puerto Rico, 1958; DMD, University of Puerto Rico, School of Dentistry, 1962; Residency in General Pathology, University District Hospital of Puerto Rico, 1965; MSD, Indiana University, 1967.

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RAMÍREZ-BRUNET, FRANCISCO - Surgical Sciences Department; Professor; BA, Interamerican University of Puerto Rico, 1967; DMD, University of Puerto Rico, School of Dentistry, 1971; MS, University of Minnesota, 1976.

RAMÍREZ-RAMOS, RONALDO - Surgical Sciences Department; Assistant Professor, Ad-honorem; BS, University of Puerto Rico, 1981; DMD, University of Puerto Rico, School of Dentistry, 1985.

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RODRÍGUEZ-OLAZAGASTI, HERMAN - Surgical Sciences Department; Professor, Ad-honorem; BS, University of Puerto Rico, 1961; DMD, University of Puerto Rico, School of Dentistry, 1965; Certificate in Oral and Maxillofacial Surgery, University of Puerto Rico, 1968; FICD, 1982.

RODRÍGUEZ-RODRÍGUEZ, NELSON - Restorative Sciences Department; Assistant Professor; BS, Interamerican University, May 1988; DMD, University of Puerto Rico, School of Dentistry, 1998; Certificate in Prosthodontics, University of Puerto Rico, School of Dentistry, 2001.

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SÁNCHEZ-CASTELLANO, ARLENE - Restorative Sciences Department; Assistant Professor; BS, University of Puerto Rico, 1998; DMD, University of Puerto Rico, School of Dentistry, 1992; MSHA, University of Puerto Rico, School of Public Health, 2004.

SÁNCHEZ-JAIME, NILDA - Ecological Sciences Department; Assistant Professor; BS, University of Puerto Rico, 1981; DMD, School of Dentistry, 1986.

SANTA-NORIEGA, CARMEN AIXA - Surgical Sciences Department; Professor; BS, University of Puerto Rico, 1973; MA, University of Puerto Rico 1975; DMD, University of Puerto Rico, School of Dentistry, 1982, Certificate in Endodontics, Tufts, University, 1987.

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University of Puerto Rico, School of Dentistry, 2000; Diplomate of American Board Oral and Maxillofacial Surgery, 2003; Diplomate Of National Board of Dental Anesthesiology, 2005.

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TORRES-PÉREZ, ERIC X. - Ecological Sciences Department; Assistant Professor; BS, University of Puerto Rico, Mayagüez Campus, 1996; DMD, School of Dentistry, University of Puerto Rico, 2001; General Practice Residency, University of Puerto Rico, School of Dentistry, 1990.

VARGAS-VIDOT, JOSÉ A. - Ecological Sciences Department; Assistant Professor, Ad-honorem; BS, Interamerican University, Metropolitan Campus, 1981; M.D. School of Medicine Eugenio Maria de Hostos University, Santo Domingo, Dominican Republic, 1996.

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VÉLEZ-COLÓN, ALVÁN DE JESÚS - Ecological Sciences Department; Professor; BA, Interamerican University of Puerto Rico, 1951; DMD, University of Puerto Rico, School of Dentistry, 1966; Rotating Internship, Veterans Administration Hospital, 1967; Certificate in Pedodontics, University of Pennsylvania, 1969.

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VILLA-RIVERA, HUMBERTO - Surgical Sciences Department; Professor; BS, University of Puerto Rico, 1971; DMD, University of Puerto Rico, School of Dentistry, 1976; Certificate in General Practice, Puerto Rico Veterans Administration Hospital, 1977; Certificate in Periodontics, Boston University, 1981.

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COORDINATORS OF BIOMEDICAL SCIENCES COURSES

CANT, JOHN - Department of Anatomy - School of Medicine; Professor; PhD, University of California, Davis, 1977.

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HERREÑO, DIÓGENES - Department of Pharmacology - School of Medicine; Associate Professor; PhD, School of Medicine, 1986; M.Ed., University of Puerto Rico, 1981; Postdoctoral Studies in Toxicology and Chemical Carcinogenesis, 1988-1994.

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RODRIGUEZ-MEDINA, JOSÉ R. - Department of Biochemistry - School of Medicine; Professor; BS, University of Puerto Rico, 1978; MS, MPH, University of Puerto Rico, 1980; PhD, Brandeis University , Waltham, MA; Post-Doctoral in Molecular Biology, NIH, 1989.



School of Pharmacy

HISTORY

The School of Pharmacy of the University of Puerto Rico, originally established as a Department of Pharmacy, and constituted as the College of Pharmacy on 1925, was founded on September 22, 1913 at the Río Piedras Campus. It was the first health profession program to be offered at a higher education level in Puerto Rico, and the first to be accredited. In 1989, the College changed its official name to School of Pharmacy.

The first twelve pharmacists graduated in 1915 from a two-year program. In 1928 the College of Pharmacy it began offering a four-year pharmacy program leading to the degree of Bachelor of Pharmaceutical Sciences.

In the early thirties, the College moved to a building of its own, named after Dr. Agustin Stahl, an eminent Puerto Rican botanist and scientist. In 1932, it was accepted as a member of the American Association of Colleges of Pharmacy. In 1949, the School began its five-year Bachelor of Pharmaceutical Sciences program, being the second school in the nation to adopt such a program, eleven years before it was required for accreditation. The program was first accredited by the American Council for Pharmaceutical Education in 1952, and it has been accredited ever since.

The new shift in pharmacy practice and education to clinical pharmacy required the transfer of the College from the Río Piedras Campus to the Medical Sciences Campus (MSC) of the University of Puerto Rico. In 1977, the College was physically transferred to the MSC. The Bachelor in Sciences in Pharmacy program was offered from 1981 to 2003, following a clinically oriented curriculum.

A Master of Science in Pharmacy program with options in Industrial Pharmacy and Pharmaceutical Sciences (Medicinal Chemistry) was established in 1988, providing highly trained individuals for the pharmaceutical industry in the Island.

The development of the pharmacist's new roles for pharmacists in patient care in which they and to the evolution of pharmaceutical education to the broader concept of pharmaceutical care. In this new role, the pharmacist assumes responsibility of overseeing the effectiveness and safety of the pharmacotherapy required significant changes in pharmacy education. This led the School of Pharmacy to implement the Doctor of Pharmacy program (Pharm.D.) in 2001. The program is accredited by the Accreditation Council for Pharmacy Education (ACPE). The curriculum focuses on the development of general and professional abilities, the integration of theory and practice, as well as active and collaborative learning.

In 2001 a Pharmacy Practice Residency program, was established as a joint effort with VA Caribbean Healthcare Center in San Juan. It is accredited by the American Society for Health System Pharmacists as a postgraduate year one pharmacy residency program.

The School of Pharmacy is also a provider of continuing education since 1979. Its Continuing Education and Professional Studies Division acknowledged by the Health Professional Examining Boards of Puerto Rico as a continuing education provider for the majority of health professionals in the Island. The University of Puerto Rico School of Pharmacy is accredited by the Accreditation Council for Pharmacy Education (ACPE) as a provider of coninuing pharmacy education.

MISSION STATEMENT

The School of Pharmacy is an integral part of the Medical Sciences Campus of the University of Puerto Rico. Its main mission is the formation of human resources in pharmacy to improve the health-related quality of life of individuals and populations. As a state institution, we recognize the responsibility of assuming leadership in research and service in order o contribute to the health and the economy of Puerto Rico. We offer programs at the professional and graduate levels targeted to improving the effective and safe use of medications. In addition, we promote excellence in education, research, and service in an environment of respect and commitment.

VISION

The School of Pharmacy of the University of Puerto Rico is a leader academic institution in the vanguard of education, research, and service. Our staff, students, and alumni are characterized by their commitment, ethics, and spirit of collaboration.

VALUES

- Dignity
- Integrity
- Respect
- Honesty
- Responsibility
- Commitment to quality

ORGANIZATION AND ADMINISTRATION

The School is headed by the Dean, who is assisted by the Associate Dean for Academic Affairs, the Assistant Dean for Student Affairs, Assistant Dean for Researach and Graduate Programs, and Department Heads for Pharmaceutical Sciences and Pharmacy Practice.

LOCATION AND FACILITIES

The physical facilities of the School of Pharmacy are located in the Deanship of Pharmacy and Deanship for Student Building (classrooms, and administrative offices), the Main Building of the Medical Sciences Campus (teaching and research laboratories): and the Library of the Medical Sciences Campus (Center for Drug Information and Research). The School also maintains a Museum of Pharmacy and Medicinal Plants. The Dr. Esteban Nuñez Meléndez Medicinal Plants Garden, is located at the University of Puerto Rico Botanical Garden in Río Piedras. The historical collection of the museum Dr. Luis Torres Díaz. Hall is located on the first floor of the Deanships of Pharmacy and Students Building.

STUDENTS SERVICES

Office of Student Affairs

Student services are coordinated through the Office of Student Affairs. This office is responsible of providing academic, professional, personal and vocational counseling to all students. It serves as liaison between the students, faculty and administration. Among its objectives, it develops and maintains an environment that facilitates the academic performance of students. For additional information about its services, please contact Myriam L. González, MPH, Assistant Dean for Student Affairs (**myriam.gonzalez1@upr.edu**).

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School of Pharmacy Student Council

The School of Pharmacy Student Council is the official representative body of the students enrolled in the School of Pharmacy. It is composed of the presidents of each professional year class and nine representatives elected from the student body. For more information, please contact Prof. Myriam L. González (**myriam.gonzalez1@upr.edu**) at (787) 758-2525, ext. 5407.

ACADEMIC PROGRAMS

DOCTOR OF PHARMACY PROGRAM (Pharm.D.)

The Doctor of Pharmacy (Pharm.D.) program is a four-year program designed to prepare generalist practitioners who will render pharmaceutical care.

The program goals are:

- To foster the integral formation of students by developing their general and professional abilities along the curriculum.
- To foster the integration of knowledge based on professional practice experience in a systematic ability-based curriculum which incorporates the following areas: biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; pharmacy practice; and general education.

- To prepare competent pharmacists to enter the practice of the profession in different scenarios.

Program goals are in accordance with the scope of contemporary practice responsibilities and the emerging roles of pharmacists. The program requires the approval of 141 credits, exposing the student to 1,620 hours of practical experiences. The curriculum follows a liberal, systematic, and humanistic model, which promotes human development through the development of general/ professional abilities. The program offers a core of comprehensive abilities systematically developed as skills, attitudes, values, and conceptual knowledge, all of which are necessary in order to provide pharmaceutical care. The abilities are contextualized in the disciplines and practice that comprise the pharmacy profession. These are: Pharmaceutical Care, Critical Thinking, Problem Solving and Decision Making, Communication, Ethics, Social Interaction and Relations, Social Consciousness and Responsibilities, Intervention in Public Policy, Administration, and Self-Learning and Professional Development. These abilities have been developed as a set of expectations at three levels of progress through the curriculum.

DOCTOR OF PHARMACY PROGRAM

Admission Requirements

Complete a minimum of 71 - 74 semester credits from among the following courses, or their equivalents, at any accredited college or university:

Courses	Credits
Basic English	6
Basic Spanish	6
Languages (English or Spanish)	3
Humanities	6
Social Sciences	6
Pre-calculus	4-6
Calculus I	4-5
General Chemistry	8
Organic Chemistry	8
General Biology	6
General Physics w/lab	8
General Psychology	3
Introduction to Economics	3
Total	71 – 74

- The advanced placement test does not substitute the requisites of basic English and Spanish.
- The three credits in languages (English or Spanish) must be taken in courses that develop oral and written communication skills.
- Mathematics credits through Calculus I are required for admission. Mathematics 3031, 3052 and 3151 offered by the University of Puerto Rico System may be used as standards of reference. Calculus I should include integrals.
- General Biology requirement is not satisfied by the Biological Sciences course offered by the General Studies Faculty of the University of Puerto Rico.
- General Physics requirement is not satisfied by the Physical Sciences course offered by the General Studies Faculty of the University of Puerto Rico. Physics 3001, 3002, 3003, 3004 offered by the University of Puerto Rico System may be used as standards of reference.
- For Psychology may use PSIC 3005 offered by the University of Puerto Rico as reference.
- Economics course must include basic concepts of microeconomics.

To qualify for admission, applicants must present academic and personal records indicating good preparation and ability to undertake a professional college degree program. Applicants are required a general grade point average (GPA) of at least 2.75 (on a scale of 4.00), and a specific grade point average of at least 2.75 (on a scale of 4.00) in chemistry, mathematics, biology, and physics courses (sciences index). In addition, applicants must take the Pharmacy College Admission Text (PCAT) no later than January of the year of admission and submit three recommendation forms, two of which should be from former professors. These recommendations should comment on the applicant's creativity, responsibility, leadership, oral and written communication skills, motivation to study, and aptitude for teamwork. A personal interview is also required where candidates will present evidence of volunteer service, leadership abilities, and work experience, among others.

Accreditation

The Doctor of Pharmacy program of the University of Puerto Rico is currently accreditted by the:

Accreditation Council for Pharmacy Education
20 North Clark Street
Chicago, Illinois 60602-5109
The ACPE telephone number is (312) 664-3575
Website: **www.acpe-accredit.org**

DOCTOR OF PHARMACY

TOTAL SEMESTER CREDIT-HOURS: 141

First Year: 34 credit-hours

FARM 7165	Scientific Foundations for the Professional Practice: Anatomy and Physiology I	2
FARM 7166	Scientific Foundations for the Professional Practice: Mathematics, Chemistry, and Physics	2.5
FARM 7167	Scientific Foundations for the Professional Practice: Biochemistry I	1.5
FARM 7116	Health Promotion and Disease Prevention	3
FARM 7105	Psychosocial Basis, Culture, and Management Theory-Practice Seminar I	3
FARM 7135	Research, Education, and Scientific Method Laboratory I	1
FARM 7117	Integrative Seminar of Pharmaceutical Care and Human Development I	3
FARM 7169	Scientific Foundations for the Professional Practice: Anatomy and Physiology II	3
FARM 7168	Scientific Foundations for the Professional Practice: Biochemistry II	2
FARM 7137	Compounding and Manufacturing of Dosage Forms I	3
FARM 7106	Psychosocial Basis, Culture, and Management Theory-Practice Seminar II	3
FARM 7136	Research, Education, and Scientific Method Laboratory II	1
FARM 7118	Integrative Seminar of Pharmaceutical Care and Human Development II	1
FARM 7115	Introductory Practicum	2
Electives		3

Second Year: 37 credit-hours

FARM 7225	Integrated Pharmaceutical Sciences and Therapeutic Agents I: Medicinal Chemistry and Pharmacology	7
FARM 7237	Compounding and Manufacturing of Dosage Forms II	3
FARM 7227	Pharmacy and the Health Care System	2
FARM 7205	Psychosocial Basis, Culture, and Management Theory-Practice Seminar III	2
FARM 7235	Research, Education, and Scientific Method Laboratory III	1
FARM 7217	Integrative Seminar of Pharmaceutical Care and Human Development III	2
FARM 7226	Integrated Pharmaceutical Sciences and Therapeutics Agents II: Medicinal Chemistry and Pharmacology	2
FARM 7229	Basic Biopharmaceutics and Pharmacokinetics	2.5
FARM 7228	Integrated Pharmaceutical Sciences of Anti- Infective Agents	2.5
FARM 7305	Health Policy and Pharmacy Law	3
FARM 7306	Psychosocial Basis, Culture, and Management Theory-Practice Seminar IV	2.5
FARM 7285	Scientific Foundations for the Professional Practice III: Microbiology	1.5
FARM 7335	Research, Education, and Scientific Method Laboratory IV	1

FARM 7315	Integrative Seminar on Pharmaceutical Care and Human Development IV	1
FARM 7266	Service Learning Practicum	1
FARM 7275	Longitudinal Care Practice I	1
Electives		2

Third Year: 35 credit-hours

FARM 7331	Integrated Sciences, Therapeutics, and Patient Care I	7
FARM 7307	Psychosocial Basis, Culture, and Management Theory-Practice Seminar V	4
FARM 7336	Research, Education, and Scientific Method Laboratory V	1
FARM 7375	Longitudinal Care Practice II	1
FARM 7317	Integrative Seminar of Pharmaceutical Care and Human Development V	2
FARM 7332	Integrated Sciences, Therapeutics, and Patient Care II	7
FARM 7337	Research, Education, and Scientific Method Laboratory VI	1
FARM 7318	Integrative Seminar on Pharmaceutical Care and Human Development VI	1
FARM 7345	Management of the Practice and the Medication Distribution and Control Systems Practicum: Institutional Pharmacy	4
FARM 7346	Management of the Practice and the Medication Distribution and Control Systems Practicum: Community Pharmacy	4
Electives		3

Fourth Year: 35 credit-hours

FARM 7489	Inpatient Pharmaceutical Care: Acute Care in Specialized Practice	4-5
FARM 7488	Inpatient Pharmaceutical Care: General Medicine Practice	4-5
FARM 7497	Pharmaceutical Care in the Ambulatory Setting: Community Pharmacy Practice	4-5
FARM 7451	Selective Advanced Practicum in Pharmacy	4-5
FARM 7498	Pharmaceutical Care in Ambulatory Setting: Institutional Practice	4-5
FARM 7452	Selective Advanced Practicum in Pharmacy	4-5
FARM 7453	Selective Advanced Practicum in Pharmacy	4-5
FARM 7487	Institutional Pharmacy Practice	4-5
FARM 7417	Integrative Seminar on Pharmaceutical Care and Human Development VII	1
FARM 7418	Integrative Seminar on Pharmaceutical Care and Human Development VIII	1
FARM 7438	Doctor of Pharmacy Research Project	1

Experiential Education in the Doctor of Pharmacy Program

The professional experience component of the Doctor of Pharmacy Program consists of a series of structured experiential learning practicums, which begin during the second semester of the first professional year. The experiences occur in a variety of settings which include hospitals, community pharmacies, and the pharmaceutical industry, among others. The practicums are organized as a curricular progression leading to eight advanced practice experiences (five required and three selective) in the fourth professional year of the curriculum. A total of 1,620 contact hours (equivalent to 45 semester credits) are distributed and offered in the curricular sequence, as they appear in the following table. The Board of Pharmacy of Puerto Rico accrues the total number of hours towards licensure requirements in Puerto Rico.

EXPERIENTIAL LEARNING PRACTICUMS

First Year

Introductory Practicum (72 hrs) 2 credits

Second Year

Service Learning (36 hrs)	1 credit
Longitudinal Care I (36 hrs)	1 credit

Third Year

Longitudinal Care II (36 hrs)	1 credit
Management of the Practice and the Medication Distribution and Control Systems Practicum: Community Pharmacy (144 hrs) and Institutional Pharmacy (144 hrs)	8 credits

Fourth Year

Advanced Practicums (8 practicums) (1,152 hrs)	32 credits

Institutional Pharmacy Practice
Inpatient Pharmaceutical Care I & II
Ambulatory Pharmaceutical Care I & II
Selective Advanced Practicum in Pharmacy (three courses)

Graduation Requirements

Students will receive a Doctor of Pharmacy (Pharm D) degree upon completion of the following requirements:

- Approve all required courses (141 semester credits). The required and elective courses must be approved with a grade of C or above, i.e., a minimum grade point average of 2.00 (on a scale of 4.00).
- Present a portfolio that shows the student´s development of the ten (10) general and professional abilities of the program.
- Demonstrate professional and ethical conduct.
- Complete at least the last two (2) years of studies at the School of Pharmacy of the University of Puerto Rico.
- Complete the academic program within a maximum of six (6) years from the time of admission.
- Comply with all applicable regulations established by the University of Puerto Rico Medical Sciences Campus.

PHARMACY PRACTICE RESIDENCY PROGRAM

The Pharmacy Residency Program Post Graduate Year 1 (PGY-1) at the VA Caribbean Healthcare System is a collaborative program between the School of Pharmacy of the University of Puerto Rico (UPR) and the VA Caribbean Healthcare System. It is accredited by the AmericanSociety of Health System Pharmacists. The purpose of this twelve month residency program is to provide structured and advanced education and training to selected, highly motivated and qualified graduates and pharmacists, so that they are prepared to pursue a Post Graduate Year 2 (PGY-2) specialty pharmacy residency or assume an advanced pharmacy practice or academic position. It complies with the ASHP-PGY-1 standards and emphasizes evidenced-based patient-centered medication therapy management with interdisciplinary teams, participation in the medication use process, leadership and practice management skills, project management skills, medication and practice related training, and the effective use of informatics. In addition, residents are required to conduct a pharmacy practice research and demonstrate competencies that contribute to working succesfully in the health care environment. Residents participate in acute and ambulatory patient care experiences including anticoagulation management program, primary care, home-based primary care, pain and palliative care, geriatric evaluation and management primary care clinic, and oncology. They also participate in a practice management extended rotation, in a teaching rotation at the School of Pharmacy UPR, and in precepting students in their longitudinal experiences and advanced practicums.

Applicants must be U.S. citizen, fully bilingual (Spanish and English), Pharm D. graduates and possess a U.S.A. pharmacy licensure. In addition, a curriculum vitae and three letters of recommendation are required.

Interested candidates must register in the ASHP National Matching Program. For more information, contact:

Mirza D. Martínez, PharmD.
Tel. (787) 858-2525 Ext. 5316
Fax (787) 754-6995
E-mail: **mirza.martinez@upr.edu**

MASTER OF SCIENCE IN PHARMACY PROGRAM

The School of Pharmacy graduate program was approved in 1986 by the Council on Higher Education of Puerto Rico. The first class was admitted in academic year 1987-1988. It offers a Master of Science in

Pharmacy degree with two options, i.e., Pharmaceutical Sciences (Medicinal Chemistry) and Industrial Pharmacy. Classes for both options are held usually in the evening on weekdays and Saturday mornings. Both options require 40 trimester credit-hours for graduation, including original research work presented in a thesis. Students will not be admitted to the program for 2010-2011 academic year.

The main goal of the Master of Science in Pharmacy program is to provide advanced training in industrial pharmacy and pharmaceutical sciences. Within the context of this general goal, the specific program objectives are to:

- Offer an opportunity for individuals to advance their knowledge in specific areas of industrial pharmacy.
- Prepare individuals for research and teaching positions requiring personnel with a strong background in the pharmaceutical sciences.
- Develop individuals with the research skills needed to carry out basic and applied studies.
- Address the pharmaceutical needs of Puerto Rico.

The Industrial Pharmacy option is geared towards understanding the scientific principles involved in techniques employed in the pharmaceutical industry. To accomplish this goal, the program offers courses in Advanced Physical Pharmacy, Biopharmacy and Pharmacokinetics, Pharmaceutical Quality Control, Instrumental Pharmaceutical Analysis, and Pharmaceutical Technology. Graduates are qualified to work in numerous areas of the pharmaceutical industry, or pursue a Ph.D. degree.

The Pharmaceutical Sciences (Medicinal Chemistry) option offers courses in Medicinal Chemistry, Instrumental Pharmaceutical Analysis, Pharmacognosy and Natural Products, Drug Metabolism, and Biological Chemistry. Students become familiar with methods of identification and purification that employ advanced instrumental techniques such as: gas chromatography, HPLC, NMR, gas chromatography- mass spectrometry, and other hyphenated methods of analysis. The knowledge and experience obtained enables graduates to perform successfully in the pharmaceutical industry, research laboratories, and other related areas, or pursue a Ph.D. degree.

Admission Requirements

- A Doctor of Pharmacy degree, baccalaureate degree in Pharmacy or in one of the physical, chemical, biological, or engineering sciences.
- A grade point average of 3.00 or higher (scale of 4.00).
- GRE scores.
- Interview required.

These programs, Industrial Pharmacy and Pharmaceutical Sciences (Medicinal Chemistry), will not admit students in August 2010 (academic year 2010-2011); admissions will resume in August 2011 (academic year 2011-2012). Described interruption of admissions has been notified to the UPR Vice Presidency for Academic Affairs.

Graduation Requirements

The student must satisfy all the requirements stated in the School of Pharmacy Norms and Procedures for the Master of Science. The minimum requirements include:

- Completion of 40 trimester credit hours, within five consecutive years. A maximum of six credits, if deemed acceptable by the Graduate Committee, may be transferred from another accredited institution.
- Completion of all required courses in a satisfactory manner. An overall grade point average of at least 3.00.
- Submission of an original research project and defense of a thesis.
- Demonstrate adequate knowledge in the specialty area by successfully passing an oral examination.
- Submission of bound copies of the thesis in its final form.

MASTER OF SCIENCE IN PHARMACY WITH SPECIALTY IN INDUSTRIAL PHARMACY

TOTAL TRIMESTER CREDIT-HOURS: 40

General Core: 6 credit hours

FAGG 6100	Statistics in Pharmacy	2
FAGG 6200	Drug Literature Evaluation	2
FAGG 6300	Principles of Research Design	2

Industrial Pharmacy Core: 24 credit hours

FAQM 6351	Instrumental Pharmaceutical Analysis I	2
FAQM 6352	Instrumental Pharmaceutical Analysis II	2
FAFI 6311	Advanced Physical Pharmacy I	2
FAFI 6312	Advanced Physical Pharmacy II	2
FAFI 6321	Pharmaceutical Unit Operations I	2
FAFI 6322	Pharmaceutical Unit Operations II	2
FAFI 6511	Industrial Pharmaceutical Technology I	2
FAFI 6512	Industrial Pharmaceutical Technology II	2
FAFI 6400	Seminar in Industrial Pharmacy	2
FAFI 6600	Pharmaceutical Quality Control	2
FAFI 6700	Advanced Biopharmaceutics and Pharmacokinetics	2
FAFI 6313	Advanced Physical Pharmacy III	2

Electives: 4 credit hours
Research and Thesis: 6 credit hours

FAGG 6800	M.S. Research*	2
FAGG 6900	Thesis	2

*Must be taken at least twice to receive 4 credits. If taken more than twice, only 4 credits will be credited toward the degree.

MASTER OF SCIENCE IN PHARMACY WITH SPECIALTY IN PHARMACEUTICAL SCIENCES

TOTAL TRIMESTER CREDIT-HOURS: 40

General Core: 6 credit-hours

FAGG 6100	Statistics in Pharmacy	2
FAGG 6200	Drug Literature Evaluation	2
FAGG 6300	Principles of Research Design	2

Pharmaceutical Sciences (Medicinal Chemistry) Core: 18 credit-hours

FAQM 6351	Instrumental Pharmaceutical Analysis I	2
FAQM 6352	Instrumental Pharmaceutical Analysis II	2
FABI 6311	Advanced Biological Chemistry I	2
FAQM 6705	Seminar in Medicinal Chemistry	2
FAFI 6311	Advanced Physical Pharmacy I	2
FAQM 6701	Medicinal Chemistry I	2
FAQM 6702	Medicinal Chemistry II	2
FAQM 6703	Medicinal Chemistry III	2
FAQM 6707	Pharmacognosy and Natural Products	2

Electives: 10 credit hours

Research and Thesis: 6 credit hours

FAGG 6800	M.S. Research*	2
FAGG 6900	Thesis	2

*Must be taken at least twice to receive 4 credits. If taken more than twice, only 4 credits will be credited toward the degree.

Course Descriptions

Faculty

SCHOOL OF PHARMACY

COURSE DESCRIPTIONS

First Professional Level: Doctor of Pharmacy (Pharm D)

FARM 7105
Psychosocial Basis, Culture, and Management Theory-Practice Seminar I. Three (3) credits.

The Psychosocial Basis, Culture, and Management Theory-Practice block systematically and progressively integrates the psychosocial basis of the liberal professional curriculum. The block will be developed throughout five academic semesters in the first two and a half years of the program. In this course of the first semester of the First Professional Year, the student will be exposed in an introductory manner, to contents, such as: social structure and professional practice. Also, students will be exposed and study in depth cultural aspects and historic processes addressed in the Pharmacy Anthropology Unit. The student will start to develop the following major concepts: psychosocial basis, culture, and professional practice. These contents will be developed with the ECA, problem posing and PBL strategies.

FARM 7106
Psychosocial Basis, Culture, and Management Theory-Practice Seminar II. Three (3) credits. Pre-requisite: FARM 7105.

In this course of the Second Semester of the First Professional Year the psychosocial foundations unit started in Psychosocial Basis, Culture and Management Theory-Practice Seminar I will be further developed. The student will be exposed in an introductory manner to contents of professional ethics. The contents of communication will provide an opportunity for breath and depth as well as application of concepts of health communications with emphasis in pharmaceutical care. Active learning strategies and methodologies as well as conference are used.

FARM 7107
Introduction to the use of Microcomputers and its Applications. Three (3) credits.

In this course of the First Professional Year, the main concepts of information systems, particularly the microcomputer, are developed. The course also includes discussion and practice of the main applications of microcomputers. These ones include word processing, spreadsheets, presentations, data base handling and telecommunications, including access to e-mail, world wide web and remote computers. The Microsoft Office Package is used as the main software for the course. Educational experiences are developed through the use of active learning methodologies. In this course active learning methodologies will be used.

FARM 7108
Non-Parametric Statistics for Health Professions. Three (3) credits. Pre-requisites: Precalculus and Differential Calculus Course.

The course presents the basic concepts of statistical inference related to hypothesis testing and statistical methods for non-normal variables. These methods represent an alternative to traditional parametric methods, for which normality is essential. Applications to research in Health Science area are presented. Statistical packages as well as online interactive calculators available at the World Wide Web are used along with the traditional hand solving methods for mathematical problems. Active learning strategies and methodologies are used.

FARM 7115
Introductory Practicum. Two (2) credits. Pre-requisites: FARM 7165, FARM 7166, FARM 7167, FARM 7116, FARM 7105, FARM 7135, FARM 7117.

This practicum is designed to provide the student an ample vision of the science and the profession of Pharmacy and existing career opportunities. The student observes, practices, and analyzes, according to his/her level of development, the responsibilities and activities that pharmacists carry out in a variety of settings, with emphasis on those as members of a team. The student completes a minimum of 16 hours in each of the following settings: community pharmacy, health care institution, industrial pharmacy, and a setting of the student's

choice, for a total of 64 contact hours in the practice settings and 8 hours in group sessions. The strategy of Exploration, Conceptualization, and Application (ECA), and instructional methodologies which include practice, cooperative learning, and group discussion are used.

FARM 7116
Health Promotion and Disease Prevention. Three (3) credits.

This course corresponds to the block of the Drug, Health and Public Policy Seminar. The course develops the concept of health-disease in a progressive way. It analyzes the health environment and the natural history of diseases. It incorporates the study of epidemiological strategies, population aspects and vital statistics. The challenges and strategies of the intervention of the pharmacist in Public Health, with emphasis in health promotion and disease prevention are discussed. These contents will be developed with the ECA, problem posing and PBL strategies.

FARM 7117
Integrative Seminar of Pharmaceutical Care and Human Development I. Three (3) credits.

The Integrative Seminar I constitutes the unifying center of the curriculum. In it the student is introduced to the professional practice of pharmaceutical care, which is developed throughout the four years of study. In this seminar, ten abilities are studied and applied and the main knowledge and skills acquired in the other courses are incorporated progressively. The seminar guides the student in the preparation of the portfolio, which documents the development of the abilities throughout the academic experiences. During the First Semester of the First Professional Year, the student will be introduced to: the abilities as an object of study, the philosophy of pharmaceutical care and the conceptualization of the practice of pharmaceutical care. The abilities of pharmaceutical care, critical thinking, problem solving and self-learning will be emphasized. The seminar fosters the reflection between the educator and the student by methods of active learning.

FARM 7118
Integrative Seminar of Pharmaceutical Care and Human Development II. One (1) credit. Pre-requisite: FARM 7117.

The Integrative Seminar II continues with the conceptualization of pharmaceutical care, which will be developed throughout the four year program. It also integrates in a progressive manner the 10 abilities, to the concepts learned in other courses. The seminar continues to guide the student in the preparation of the portfolio that demonstrates the development of the abilities throughout the curricular experiences. The seminar emphasizes the integration of the concepts learned in other courses, so that the student can understand the importance of the scientific basis in the practice of pharmaceutical care. The abilities of pharmaceutical care, problem solving, critical thinking and self-learning will be emphasized. The seminar fosters the students' reflective process by incorporating teaching strategies and methodologies that emphasize active learning.

FARM 7125
Scientific Foundations for the Professional Practice I. Six (6) credits.

This course includes the fundamentals of the Chemistry, Biology , Mathematics and Physics disciplines. These fundamentals will be developed in the First Semester and during the First Professional Year. The course sustains active and participatory learning and provides maximum integration with the professional practice progressively so that conceptual, actitudinal and valorative knowledge is develop. Strategies such as Problem Based Learning (PBL), Exploring, Conceptualization and Application (ECA) and problem posing will be embraced in addition to lectures, throughout the course.

FARM 7126
Scientific Foundations for the Professional Practice II. Five (5) credits. Pre-requisite: FARM 7125.

This course includes the fundamentals of biology (biochemistry and structures and functions of the human body) which are develop and integrated during the First Year of the curriculum. This course of the Second Semester continues to sustain active and participatory learning and provides maximum integration with the

professional practice progressively so that conceptual, actitudinal and valorative knowledge is develop. Strategies such as Problem Based Learning (PBL), Exploring, Conceptualization and Application (ECA) and problem posing will be embraced in addition to lectures, throughout the course.

FARM 7135
Research, Education, and Scientific Method Laboratory I. One (1) credit. Co-requisites: FARM 7165, FARM 7166, FARM 7167, FAARM 7105.

The Research, Education, and Scientific Method Laboratory will approach education, research, and the scientific method in an integrated fashion. The course will be developed along the four year of studies. In the First Semester of the First Professional Year, the student will be exposed in an introductory fashion to the basic terminology of the concept of education and research. The students will applied the fundamentals of chemistry and mathematics and the scientific method. Educational experiences will be develop using strategies such as: Problem Based Learning (PBL), Exploration, Conceptualization and Application (ECA) and problem posing.

FARM 7136
Research, Education, and Scientific Method Laboratory II. One (1) credit. Pre-requisites: FARM 7105, FARM 7166, FARM 7167, FARM 7135. Co-requisites: FARM 7168, FARM 7106.

This course of the Second Semester of the First Professional Year will continue to develop in more depth the concepts of education presented in the course Research, Education, and Scientific Method Laboratory I. The student will be exposed to experiences related to the professional practice. Physical pharmacy fundamental and the scientific method will be applied. The concept of research will be further study, with a particular emphasis in quantitative and qualitative research. Educational experiences will be developed through strategies such as Problem Based Learning (PBL), Exploring, Conceptualization and Application (ECA) and problem posing.

FARM 7137
Compounding and Manufacturing of Dosage Forms I. Three (3) credits. Pre-requisites: FARM 7166, FARM 7135. Co-requisites: FARM 7136.

This course starts with the development of the concept of dosage forms, the technological and scientific principles of these preparations and drug delivery systems and their use in patient care. Principles of physical pharmacy, administration routes, products design: preformulation and formulation, compounding and manufacture with emphasis in the application of pharmaceutical products in patient care are integrated. This course emphasize solid dosage forms, like powders, granules, tablets and capsules, ophthalmic, nasal, and otic dosage forms, oral and topical solutions and parenteral products. Laws and regulations applicable to research, drug product development, manufacturing practice and compounding practice standards, and the regulatory process by which pharmaceutical are approved for marketing are examined. Educational experiences will be developed through the use of active learning methodologies.

FARM 7145
Readings in Pharmacology I. Three (3) credits. Pre-requisites: FARM 7135. Co-requisites: FARM 7136.

The First Professional Year elective course, will direct students in the analysis and evaluation of scientific papers in the field of Pharmacology. All students will be exposed to principles involved in analyzing and critically evaluating scientific literature under the direction of the professor. Subsequently each student will select a topic of interest from a list (containing a short bibliography for each topic) provided by the professor. Each student will make an oral presentation to the class, demonstrating his/her mastery of analytic and evaluative skills, of at least one item of primary literature related to the selected topic. A final written report, taking into consideration feedback from the presentation, will be submitted before the end of the course. Educational experiences will be developed through the use of active learning methodologies.

FARM 7146
Enzyme Organization. Two (2) credits. Pre-requisites: FARM 7168, FARM 7136.

This seminar promotes an understanding of the relationship between the different levels of enzyme organization and the enzyme function in cellular metabolism, as well as possible pharmaceutical implications of this knowledge. The student will develop theorical tools for the initial understanding of this topic, through the study and analytical discussion of scientific papers and of some illustrative examples, which will form the basis for the required project.

FARM 7147
Readings in Pharmacognosy I. Three (3) credits. Pre-requisites: FARM 7135. Co-requisites: FARM 7136.

This First Professional Year elective course, will direct students in the analysis and evaluation of scientific papers in the field of Pharmacognosy. All students will be exposed to principles involved in analyzing and critically evaluating scientific literature under the direction of the professor. Subsequently each student will select a topic of interest from a list provided by the professor. Each student will make an oral presentation to the class, demonstrating his/her mastery of analytic, evaluative and communication skills, of primary literature related to the selected topic. A final written report, taking into consideration feedback from the presentation, will be submitted before the end of the course. Educational experiences will be developed through the use of active learning methodologies.

FARM 7155
Topics in Pharmaceutical Sciences I. Three (3) credits. Pre-requisites: FARM 7125, FARM 7135. Co-requisites: FARM 7126, FARM 7136, FARM 7137.

This elective course of the First Professional Year will enable the student to study according to his conceptual level, and in more depth topics related to new development and approach in the Pharmaceutical Sciences. Educational experiences will be developed through the use of active learning methodologies.

FARM 7157
Health Topics Impacting Society I. Three (3) credits. Pre-requisites: FARM 7105, FARM 7116. Co-requisite: FARM 7106.

This elective course of the First Professional Year will enable the student to study according to his conceptual level, and in more depth current topics in the Social Sciences and Public Health impacting the society and individual and communitary health. The role of the pharmacist as a professional and citizen will be studied in the context of the selected topic. Educational experiences will be developed through the use of active learning methodologies.

FARM 7165
Scientific Foundations for the Professional Practice: Anatomy and Physiology I. Two (2) credits.

This course studies the fundamentals of the structure and function of the human body, which are developed and integrated in the First Semester and during the First Professional Year. Includes the study of the structural and functional organization of the human body, homeostasis, and the following systems: Integumentary, Skeletal, Muscular, and The Central Nervous System and Peripheral Nervous System. This course promotes an active learning in the student and also integrates the practice of Pharmacy in a progressive way. The teaching strategy of Exploration, Conceptualization and Application (ECA) is adopted as the main strategy to promote the development of concepts, thinking and professional skills, and attitudes and values in students. Problem Based Learning (PBL) and problem posing can also be used.

FARM 7166
Scientific Foundations for the Professional Practice: Mathematics, Chemistry, and Physics. Two and a half (2.5) credits.

Fundamentals of Mathematics, Chemistry, and Physics applied to Pharmacy developed and integrated during the First Semester of the First Professional Year are discussed in this course. Topics discussed includes Drug Analysis, Drug Chemical-Physical Properties, Pharmaceutical Calculations, Mathematical Functions, Models and Graphs, among others. Active and participatory learning, as well as progressive integration with professional practice, are

foster in order to develop concepts, attitudes and values. Teaching strategies and methodologies such as: Problem Based Learning (PBL), Exploration, Conceptualization and Application (ECA) and problem posing and lectures are used.

FARM 7167
Scientific Foundations for the Professional Practice: Biochemistry I. One and a half (1.5) credits.

In this course the student will comprehend the importance of the principle biomolecules of life in cellular organization and function. An introduction to intermediary metabolism and its applications to the pharmaceutical field are essential elements of the course. Active and participatory learning are employed to develop concepts, attitudes, and values. The learning methodologies of active learning such as questioning, Socratic dialogue, and cooperative learning, among others, are used.

FARM 7168
Scientific Foundations for the Professional Practice: Biochemistry II. Two (2) credits. Pre-requisite: FARM 7167.

In this sequence course, the student will achieve an initial understanding of intermediary metabolism, molecular biology, and its pharmaceutical applications. With emphasis in the relationship between molecular structure and function, the course includes the principal metabolic pathways, metabolic control mechanisms, integration of metabolism, DNA and RNA structure, the genetic code as well as gene expression and regulation. This course facilitates active and participative learning so as to develop conceptual, judgmental, and attitudinal knowledge. It encourages utilization of questioning, Socratic dialogue and cooperative learning, among other methodologies, and incorporates the use of bioinformatics.

FARM 7169
Scientific Foundations for the Professional Practice: Anatomy and Physiology II. Three (3) credits. Pre-requisite: FARM 7165.

This course continues with the development and integration of the fundamentals of the structure and function of the human body. Includes the study of the following systems: Autonomic Nervous System, Endocrine, Cardiovascular, Lymphatic and Immunology, Respiratory, Digestive, Urinary and Reproductive Systems. This course promotes an active learning in the student and also integrates the practice of Pharmacy in a progressive way. The teaching strategy of Exploration, Conceptualization and Application (ECA) is adopted as the main strategy to promote the development of concepts, thinking and professional skills, and attitudes and values in students. Problem Based Learning (PBL) and problem posing can also be used.

FARM 7175
Health Promotion and Disease Prevention in Disaster Management. Three (3) credits. Pre-requisites: FARM 7105, FARM 7116. Co-requisite: FARM 7106.

This elective course of the First Professional Year will enable the student to study in more depth different types of disasters and its management, being this topic one that impacts society, individual and community health. The student is exposed to the Health System and to the Pharmacy subsystem in the context of structure, organization and planning of disaster management. Environmental and mental consequences are examined in the occurrence of disaster as well as essential drugs. Actual topics such as The Resurgence of Infectious Diseases and Bioterrorism are discussed. The role of the pharmacist as a health professional and citizen is examined in the context of disaster management. Educational experiences will be developed through active learning methodologies.

FARM 7205
Psychosocial Basis, Culture, and Management Theory-Practice Seminar III. Two (2) credits. Pre-requisite: FARM 7106.

The Psychosocial Basis, Culture and Management Theory-Practice Seminar, integrates progressively and systematically the psychosocial foundations of the professional-liberal curriculum. This seminar develops during the five academic semesters of the first two years and a half of the program of studies. The psychosocial foundations concept is study in depth, particulary through subconcepts, such as: ethics applied to the professional practice, analysis and management of ethical situation, health sociology and pharmaceutical sociology in health

care systems. Educational experiences will be developed through the use of active learning methodologies.

FARM 7217
Integrative Seminar of Pharmaceutical Care and Human Development III. Two (2) credits. Pre-requisite: First Professional Year.

The Integrative Seminar III constitutes the unifying center of the curriculum. The seminar continues with the development of the abilities, which are also applied and contextualized to the knowledge and skills developed in the other courses. In this seminar, the student continues with the conceptualization of pharmaceutical care, which is developed throughout the four years of study. The seminar continues to guide the student in the preparation of the portfolio, which documents the development of the abilities throughout the academic experiences. During the First Semester of the Second Professional Year, the student will continue to develop: the knowledge of the abilities as an object of study, and the conceptualization of the practice of pharmaceutical care. The ten abilities identified as outcomes of the curriculum (pharmaceutical care, critical thinking, problem solving, self-learning, communication, ethics, social conscience and responsibility, administration, intervention in public policy, and social interaction) will be emphasized. The seminar fosters the reflection between the educator and the student by incorporation of active learning strategies and methodologies.

FARM 7225
Integrated Pharmaceutical Sciences and Therapeutic Agents I: Medicinal Chemistry and Pharmacology. Seven (7) credits. Pre-requisite: First Professional Year. Co-requisite: FARM 7235.

In this course of the Second Professional Year the development of the drug concept will be continued. Medicinal Chemistry and Pharmacology will be integrated to facilitate the comprehension of the relationship between the physical chemical properties and the structure with the pharmacologic action and effect in the living organism. Knowledge of the basic and Biomedical Sciences will also be integrated. Active learning methodologies will be used in addition to lecture/discussion sessions.

FARM 7226
Integrated Pharmaceutical Sciences and Therapeutic Agents II: Medicinal Chemistry and Pharmacology. Two (2) credits. Pre-requisites: FARM 7225.

In this course of the Second Professional Year the development of the drug concept will be continued. Medicinal Chemistry and Pharmacology will be integrated to facilitate the understanding of the relationship between the physical chemical properties and the structure of a drug with the pharmacologic action and its effects in the living organism. Knowledge of the basic and biomedical sciences will also be integrated. Active learning methodologies will be used in addition to lecture/discussion sessions.

FARM 7227
Pharmacy and the Health Care System. Two (2) credits. Pre-requisites: FARM 7106, FARM 7116.

This course develops the conceptual model of a system as it pertains to the Health Care System in the United States and Puerto Rico, emphasizing the Pharmacy subsystem. The organizational and administrative framework that governs the provision of health care services and pharmaceutical services in the public and private sectors is presented. Models of delivery of health care services are discussed as well as financing mechanisms and payment strategies to providers. The diverse health facilities are examined, particularly those offering pharmaceutical services. The pharmaceutical services that are offered in ambulatory and institutional settings are analyzed. The role of the pharmacist as a member part of the health care team is examined. The critical analysis of current and future challenges posed by the Health Care System and the Pharmacy subsystem is encouraged and opportunities for Pharmacy are discussed. Active learning methodologies will be used.

FARM 7228
Integrated Pharmaceutical Sciences of Anti-Infective Agents. Two and a half (2.5) credits. Pre-requisites: FARM 7225. Co-requisites: FARM 7226, FARM 7285, FARM 7229.

In this Second Year course, the students develop the conceptual framework of the medicinal chemistry, pharmacodynamics and pharmacokinetics of antimicrobial

agents and its application to Pharmacy. The course emphasizes the development of conceptual knowledge of antimicrobials, as a foundation for the practice of Pharmacy. It also incorporates the problem solving process in order to enable students to prevent, identify, and solve problems related to antimicrobial therapy that are commonly encountered in the practice of Pharmacy. This course is offered in a web enhanced format, and consists of 45 classroom contact hours. The course will also provide the students with the opportunity to access online external links related to the course content, and students will also complete online activities like quizzes, exams, homework assignments, and other types of work projects that are required. Active learning strategies and methodologies are incorporated in the course.

FARM 7229
Basic Biopharmaceutics and Pharmacokinetics. Two and a half (2.5) credits. Pre-requisites: FARM 7225.

This course covers the fundamentals of biopharmaceutics and pharmacokinetics in order to reinforce the major concept of drug for better understanding of the potential benefit related to the safety and effective use of drug product. It is aimed at enhancing the students' skills in developing and assessing formulations based on the relationship between the drug, the dosage form and the living system. It brings together disciplines like pharmacokinetics, biopharmaceutics, physical pharmacy, compounding, and therapeutics. It strengthens some cardinal concepts related to the optimization of drug products , improve knowledge of the relationship between drug exposure and clinical outcome, with emphasis on supporting the patient-oriented pharmaceutical care goals, to refine drug dosage regimens and identify factors determining untoward responses. Active learning strategies and methodologies will be used, as well as lectures and case discussions.

FARM 7235
Research, Education, and Scientific Method Laboratory III. One (1) credit. Pre-requisite: First Professional Year. Co-requisites: FARM 7225, FARM 7237.

In this course the development of the research, scientific method, education and professional practice concepts will continue. The education and professional practice concepts will be examined in the context of self-care and the care process when providing pharmaceutical care. In harmony with the practice, the Scientific Method will be applied by means of additional experiences in drug action/effect and compounding and manufacturing of dosage forms. Statistical concepts as a tool for research as well as for other dimensions of the Pharmacy profession will be introduced. Active learning methodologies will be used.

FARM 7237
Compounding and Manufacturing of Dosage Forms II. Three (3) credits. Pre-requisite: FARM 7137. Co-requisite: FARM 7235.

This course continues the development of the concept dosage forms, the technological and scientific principles applied in the preparation of the dosage forms and drug delivery systems and their use in patient care. Principles of physical pharmacy, product design, compounding and manufacture with special attention to the use of these products in patient care are integrated. This course emphasizes disperse systems such as Colloids, Suspensions and Emulsions, Semisolids, Transdermal and Transmucosal Systems, Non-Traditional and other New Drug Delivery Systems, Products of Biotechnology, Aerosols and Inhalation Products and Radiopharmaceuticals. Laws and regulations applicable to research, drug product development, manufacturing and compounding practice standards and the regulatory process by which pharmaceuticals are approved for marketing are examined. Educational experiences will be developed through the use of active learning methodologies in addition to the traditional methodologies.

FARM 7255
Topics in Pharmaceutical Sciences II. Two (2) credits. Pre-requisite: First Professional Year. Co-requisites: FARM 7225, FARM 7235, FARM 7237.

This elective course of the Second Professional Year will enable the student, according to his conceptual level, study in more depth topics related to new developments and approaches in the Pharmaceutical Sciences. Educational experiences will be developed through the use of active learning methodologies.

FARM 7256
Topics in Research. Two (2) credits. Pre-requisites: FARM 7135, FARM 7136. Co-requisite: FARM 7235.

This elective course of the Second Professional Year will enable the student, according to conceptual level, to study in more depth topics related to the theorical and methodological foundations of research in the Basic and Clinical Sciences, Pharmaceutical Sciences, Behavioral, Social and Administrative Pharmacy Sciences, Pharmacy Practice or Education. Educational experiences will be developed through the use of active learning methodologies.

FARM 7257
Health Topics Impacting Society II. Two (2) credits. Pre-requisite: First Professional Year. Co-requisite: FARM 7205.

This elective course of the second professional year will enable the student, according to his conceptual level, study in more depth current topics in the Social Sciences and Public Health impacting the society and individual and communitary health. The role of the pharmacist as a professional will be studied in the context of the selected topic. Educational experiences will be developed through the use of active learning methodologies.

FARM 7258
Health Topics Impacting Society III. Three (3) credits. Pre-requisite: Completion of Second Professional Year. Co-requisite: FARM7307.

This elective course of the Third Professional Year will enable the student, according to his level, to broaden and study in more depth the conceptual framework of certain areas of content of the Social Sciences and Public Health. Objectives, concepts, and attitudes pertinent to the area of content will be studied. Educational experiences will be developed through the use of active learning methodologies.

FARM 7265
Experience in Community Voluntary Service. Three (3) credits.

This elective course provides the student an experience in community voluntary service related to contemporary health challenges. The experience is designed to contribute to develop student's social awareness towards the pharmacist role and responsibility as a professional and citizen. Also, the course contributes to the development of abilities necessary to provide adequate service to groups or communities. The student completes a total 108 hours of community voluntary service. Active learning methodologies will be used to promote learning through discovery.

FARM 7266
Service Learning Practicum. One (1) credit. Pre-requisite: FARM 7225, FARM 7237, FARM 7227, FARM 7205, FARM 7235, FARM 7217.

This practicum is a structured field experience, which expose the student to community health matters through the participation in public and private organizations. The student gets to know the organization mission, goals, objectives, and operation, and also the pharmacist role in community health. The knowledge obtained by the student through the academic program until this moment makes possible the provision of service to an organization contextualized in community needs and the Pharmacy profession. This practicum is an opportunity to provide community service as well as learning experience for the student.

FARM 7267
Topics in Pharmaceutical Sciences III. Three (3) credits. Pre-requisite: Completion of Second Professional Year. Co-requisites: FARM 7331, FARM 7336.

This elective course of the Third Professional Year will enable the student, according to his level, to broaden and study in more depth the conceptual framework of certain areas of content of the Pharmaceutical Sciences. Objectives, concepts, and attitudes pertinent to the areas of content will be studied. Educational experiences will be developed through the use of active learning methodologies.

FARM 7268
Topics in Pharmacy Administration. Three (3) credits. Pre-requisite: Completion of Second Professional Year. Co-requisite: FARM 7307.

This elective course of the Third Professional Year will enable the student, according to his conceptual level, study in more depth current topics in the Administrative Sciences as they apply to the practice of the profession of Pharmacy. The role of the pharmacist as a manager will be studied in the context of the selected topic. Educational experiences will be developed through the use of active learning methodologies, such as Case Studies, Simulations and Problem-Based Learning. Invited guests will include managers, as well as pharmacist managers, from different practice environments such as community pharmacy, pharmaceutical industry and the institutional pharmacy.

FARM 7275
Longitudinal Care Practice I. One (1) credit. Pre-requisite: FARM 7205, FARM 7217, ARM 7225, FARM 7227, FARM 7235, FARM 7237.

In this practicum the student participates in the longitudinal care of a patient with emphasis in the continuity of care and the evaluation of the changing needs of patients. The student learns to effectively collect information from various sources, including the patient, evaluates the needs of the patient, and how to prepare progress reports about the health status of the patient. The student explicitly applies the knowledge and skills developed in other courses and demonstrates the attributes of a professional. The practicum includes activities of interaction with the patient and other health care professionals responsible for their care, as well as classroom activities.

FARM 7285
Scientific Foundations for the Professional Practice III: Microbiology. One and a half (1.5) credits. Pre-requisite: FARM 7168, FARM 7169.

This course includes the fundamentals of Biology, specifically the concepts related to Medical Microbiology, such as: Bacterial Physiology, Metabolism, Genetics, Sterilization and Disinfection, and Immunology. In addition, syndromes caused by different types of organisms are studied. Active learning strategies and methodologies will be utilized.

FARM 7305
Health Policy and Pharmacy Law. Three (3) credits. Pre-requisites: FARM 7205, FARM 7227, FARM 7237.

The course examines Health Policy and Legislation with emphasis on their application to Pharmacy practice, the distribution and dispensing of drugs and medical devices, and the distribution of dietary supplements and cosmetics. Regulation of controlled and dangerous substances is highlighted. Risk management and the pharmacist's civil liability are addressed through case discussion and simulations. Opportunity for multifactorial critical analysis of Health Policy and Pharmacy Law is provided, and advocating for changes in order to meet societal needs is fostered. The student participates in forums at the micro and macro levels where Health Policy and Pharmacy Legislation are developed, and practices strategies for intervention in their formulation, implementation, and evaluation. Active learning strategies as instructional methodologies are used.

FARM 7306
Psychosocial Basis, Culture, and Management Theory-Practice Seminar IV. Two and a half (2.5) credits. Pre-requisite: FARM 7205.

This Theory-Practice Seminar systematically and progressively integrates the psychosocial culture and management basis of the liberal professional curriculum during the first five semesters of the first two and a half years of the study program. In this course in particular, the concept of management is develop in the context of Pharmacy in the health system. Leadership, motivation, supervision, resources management and strategic planning will be studied. Active learning strategies and teaching methodologies will be used.

FARM 7307
Psychosocial Basis, Culture, and Management Theory-Practice Seminar V. Four (4) credits. Pre-requisites: Classified in Third Year of Pharm D., FARM 7306.

This Theory-Practice Seminar systematically and progressively integrates the psychosocial, culture and management basis of the liberal professional curriculum during the first five semesters of the first two and a half years of the program of studies. In this course in particular,

the psychosocial component continues to be examined through ethics applied to professional practice. The concept of Pharmacy management continues to be studied in health care systems. Physical and fiscal resources, marketing of products and services, organization, direction and coordination, and pharmacoeconomics will be studied, and a business plan will be formulated. Active learning strategies and teaching methodologies will be used, including the use of line platform.

FARM 7315
Integrative Seminar on Pharmaceutical Care and Human Development IV. One (1) credit. Pre-requisite: FARM 7217.

The Integrative Seminar IV constitutes the unifying center of the curriculum. In the seminar, the student continues with the conceptualization and application of the general abilities, and with the integration of knowledge and skills developed in other courses. The integration provides the student the opportunity to integrate the knowledge developed in other curricular blocks, in order to establish their relevance to the practice of pharmaceutical care. The seminar also continues to guide the student in the preparation of the portfolio, which documents the development of the abilities throughout the academic experience. An emphasis is placed on the development of the abilities of pharmaceutical care, problem solving and decision making, critical thinking, self-learning and professional development, and communication. The seminar fosters the reflection between the student and the educator by incorporating active learning strategies and methodologies.

FARM 7317
Integrative Seminar of Pharmaceutical Care and Human Development V. Two (2) credits. Pre-requisite: FARM 7315.

The Integrative Seminar constitutes the unifying center of the curriculum. In this seminar, the student continues with the conceptualization and application of the general abilities, and with the integration of knowledge and skills developed in other courses. This course continues with the conceptualization of pharmaceutical care, which is developed throughout the four years of the curriculum. The seminar also continues to guide the student in the preparation of the portfolio, which documents the development of the abilities throughout the academic experience. During the First Semester of the Third Professional Year, the student continues with the conceptualization of: the abilities as an object of study and the pharmaceutical care practice. An emphasis is placed on the development of the abilities of pharmaceutical care, problem solving, and decision making, critical thinking, administration, social conscience and responsibility, intervention in public policy, social interaction and relations, and ethics. The seminar fosters the reflection between the student and the educator by incorporating active learning strategies and methodologies.

FARM 7318
Integrative Seminar on Pharmaceutical Care and Human Development VI. One (1) credit. Pre-requisite: FARM 7317.

The Integrative Seminar constitutes the unifying center of the curriculum. In the seminar, the student continues to develop the conceptualization, application of the general abilities and the integration of knowledge and skills developed in other courses. The integration provides the student the opportunity to integrate the knowledge developed in other courses, in order to establish their relevance to the practice of pharmaceutical care. The seminar guides the student in the construction of the assessment portfolio, which documents the development of the abilities throughout the academic experience. An emphasis is placed on the development of the abilities of pharmaceutical care, problem solving and decision making, critical thinking, self-learning and professional development, communication and administration. The seminar fosters the reflection between the student and the educator by incorporating active learning strategies and methodologies.

FARM 7325
Integrated Pharmaceutical Sciences and Therapeutic Agents II. Seven (7) credits. Pre-requisite: FARM 7225.

This course of the Second Professional Year continues with the development of the drug concept. The course continues with the integration of Medicinal Chemistry and Pharmacology, Pharmacodynamics, Pharmacokinetics and Therapeutics, to facilitate the

comprehension of the relationship between the physical chemical properties and the structure of a drug with the pharmacologic action and effect in the living organism. The concepts of Biopharmaceutics, Pharmacokinetics, and Pharmacodynamics of anti-infective agents are also incorporated in order to enhance the understanding of the interaction between the therapeutic agents and the living organism. Lecture and discussion sessions are utilized with active learning strategies and methodologies.

FARM 7331
Integrated Sciences, Therapeutics,and Patient Care I. Seven (7) credits. Pre-requisites: FARM 7225, FARM 7325.

This course, of the Third Professional Year, integrates aspects of the disciplines of Pathophysiology, Pharmacokinetics, Pharmacodynamics, Toxicology, Pharmacoepidemiology, Pharmacoeconomics, and Pharmacotherapy related to patient care. Students participate in educational activities that enable them to design, implement, and evaluate pharmaceutical care plans for patients with specific illnesses. Emphasis is given to specific goals of therapy, evaluation of the achievement of these goals and the phases of active intervention at different levels in order to achieve satisfactory results. This course studies the diseases commonly encountered by pharmacists in a variety of practice scenarios, including ambulatory as well as institutional, in Puerto Rico. The course will utilize lectures and discussions beside active learning strategies and methodologies.

FARM 7332
Integrated Sciences, Therapeutics, and Patient Care II. Seven (7) credits. Pre-requisite: FARM 7331.

This course, of the Third Professional Year, integrates aspects of the disciplines of Pathophysiology, Pharmacokinetics, Pharmacodynamics, Toxicology, Pharmacoepidemiology, Pharmacoeconomics, and Pharmacotherapy related to patient care. Students will be able to design, implement and evaluate pharmaceutical care plans for patients with specific illnesses of the Respiratory, Endocrine and Neurological Systems, among others; commonly encountered by pharmacists in a variety of practice scenarios, including ambulatory as well as institutional, in Puerto Rico. Emphasis is given to specific goals of therapy, evaluation of the achievement of these goals and the phases of active intervention at different levels in order to achieve satisfactory results. The course will utilize lectures and discussions beside active learning strategies and methodologies.

FARM 7335
Research, Education, and Scientific Method Laboratory IV. One (1) credit. Pre-requisite: FARM 7235. Co-requisites: FARM 7285, FARM 7325.

In this course the development of the research, Scientific Method ,education, and professional practice concepts will continue. The education and professional practice concepts will be examined in the context of providing pharmaceutical care for self-care through responsible self-medication and in experiences that will contribute to the development of the concept of management. In harmony with the practice, the Scientific Method will be applied by means of experiences in drug action/effect of antimicrobial agents, biotechnology and pharmacy, and compounding of extemporaneous dosage forms. Statistical concepts will continue to be developed as a tool for research as well as for other dimensions of the Pharmacy profession. Active learning methodologies will be used.

FARM 7336
Research, Education, and Scientific Method Laboratory V. One (1) credit. Pre-requisite: Completion of Second Professional Year. Co-requisites: FARM 7317, FARM 7331.

In this course the development and application of the education, professional practice, Scientific Method, and research concepts will continue. The education and professional practice concepts will be developed in the context of literature evaluation and dermatologic conditions. The research and Scientific Method concepts will be developed through literature evaluation and research proposal writing. Active learning methodologies will be used.

FARM 7337
Research, Education, and Scientific Method Laboratory VI. One (1) credit. Pre-requisite: FARM 7336. Co-requisites: FARM 7318, FARM 7332.

In this course the concepts of education, professional practice, Scientific Method, and research will continue to be developed. In addition, learning activities will address the concepts of pharmaceutical care, health, disease, drug, psychosocial principles and service. These major concepts are integrated and applied principally in the context of case studies that represent common health problems and the proposal for the research project of the Pharm D program. Active learning methodologies will be used.

FARM 7339
Research Project. Two (2) credits. Pre-requisites: FARM 4055, FARM 5005.

In this course the student(s) will select a topic of interest in order to develop a research project. The student(s) will design and submit a research proposal to the research project committee for approval. The research project will be supervised by a faculty member of the School of Pharmacy. The faculty member will meet and discuss individually or in group written paper work. The student(s) will perform an oral and written presentation of the research project.

FARM 7345
Management of the Practice and the Medication Distribution and Control Systems Practicum: Institutional Pharmacy. Four (4) credits. Pre-requisite: FARM 7331, FARM 7307, FARM 7336, FARM 7317, FARM 7375.

This practicum is designed to provide a comprehensive experience on the structures and basic processes needed to support the drug distribution and control systems in the practice of Institutional Pharmacy and its integral relation with the medication use process and the delivery of pharmaceutical care. The student will complete 144 hours of practice in an Institutional Pharmacy. The principal instructional methodology is Practice-Based Teaching.

FARM 7346
Management of the Practice and the Medication Distribution and Control Systems Practicum: Community Pharmacy. Four (4) credits. Pre-requisite: FARM 7331, FARM 7307, FARM 7336, FARM 7375, FARM 7317.

This practicum is designed to provide a comprehensive experience on the structures and basic processes needed to support the drug distribution and control systems in the practice of Community Pharmacy and its integral relation with the medication use process and the delivery of pharmaceutical care. The student will complete 144 hours of practice in a Community Pharmacy. The principal instructional methodology is Practice-Based Teaching.

FARM 7375
Practicum in Longitudinal Care II. One (1) credit. Pre-requisites: Completion of Second Semester of the Second Professional Year, FARM 7275.

In this practicum, continuation of Longitudinal Care I, the student participates in the longitudinal care of a patient with emphasis in the continuity of care and the evaluation of the changing needs of the patients. The student having greater skill in information gathering from different sources and in evaluation of the medication needs of the patient, develops care plans and provides follow-up. The practicum includes activities that require interaction with patients and health professionals responsible for the care of patient as well as classroom activities.

FARM 7417
Integrative Seminar on Pharmaceutical Care and Human Development VII. One (1) credit. Pre-requisite: FARM 7318.

In the Integrative Seminar, the unifying center of the curriculum, the student continues to develop the conceptualization and application of the general abilities. It allows the integration of knowledge and skills developed in other courses, with emphasis on the integration with the advanced practicum. Knowledge acquired will allow students to integrate the curricular principles with the pharmaceutical care practice. It also continues to guide the student in the construction of the assessment portfolio, which documents the development of the abilities throughout the academic experience. An emphasis is placed on the development of the abilities of pharmaceutical care, problem solving and decision making, critical thinking, self-learning and professional development, social interaction, and communication. The seminar fosters the reflection between the student and the educator by incorporating active learning strategies and methodologies.

FARM 7418
Integrative Seminar on Pharmaceutical Care and Human Development VIII. One (1) credit. Pre-requisite: FARM 7417.

The Integrative Seminar VIII constitutes the unifying center of the curriculum, allowing the student, during the last semester of the program, to culminate the conceptualization and application of the general abilities. The seminar also continues to integrate knowledge developed in the advanced practicums. The knowledge developed in these practice experiences allows students to integrate the fundamentals of the curriculum with the practice of pharmaceutical care. The conceptual knowledge developed is contextualized to the advanced practicum experiences and according to identified students learning needs. The course continues to guide students in the construction of the assesment portfolio, which documents the development of the abilities through the end of the curricular experience. The seminar incorporates active learning strategies and methodologies.

FARM 7420
Seminar on Professional and Human Development I. One (1) credit. Pre-requisites: Completion of Third Professional Year of Program of Studies.

This course will provide a framework which will enable the student to become actively involved in current issues in Pharmacy. Each student is expected to contribute to the discussion and formulate solutions to the issues presented based on information gathered by them, evaluation on the literature available as well as interacting with others professionals, among others. The seminar is designed to provide the student with opportunities to develop the professional abilities in the context of the issues under discussion and major learning that has occurred in other courses. It also guides the student in the preparation of their portfolio where they will present products as evidence of the development of the abilities. Active learning instructional methodologies will be used. Students from the Baccalaureate Program in transition to the Doctor of Pharmacy Program must take this seminar in both semesters during the last professional year.

FARM 7421
Seminar on Professional and Human Development II. One (1) credit. Pre-requisite: FARM 7420.

This course, a continuation of FARM 7420, builts on a framework developed to enable the student to become actively involved in current issues in Pharmacy. Each student is expected to contribute to the discussion and formulate solutions to the issues presented based on information gathered by them, evaluation of the literature available as well as interacting with other professionals, among others. The seminar is designed to provide the student with opportunities to develop the professional abilities in the context of the issues under discussion and major learning that has occurred in other courses. It also guides the student in the preparation of their portfolio where they will present products as evidence of the development of the abilities. Active learning instructional methodologies will be used.

FARM 7425
Forensic Pharmacy. Three (3) credits. Pre-requisites: FARM 7225, FARM 7325.

In this course the students study the causes of death due to interactions of therapeutic, prohibited, and illegal drugs. Other topics presented are Medication Errors, Drug Related Crimes, Poisonings, Legal and Expert Witness Issues. The student will work on a research project of his or her selection. Active and participatory learning are employed to develop concepts, attitudes, and values. The learning methodologies of active learning such as questioning, Socratic dialogue, and cooperative learning, among others are used. On completion of the course the student will possess a comprehensive knowledge of the relation that exists between the Forensic Sciences and the practice of Pharmacy.

FARM 7438
Doctor of Pharmacy Research Project. One (1) credit. Pre-requisites: FARM 7337, Approval of the Pharm.D. Research Proposal.

In this course the student(s) of Doctor of Pharmacy Program will conduct a research project, experience in which concepts and abilities will be integrated. The student will select a topic of interest in the context of Clinical Science, Pharmaceutics, Biomedical, Behavior,

Social, Administrative and Pharmaceutical Education in order to write a research project within the framework of pharmaceutical care. Students will conduct a research project individually or up to a maximum of three students under the supervision of the same faculty member (advisor). The advisor will meet periodically with the students during all project phases, including the oral presentation and written paper work.

Grading System: Passed (P), Not Passed (NP)

FARM 7451
Selective Advanced Practicum in Pharmacy. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

These practicums are designed to provide comprehensive in-depth experience to students in a wide range of practice areas in Pharmacy. It can include participation in traditional practice settings and participation in innovative Pharmacy practice settings. Practice experiences may involve direct patient care, indirect patient care or may occur in non-patient care areas. The main instructional methodology is Practice Based Teaching.

FARM 7452
Selective Advanced Practicum in Pharmacy. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

These practicums are designed to provide comprehensive in-depth experience to students in a wide range of practice areas in Pharmacy. It can include participation in traditional practice settings and participation in innovative Pharmacy practice settings. Practice experiences may involve direct patient care, indirect patient care or may occur in non-patient care areas. The main instructional methodology is Practice Based Teaching.

FARM 7453
Selective Advanced Practicum in Pharmacy. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

These practicums are designed to provide comprehensive in-depth experience to students in a wide range of practice areas in Pharmacy. It can include participation in traditional practice settings and participation in innovative Pharmacy practice settings. Practice experiences may involve direct patient care, indirect patient care or may occur in non-patient care areas. The main instructional methodology is Practice Based Teaching.

FARM 7487
Institutional Pharmacy Practice. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

This practicum provides opportunities for comprehensive in-depth experience in specific areas of Institutional Pharmacy Practice. The student participates in activities related to the management of a Pharmacy in a health institution and in activities to optimize pharmacotherapies such as medication formulary management, medication use evaluations, and adverse drug events/ medication errors program. The main instructional methodology is Practice Based Teaching.

FARM 7488
Inpatient Pharmaceutical Care: General Medicine Practice. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

This practicum provides the student with comprehensive in-depth practice experience in the provision of pharmaceutical care in an acute inpatient setting. Its emphasis is the pharmacist's responsibility in the detection , prevention, and solution of pharmacotherapeutic problems found in General Medicine and the need to use standard systematic patient care process. This requires that the student gather pertinent information, evaluate pharmacotherapeutic problems, develop and document care plans, and measure and document specific results achieved in the patient. The main instructional methodology is Practice Based Teaching.

FARM 7489
Inpatient Pharmaceutical Care: Acute Care in Specialized Practice. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

This practicum provides the student with comprehensive in-depth practice experience in the provision of pharmaceutical care in a specialized practice in an

acute inpatient setting. The practicum has as objective the integration and application of knowledge previously developed as well as the development of professional abilities in the context of Pharmacy practice. Its emphasis is the pharmacist's responsibility in the detection, prevention, and solution of pharmacotherapeutic problems using a standard systematic patient care process. This requires that the student gather pertinent information, evaluate pharmacotherapeutic problems, develop and document care plans, and measure and document the result of their interventions. The main instructional methodology is Practice Based Teaching.

FARM 7497
Pharmaceutical Care in the Ambulatory Setting: Community Pharmacy Practice. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

This practicum provides the student comprehensive in-depth practice experience in the provision of pharmaceutical care in a Community Pharmacy. Its emphasis is the pharmacist's responsibility in the prevention and solution of pharmacotherapeutic problems found in Community Pharmacy Practice and the need to use a standard systematic patient care process. This requires that the student gather pertinent information, evaluate pharmacotherapeutic problems, develop and document care plans, and measure and document specific results achieved in the patient. The main instructional methodology is Practice Based Teaching. The practicum is developed in one or more community pharmacies that provide pharmaceutical care to their community.

FARM 7498
Pharmaceutical Care in Ambulatory Setting: Institutional Practice. Four to five (4-5) credits. Pre-requisite: Students are required to be classified in 4th Professional Year.

This practicum provides the student with comprehensive and in-depth practice experience in the provision of pharmaceutical care in the ambulatory setting of a health institution. Its emphasis is preventive health and the solution of pharmacotherapeutic problems found in this setting and the need to use a standard systematic patient care process. This requires the student to gather pertinent information, evaluate pharmacotherapeutic problems, develop and document care plans and measure and document specific results attained in the patient. The main instructional methodology is Practice Based Teaching.

FARM 7505
Toxicology: Principles and Specific Health Hazards. Three (3) credits. Pre-requisite: FARM 7225.

In this course, the concept of drug will be expanded to include the study of toxic agents that are not drugs. Students will become familiarized with basic and applied principles, concepts, and practices of Toxicology. They will use this information to characterize and discuss how toxic responses resulting from exposure to specific health hazards (selected in consultation with the professor) are identified, controlled and/or prevented. Students will demonstrate mastery of their topic by organizing and presenting information in verbal and written reports. Teaching methodologies will include discussions, conferences, Socratic dialog and independent study. Internet access and literacy is required.

FARM 7515
Drug Information. Three (3) credits.

The purpose of this elective course is to strengthen the principles of Drug Information and Drug Literature Evaluation through discussion, using a non-traditional web based modality. Emphasis is placed in understanding important concepts that will provide the health care practitioner with knowledge, skills and attitudes needed to retrieve and evaluate the medical literature. Students will manage multiple forms of drug literature including primary, secondary, tertiary, computerized databases and internet resources. The areas of Evidence-Based Medicine and Poison Information will also be covered.

FARM 7520
Diabetes Education Principles. Three (3) credits. Pre-requisites: FARM 7205, FARM 7217, FARM 7225, FARM 7227, FARM 7235, FARM 7237, FARM 7266, FARM 7285, FARM 7305, FARM 7306, FARM 7315, FARM 7325, FARM 7335.

This elective course includes a sequence of educational sessions that enhance the development of skills and concepts related to the education and care of the patient with Diabetes. The course encourage Pharmacy students to

develop educational literature that could be used at their practice centers to educate patients with Diabetes, apply the knowledge acquired, and develop new concepts. During the course, several tasks or special projects will be assigned to the students, according to the needs and student priorities. The student will coordinate a group educational activity directed to patients with Diabetes in a selected community. Active learning methodologies will be used, as well as, the Blackboard Learning System will be adopted as a learning and educational tool to enhance the distance interaction between student-professor and student-student.

INTD 7995
Complementary Practices for Health and Healing. Three to five (3-5) credits.

The course gives an overview of various health belief systems in Complementary and Alternative Medicine (CAM) and examines the current trends in the utilization of some of these practices and its implications. Specific therapeutic practices will be discussed. Information resources of natural products will also be reviewed. The paradigms in which biomedical model is based, its strengths and limitations will be discussed, as well as comparison with other healing philosophies and practices. Most common forms of healing practices, its theories, proposed mechanism of action, specific indication, expected results, available scientific evidence, contraindications, adverse effects, and interactions or interference between conventional and non-conventional practices will be study. This course will be offered at the Undergraduate, Graduate, and First Professional Level. For Medical School students the number of hours will fluctuate between 80-160 hours. The instructional strategies will include lecture, discussion, practical experience, case study, and workshop.

GRADUATE PROGRAM

FABI 6311
Advanced Biological Chemistry I. Two (2) credits.

This course deals with the structure and function of biomolecules, including proteins, enzymes,nucleic acids, lipids, carbohydrates, vitamins and hormones. It also deals with the transformations, interactions and energy changes of these biomolecules (metabolism) in the different cells of the organism and how these reactions are regulated under ever changing environmental conditions and during cell differentiation (genetic and epigenetic regulation). The origin of "high energy" biomolecules are described mainly in relation to mitochondrial function and their participation in energy requiring processes. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FABI 6312
Advanced Biological Chemistry II. Two (2) credits. Pre-requisite: FABI 6311.

This course deals with the characteristics of the human genome, the replication and repair of the genetic material, the transcription and translation of genetic information, the alteration of genetic material (mutations), and its consequences (genetic diseases), and the modern methods and techniques of molecular biology (recombinant DNA technology, gene therapy and cloning) the general mechanisms of hormone action and the molecular bases of nutrition are dealt with in this course. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6311
Advanced Physical Pharmacy I. Two (2) credits.

This course helps the students to understand the quantitative relationships between heat and other forms of energy. Also, it provides the students with the theories and principles involved in the three laws of thermodynamic. In addition, it will provide the students with the theories, concepts and fundamental principles of solutions. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6312
Advanced Physical Pharmacy II. Two (2) credits. Pre-requisites: FAFI 6311.

This course is essential for helping the students in understanding the physical chemical foundations of the pharmaceutical sciences and their pharmaceutical applications and also update the students with the progress and new researches in the topics outlined in this course such as: physical properties of drug molecules;

complexation and protein binding; principles of interfacial phases; theories and principles of the different types of dispersed systems and fundamental principles of rheology. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6313
Advanced Physical Pharmacy III. Two (2) credits. Pre-requisite: FAFI 6312.

This course is essential for the students to understand the physical and chemical properties of new medicinal products. In this course will provide the students broad principles in an attempt to predict solubility, stability, compatibility and biological action of drug products. Emphasis is placed upon the application of scientific principles to practical professional problems. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6321
Pharmaceutical Unit Operations I. Two (2) credits. Pre-requisite: FAFI 6311.

An introduction to the theory and applications of fluid flow, and the theory and mechanisms of heat transfer. The emphasis will be on applications in the pharmaceutical industry. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6322
Pharmaceutical Unit Operations II. Two (2) credits. Pre-requisite: FAFI 6321.

Application of momentum, heat and mass transfer principles in the design of separation processes. An introduction to the theory and applications of particulate solids. The emphasis will be on the applications in the pharmaceutical industry. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6355
Drug Metabolism. Two (2) credits.

The overall objective of this course is to enable the student to predict, from a drug's structure its probable metabolites and their potential for toxicity. In the first part of the course, the physiological processes of drug absorption,distribution and elimination will be briefly reviewed, and the major pathways of drug biotransformation will be studied in detail from an enzymatic basis. Phase I reactions due to monooxygenases (Cytochrome P-450 and Flavin Monooxygenases) will be studied in detail. Examples of metabolic activation and biotransformation of xenobiotics, including drugs, environmental pollutants and naturally occurring toxic chemicals will be given. The second part of the course will deal with the Phase II reactions. Various conjugating enzymes and the reactions they catalyze will be studied using examples of drugs and xenobiotic compounds. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6400
Seminar in Industrial Pharmacy. Two (2) credits.

Research work under the supervision of a member of the Industrial Pharmacy faculty. The students will prepare and submit a report to be evaluated by the faculty. The students can take the course more than once with the authorization of the professor. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6500
Projects in Industrial Pharmacy. Two (2) credits. Pre-requisites: FAFI 6511, FAFI 6512.

Research work under the supervision of a faculty member of Industrial Pharmacy. The students will prepare and submit a report to be evaluated by faculty. The students can register for the course more than once with the authorization of the professor. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6511
Industrial Pharmaceutical Technology I. Two (2) credits. Pre-requisite: FAFI 6311.

This course will provide knowledge concerning design, manufacture and control of pharmaceutical dosage forms. This course will teach the students concepts, new theories and their practical applications in the development and production of dosage forms and in drug delivery systems. This course will direct the students to new production process and machines for manufacture , new control methods for accurate definition of drug delivery and new improved controlled procedures. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6512
Industrial Pharmaceutical Technology II. Two (2) credits. FAFI 6511.

This course will provide knowledge related to the fundamental concepts that lead to an understanding of the techniques employed in the chemical and pharmaceutical industries to obtain satisfactory mixing. Through this course the fundamental concepts of drying and the principles of milling will be provided. In addition, the course describes the physics, mechanics and unit operation of compaction; tablet coatings principles, theories and equipment; granulation, microencapsulation, capsules among others. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6600
Pharmaceutical Quality Control. Two (2) credits. Pre-requisite: FAGG 6100.

This course will discuss the concepts for statistical control and the improvement of quality in pharmaceutical processes. Furthermore, the management of total quality, control charts and experimental design will be addressed. Finally, the student will be able to estimate and interpret process capacity of pharmaceutical processes. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6650
Statistical Quality Control. Two (2) credits.

FAFI 6700
Advanced Biopharmaceutics and Pharmacokinetics. Two (2) credits.

The course exposes the student to the absorption, distribution, and drug elimination concepts. The factors in the formulation of the pharmaceutical products that affect bioavailability are discussed. The physiological conditions that can affect the kinetics and dynamics of some drugs are presented. The course also exposes the students to data shaping or pattern-making techniques. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFI 6750
Industrial Management. Two (2) credits.

Basic theory and methods for analysis, design, installation, and maintenance of operational and management systems involved in the production and distribution of pharmaceutical goods and services will be covered. Planning , organization, scheduling, personnel, allocation, and control for productivity improvement and effective utilization of resources will be emphasized. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFT 6311
Advanced Pharmacology I. Two (2) credits.

This course deals with the structure and function of biomolecules, including proteins, enzymes,nucleic acids, lipids, carbohydrates, vitamins and hormones. It also deals with the transformations, interactions and energy changes of these biomolecules (metabolism) in the different cells of the organism and how these reactions are regulated under ever changing environmental conditions and during cell differentiation (genetic and epigenetic regulation). The origin of “high energy” biomolecules are described mainly in relation to mitochondrial function and their participation in energy requiring processes. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFT 6312
Advanced Pharmacology II. Two (2) credits.

Discussion of the action mechanisms of drugs in the systems and the organism. Examples are presented on how the drugs modify the biological function, and the therapeutic and adverse effects are studied. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAFT 6550
Special Topics in Pharmacology. Two (2) credits.

Selected topics in Pharmacology will be discussed; depending on the professor,topics can include autonomic, cardiovascular or central nervous system agents. Student can register in this course more than once if topics to be discussed are different and with authorization of the professor. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAGG 6100
Statistics in Pharmacy. Two (2) credits.

Basic statistical concepts, probability concepts, presentations, data charts, and parametric and non-parametric statistical methodology are discussed, in addition to experimental designs in the pharmaceutical sciences context. In this course, lecture, student oral presentation and internet search will be used among other instructional strategy.

FAGG 6200
Drug Literature Evaluation. Two (2) credits.

Drug Literature Evaluation is designed to introduce the student to basic areas of study that enhance their ability to deal with and utilize this information. The course is a combination of group discussion and lecture. This course requires extensive hands-on practice by the student to create and execute effective search strategies of the medical literature. It also requires comprehensive evaluations of the medical literature. There is no standard text for this course. Material will be excerpted from journal reading assigned by the instructors. In this course, lecture, student oral presentation and internet search will be used among other instructional strategy.

FAGG 6213
Special Topics in Pharmaceutical Sciences. Two (2) credits.

Selected Topics in Pharmaceutical Sciences will be discussed. It requires previous authorization of the professor in charge of the course. The topics included, depending on the professor in charge of the course, can be: antiinfectious, autonomic agents, molecular pharmacology concepts, neuropharmacology, nuclear pharmacy, structure activity relationships, biopharmaceutics, cardiovascular or central nervous system agents. Students are permitted to register more than once in this course with the professor and its mayor advisor's permission when the topics presented are different. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAGG 6300
Principles of Research Design. Two (2) credits.

This course will supply and develop in the students the skills necessary for writing a successful research proposal including basic concepts, statement of the problem, hypothesis, objectives, design of experiments, experiment planning, analysis of the data and documentation of results. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAGG 6800
MS Research. Two to four (2-4) credits.

Research oriented towards dissertation of the thesis for Master of Science in Pharmacy. Not more than four (4) credits will be accredited to the masters program, even though the student can register a total of 16 credits.

FAGG 6900
Thesis. Two (2) credits.

Results are presented as a written dissertation. All candidates for Master of Science in Pharmacy (MS) have to register in this course in the trimester that there thesis defense will be presented.

FAQM 6351
Instrumental Pharmaceutical Analysis I. Two (2) credits.

Presentation of the theoretical and practical principles of the advanced techniques used in the qualitative and quantitative analysis of drugs, its metabolites and excipients; in addition to endogenous substances in the biologic fluids and corporal tissues. The techniques are compared to determine the most capable in terms of applications depending on the situation. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6352
Instrumental Pharmaceutical Analysis II. Two (2) credits. Pre-requisite: FAQM 6351.

The theoretical and practical aspects of instrumentation used in chemical separations are presented. Among the techniques discussed are gas chromatography, liquid chromatography and capilar electrophoresis with their respective detection modes which are used to identify drugs. Advantages and disadvantages of the separation techniques depending on the situation. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6701
Medicinal Chemistry I. Two (2) credits.

This is an intensive course in Organic Chemistry, intended to lay the background for the subsequent courses in Medicinal and Pharmaceutical Chemistry. At the same time, the course is intended to fill in the gaps for those students who did not major in Organic Chemistry at the undergraduate level. Each topic is covered at the basic level, and then treated in-depth, so that at the end of the course the students are well-prepared to master the advanced topics taught in Medicinal Chemistry II and III. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6702
Medicinal Chemistry II. Two (2) credits. Pre-requisite: FAQM 6701.

The course covers the physical-chemical purpose of the drug action theory and effector-receptor. The methods to characterize the receptors will be studied. The drugs will be presented in groups, acting over neurotransmitters and receptors, neurohormones and its receptors, and the drug that affect the membranes, cell wall, enzymes and nucleic acids. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6703
Medicinal Chemistry III. Two (2) credits. Pre-requisite: FAQM 6702.

Study of the structure-activity relationship in the design of medicinal products. Among the subjects to be covered are, dopamine and its receptors, seratonine and its receptors, biosynthesis of dopamine, histamine and its receptors, agonists and antagonists of dopamine, neurotransmitters of aminoacids, steroidal and peptic hormones, among others. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6705
Seminar in Medicinal Chemistry. Two (2) credits. Pre-requisite: FAQM 6703.

This course shows the student the fundamentals to prepare an oral and written presentation of a subject assigned by the professor or chosen by the student. The student will prepare a poster from the oral presentation following some general rules. Different aspects of presentations will be worked such as: choosing an appropriate title, logical sequence, background, material presentation, duration of presentation, visual aid, use of physical resources. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6707
Pharmacognosy and Natural Products. Two (2) credits. Pre-requisites: FAQM 6351, FAQM 6703.

Pharmacognosy literally means “knowledge of drugs”. From a historical point of view, the first drugs used by humans came from natural products, and so, Pharmacognosy has retained its basic concept. Inside the natural products range, the superior plants compose the

highest percent of the source from where the drugs have been isolated. The objectives of the course are centralized in the isolation and determination of the structure of the compounds from plants. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6710
Applied Inorganic Chemistry. Two (2) credits.

The following methods used in the analysis of drugs and chemical substances will be discussed: visible, ultraviolet, fluorescence, atomic absorption and mass spectrometry. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FAQM 6720
Applied Organic Chemistry. Two (2) credits.

Theoretical and practical aspects of the infrared spectroscopy and nuclear magnetic resonance methods will be covered with emphasis in recent development on instrumentation and interpretation of drug and natural products spectra. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FARM 6001
Unit Operations I. Two (2) credits.

This course is designed as an introductory course in the Industrial Pharmacy sequence. It deals with the Unit Operations frequently employed in the Pharmaceutical Industry both in the development as well as in the production environment. Special attention is given to an in-depth discussion of such processes as milling, mixing, blending, heat transfer, sieving, sizing and particle size analysis.

FARM 6002
Unit Operations II. Two (2) credits.

The course is designed as an introductory course in the Industrial Pharmacy Program. It deals with the Unit Operations frequently employed in the Pharmaceutical Industry both in the development as well as in the production environment. Special attention is given to an in-depth discussion of such processes as fluid mixing, filtration and clarification, micrometrics and particle size analysis.

FARM 6011
Disease States and Therapeutics I. Two (2) credits.

The study of Disease States of the Cardiovascular System, their clinical manifestations, and their treatment. The role of the pharmacist in the management and/or prevention of these conditions is emphasized.

FARM 6012
Disease States and Therapeutics II. Two (2) credits.

The study of common chronic Disease States of Endocrine and Respiratory System, their clinical manifestations, and their treatment. The role of the pharmacist in the management and/or prevention of these conditions is emphasized.

FARM 6013
Disease States and Therapeutics III. Two (2) credits.

Study of major psychiatric disorders and renal diseases, their clinical manifestations and their treatment. The role of the pharmacist in the management and/or prevention of these conditions is emphasized.

FARM 6014
Disease States and Therapeutics IV. Two (2) credits.

Study of infections and oncologic diseases, their clinical manifestations and treatment, the role of the pharmacist in the management and/or prevention of these conditions is emphasized.

FARM 6089
Institutional Pharmacy Administration I. Two (2) credits.

The focus of this course will be Procedure Manuals, Budgeting Process (Operational and Personnel), Cost Containment Procedures, Reimbursement Systems, Purchasing, Inventory Control and Personnel Management.

FARM 6095
Institutional Pharmacy Administration II. Two (2) credits.

The focus of this course will be on Work Analysis and the Time Studies, Cost Analysis, Cost Control and Cost Benefit Studies.

FARM 6096
Statistical Quality Control. Two (2) credits.

Basic aspects and methods for Quality Control Programs with emphasis on process control, acceptance techniques and special job studies.

FARM 6097
Advanced Physical Pharmacy I. Two (2) credits.

Application of selected physical-chemical principles to homogeneous systems used in the development of pharmaceutical dosage forms.

FARM 6098
Advanced Physical Pharmacy II. Two (2) credits.

Application of selected physical-chemical principles to homogeneous systems used in the development of pharmaceutical dosage forms.

FARM 6099
Institutional Pharmacy Practice. Two (2) credits.

The pharmacist's role in 1,2 and 3 Health Care Delivery Systems as well as basic institutional concerns such as unit-dose, intravenous additives, decentralized practice and quality assurance programs will be covered.

FARM 6105
Advanced Biopharmaceutics and Pharmacokinetics. Two (2) credits.

Methods of optimizing drug delivery systems for various routes of administration based on biopharmaceutical and pharmacokinetics considerations.

FARM 6106
Special Topics in Pharmacology. Two (2) credits.

Select topics in Pharmacology will be discussed. Depending on the instructor's preferences, topics may include, among others, Automatic Agents, Cardiovascular Agents or Central Nervous System Agents. Students will be allowed to take this course more than once, when and if the subject matter is different, by permission of the instructor.

FARM 6150
Phytochemistry. Two (2) credits.

Biosynthesis routes and the chemotaxonomic relations of the alkaloids, flavonoids, steroids, terpenoids and secondary products related to natural origins which are very important in Pharmacy will be covered. In this course lecture, student oral presentation and internet search will be used among other instructional strategy.

FARM 6201
Spectroscopic Analysis I. Two (2) credits.

Discussion of visible, ultraviolet, fluorescence, atomic absorption and mass-spectrometric methods of analysis of drugs and chemicals.

FARM 6202
Spectroscopic Analysis II. Two (2) credits.

This course focuses on the theoretical and practical aspects of Infra Red (IR) and Nuclear Magnetic Resonance (NMR) Spectroscopy. Special emphasis is placed on recent development in instrumentation and on interpretation of drug and natural product spectra.

FARM 6210
Statistics in Pharmacy. Two (2) credits.

Introduction to basic statistical methods used in Pharmacy with special emphasis on areas of faculty activity and interests.

FARM 6231
Advanced Pharmaceutical Analysis I. Two (2) credits.

A presentation of the theoretical and applied principles of advanced techniques used in the quantitative analysis of drugs, their metabolites and endogenous substances in biological fluids and tissues.

FARM 6241
Advanced Biological Chemistry I. Two (2) credits.

Introduction to biomolecules and their importance in cell structure, genetics, intermediary metabolism and bioenergetics. Also included is a discussion of enzymes, enzyme kinetics, and mechanisms of enzyme reactions.

FARM 6251
Advanced Pharmacology I. Two (2) credits.

A discussion of the pharmacological basis of drug action at the molecular level. Topics covered will include: Dose Response Relationships, Mechanism of Drug Action and Interaction at the Receptor Level, Relationships between Chemical Structure and Pharmacological Activity, Neurotransmitter Dynamics, and Biochemistry and Metabolism.

FARM 6301
Industrial Pharmaceutical Technology I. Two (2) credits.

A study of the processes and equipment involved in the manufacture of solid dosage form.

FARM 6302
Industrial Pharmaceutical Technology II. Two (2) credits.

A study of the processes and equipment involved in the manufacture of semi-solid and liquid dosage forms.

FARM 6303
Evaluation of Pharmaceutical Dosage Forms. Two (2) credits.

A discussion of the physical and physical-chemical methods used to evaluate pharmaceutical dosage forms.

FARM 6310
Seminar in Industrial Pharmacy. Two (2) credits.

Seminar in Industrial Pharmacy in which discussions will focus on current literature with a view toward evaluation of methodology and presentation of data.

FARM 6315
Projects in Industrial Pharmacy. Two (2) credits.

Investigation work in Industrial Pharmacy under the supervision of a member of the Industrial Pharmacy Faculty. Preparation and submission of report to be evaluated by the faculty. Students may be allowed to take this course more than once, by permission of the instructor.

FARM 6321
Pharmaceutical Unit Operations I. Two (2) credits.

Theory and practice of the Unit Operation related to Industrial Pharmaceutical Technology such as drying, communication, micrometrics and particle size analysis, blending and compaction will be covered.

FARM 6322
Pharmaceutical Unit Operations II. Two (2) credits.

Basic of theory and practice of the Unit Operations related to Industrial Pharmaceutical Technology II such as heat transfer, filtration, clarification, and fluid mixing will be covered.

FARM 6330
Industrial Management. Two (2) credits.

Methods and theoretical foundation for analysis, design, installation, and maintenance of operational and management systems involved in the production and distribution of pharmaceutical goods and services are discussed. Planning, organization, scheduling, personnel, allocation, and control for productivity improvement and effective utilization of resources are emphasized.

FARM 6340
Controlled Release Drug Delivery Systems. Two (2) credits.

A study of the theory and technology of Controlled Release Drug Delivery Systems.

FARM 6410
Seminar in Institutional Pharmacy. Two (2) credits.

Seminar in Institutional Pharmacy in which each student independently carries out a chosen in-depth literature review of a subject of interest with guidance of the faculty responsible for the course. The student presents a written report and gives an oral presentation of the subject.

FARM 6420
Health Care Administration. Two (2) credits.

The socioeconomic and statistics of health care, including governmental programs, legislative trends, third-party insurance and welfare programs, and other areas that may affect the management of the modern Institutional Pharmacy.

FARM 6550
Thesis. Two (2) credits.

FARM 6552
Advanced Pharmacology II. Two (2) credits.

The mechanisms of drug action as applied to specific organ systems as well as to the intact organism will be discussed. Examples of the modification of biological function and the therapeutic and adverse effects of drugs will be presented.

FARM 6990
Master in Sciences Research Proposal. Two (2) credits.

Development of a M.S. Research Proposal that can be submitted to the students advisory committee, following the "Guidelines for the Master Thesis Proposal". A student may register for this course without credit, only to complete work "In Progress", for a maximum of two additional trimesters.

FARM 6995
Master in Sciences Research. Two to four (2-4) credits.

Research toward the student's Dissertation. No more than four trimester credits in M.S. Research may be applied toward the Master Degree.

SCHOOL OF PHARMACY FACULTY

ALMODÓVAR-CARABALLO, EDNA N. - Assistant Professor; Department of Pharmacy Practice; PharmD, University of Kansas, 1997. Primary Care Pharmacy Residency, San Juan DVA Medical Center, 2002.

ANTOUN-DAOUD , MIKHAIL D. - Professor; Department of Pharmaceutical Sciences; PhD, London University - England, 1974; Post Doctoral Natural Products, Purdue University, 1979; Post Doctoral Enzyme Stereo Chemistry, Purdue University, 1981.

BLOOM-OQUENDO, JOSEPH - Associate Professor; Department of Pharmaceutical Sciences; PhD, University of Puerto Rico, 1991; Post-Doctoral Chemistry, Medical University of South Carolina, 1992.

CONTE-SCHMIDT, NELLY - Instructor; Department of Pharmacy Practice; MMS, InterAmerican University of Puerto Rico, 1991.

CRUZ-GONZÁLEZ, IADELISSE - Associate Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 2001; Primary Care Pharmacy Residency, San Juan DVA Medical Center, 2002; Certified Geriatric Pharmacist.

DUCONGE-SOLER, JORGE - Associate Professor; Department of Pharmaceutical Sciences; PhD, University of Havana, Cuba, 1999.

ESPINOSA-CHARNECO, MARÍA - Assistant Professor, Department of Pharmacy Practice; PhD., Oklahoma University, 1982.

FABREGAS-TROCHE, SANDRA M. - Professor; Department of Pharmacy Practice; PhD, University of Sevilla – Spain, 2001.

FIGUEROA-RÍOS, DENISE - Assistant Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 2004; Pharmacy Practice Residency, San Juan DVA Medical Center, 2005.

GARCÍA-BERDECIA, RAFAEL - Assistant Professor; Department of Pharmaceutical Sciences; M.P.H., University of Puerto Rico, Medical Sciences Campus, 1989.

GARCÍA-ORTIZ, ASTRID J. - Associate Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 2001; Pharmacy Practice Residency, San Juan DVA Medical Center, 2002.

GERENA-LÓPEZ, YAMIL - Assistant Professor; Department of Pharmaceutical Sciences; PhD, University of Puerto Rico, 2005; Post Doctral Immunology and Molecular Biology, University of Puerto Rico, 2005-2006.

GHALY, EVONE S. - Professor; Department of Pharmaceutical Sciences; PhD, University of Cairo – Egypt, 1984; Post Doctoral Pharmaceutics, Philadelphia College of Pharmacy and Science, 1986-1989.

GONZÁLEZ-CORDERO, MYRIAM - Associate Professor; Department of Pharmacy Practice; MPH, University of Puerto Rico, 1997.

GUTIÉRREZ-COLLAZO, LUZ M. - Professor; Department of Pharmacy Practice; PharmD, University of Tennessee, 1975.

GUZMÁN-BADILLO, JENNIFER - Associate Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 1999.

HERNÁNDEZ-GONZÁLEZ, LESBIA - Professor; Department of Pharmacy Practice; PharmD, University of Michigan, 1981; MPH, University of Puerto Rico – Medical Sciences Campus, 1993.

HERNÁNDEZ-MUÑOZ, JOSÉ - Assistant Professor; Department of Pharmacy Practice; PhD, University of Maryland, 2007.

HERNÁNDEZ-O'FARRILL, ELIUD - Assistant Professor; Department of Pharmaceutical Sciences; PhD, University of Puerto Rico, 2006.

JIMENEZ-RAMIREZ, FRANCISCO J. - Associate Professor; Department of Pharmacy Practice; Primary Care Pharmacy Residency, San Juan DVA MedicalCenter,

1997; PharmD, Temple University, 1999; Primary Care Pharmacy Residency, San Juan DVA Medical Center, 1997; Certified Diabetes Educator; Board Certified Pharmacotherapy Specialist.

MALDONADO-DÁVILA, WANDA T. - Professor; Department of Pharmacy Practice; PharmD, University of Maryland, 1986.

MARRERO-VÁZQUEZ, WANDA I. - Associate Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 1999.

MARTÍ-ORTIZ, ARTURO - Professor; Department of Pharmaceutical Sciences; PhD, University of Puerto Rico 1979; Post Doctoral Biochemistry, Saint Louis University, 1981-1983.

MARTÍNEZ-DE PÉREZ, MIRZA - Professor; Department of Pharmacy Practice; PharmD, University of Michigan, 1979; Hospital Pharmacy Residency, University of Michigan, 1979.

MIRANDA-MASSARI, JORGE R. - Professor; Department of Pharmacy Practice; PharmD, Philadelphia College of Pharmacy and Sciences, 1990; Clinical Pharmacokinetics Residency, University of North Carolina, 1991; Clinical Pharmacokinetics Fellowship, University of North Carolina, 1992.

MIRÓ-COLÓN, GLADYS N. - Professor; Department of Pharmacy Practice; EdD, University of Puerto Rico, 2002.

MONSERRATE-DONATE, ESTELA - Adjuct Professor; Department of Pharmacy Practice; PharmD, University of Puerto Rico, 2005.

OQUENDO-JIMENEZ, ILIA - Professor; Department of Pharmaceutical Sciences; PhD, University of Puerto Rico, Medical Sciences Campus, 1986.

PEDRO-GUTIERREZ, ELSA - Assistant Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 2006.

PÉREZ-TORRES, MARIANELA - Assistant Professor; Department of Pharmaceutical Sciences; PhD, University of Puerto Rico, 2003; Post Doctoral Fellow, Vanderbilt University, 2004-2006.

PI-PORTALES, MARÍA V. - Associate Professor; Department of Pharmacy Practice; EdD, InterAmerican University of Puerto Rico, 1991.

REYES-PEREZ, ZAYRA M. - Counselor; Department of Pharmacy Practice; MRC, University of Puerto Rico, 1989.

RIVERA-SARATE, SACHA - Associate Professor; Department of Pharmacy Practice; PharmD, Purdue University, 2001; Residency in Geriatric Pharmacy, VA Medical Center Gainesville - Florida, 2003; Certified Geriatric Pharmacist.

RODRÍGUEZ-CINTRÓN, FRANCES M. - Associate Professor; Department of Pharmacy Practice; PharmD, University of Michigan, 1993; Pharmacy Practice Residency, Riverside Methodist Hospital, Ohio, 1994; Board Certified Pharmacotherapy Specialist.

ROJAS-BRENES, MARÍA - Adjunct Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 2005; Drug Information Residency Nova Southeastern University, 2007.

SIEVENS-FIGUEROA, LUCAS - Adjunct Professor; Department of Pharmaceutical Sciences; PhD. University of Iowa, 2009.

TORRES-LAUREANO, BETTY A. - Associate Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 2001.

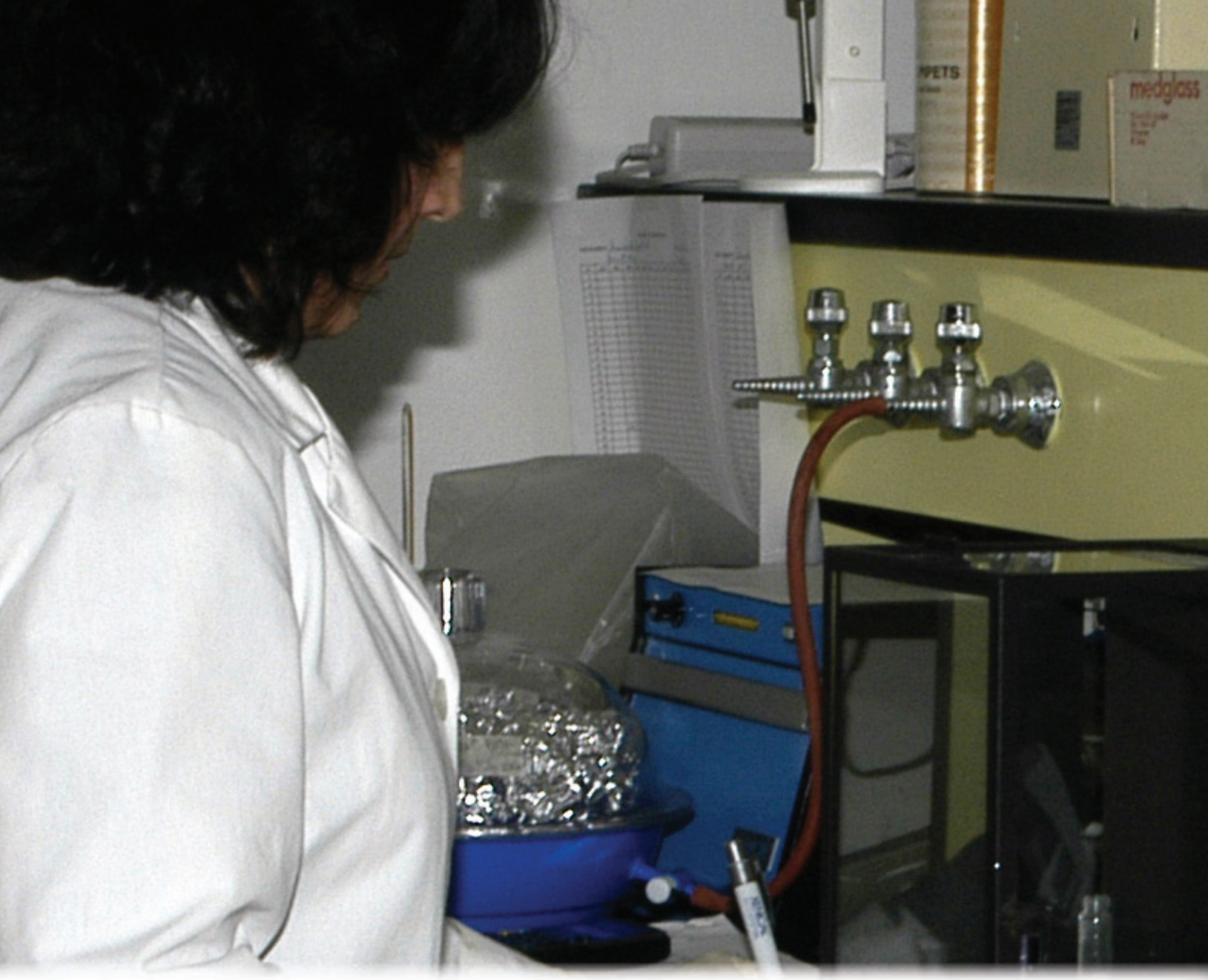
VARELA-VÁZQUEZ, MIRIAM - Assistant Professor; Department of Pharmacy Practice; PharmD, Nova Southeastern University, 2002; Pharmacy Practice Residency, San Juan DVA Medical Center, 2003.

VEGA-GERENA, MAYRA L. - Assistant Professor; Department of Pharmacy Practice; MPHE, University of Puerto Rico, 1990.

VEGA-MALDONADO, ELGA E. - Professor; Department of Pharmaceutical Sciences; EdD, University of Puerto Rico, 2001.

VÉLEZ-CARRASQUILLO, ANA E. - Professor; Department of Pharmacy Practice; JD, University of Puerto Rico, 1989; LLM, Catholic University of Puerto Rico, 1993.

VLAAR-STOOP, CORNELIS P. - Associate Professor; Department of Pharmaceutical Sciences; PhD, VRYE Universiteit - Amsterdam 1994; Post Doctoral Organic Chemistry, Louisiana State University, 1994-1995; Post Doctoral Chemistry, Scripps Research Institute - California 1995-1996.



Faculty of Biosocial Sciences and Graduate School of Public Health

HISTORY

The Faculty of Biosocial Sciences and Graduate School of Public Health is the unit of the Medical Sciences Campus dedicated to teaching, research, and service in the areas of public health and biosocial disciplines as they relate to the health sciences. Besides offering its own master's degree programs in core areas of public health, the School is responsible for the teaching of public health and biosocial contents to medical students and students in other schools of the Medical Sciences Campus.

The School of Public Health had its origin in the School of Tropical Medicine, founded in 1926 with support from the Rockefeller Foundation and under the auspices of Columbia University. The School of Tropical Medicine soon became a renowned center for research and postgraduate studies. In 1941, at the request of the Department of Health, the School of Tropical Medicine developed graduate courses in the field of public health. These were primarily courses in sanitary engineering leading to a Master of Sanitary Sciences degree developed as a response to the need for specialized personnel in that area. Subsequently, programs toward the Master of Public Health, Master of Public Health Education, and Master of Nursing were developed.

In 1949, the School of Medicine of the University of Puerto Rico was created. The Department of Preventive Medicine and Public Health was part of the School of Medicine from its inception. It offered courses in preventive medicine and public health to medical students. In 1955 , the Department of Preventive Medicine and Public Health was accredited as a School of Public Health by the Council on Education for Public Health (CEPH).

In 1956, it assumed and important role in the regionalization of health services in the Island, a plan by which primary, secondary, and tertiary care services were delivered in a coordinated fashion throughout the Island in order to maximize utilization of resources. The School's primary role has been one of training the necessary human resources to deliver many of these services, and one of assessing health needs in the community in order to respond with relevant programs.

Due to the outstanding contribution of the School and its teaching programs in the development and organization of health care services in the Island, and due to the growth of its programs, the Academic Senate of the Medical Sciences Campus recommended the creation of the Faculty of Public Health. On January 27, 1970, the Council on Higher Education authorized, by Certification No.42, the creation of the Faculty of Public Health of the Medical Sciences Campus of the University of Puerto Rico. The School thus gained independent status. At the time there were thirteen academic programs which reflected the School's philosophy and sense of mission.

In 1972, the Medical Sciences Campus moved from the old building of the School of Tropical Medicine in San Juan to a new 10 story building near the University Hospital and other health institutions within the Puerto Rico Medical Center in Río Piedras. That same year the School of Public Health moved to its new facilities within that structure. In 1976, following Certification No.4 of the Council on Higher Education which called for a total reorganization of the Medical Sciences Campus, a new organization for the School was proposed. The following departments were established: Department of Environmental Health, Department of Biostatistics and Epidemiology, Department of Social Sciences, and Department of Administration. The Nursing Department became part of the College of Health Related Professions.

In 1981, following the recommendation of the faculty, the organization of the School of Public Health was revised to meet its mission and goals, and to fulfill its commitment to train a new type of professional in the field of public health. The academic program was reorganized and five departments were created. This new organization reflected more adequately the School's endeavors and its interdisciplinary character. The School's five departments are: Department of Administration, Department of Biostatistics and Epidemiology, Department of Environmental Health, Department of Human Development, and Department of Social Sciences.

The eighties were a decade of growth and strengthening of the School's programs in response to social needs and

areas of concern in the field of public health. It was a period of development of the biosocial sciences, as evidenced by the creation of the Center for Census Data, the Center for Socio-medical Research, and the Center for Demographic Research. In keeping with the needs of an aging population, a graduate certificate in Gerontology was established.

The School has also been involved in outreach efforts through continuing education, extension and extramural courses and programs. In 1984, an evening program offering a Master of Science with specialty in Environmental Health was the first effort, and in 1985, a program offering a Master of Public Health was added. An extramural program with the University of Cádiz, Spain, began in 1986. Through this collaborative effort, the faculty offered courses at the University of Cádiz conductive to the Master of Public Health and the Master of Science with Specialty in Environmental Health.

New additions to our academic offerings are a graduate certificate in Developmental Disabilities-Early Intervention, offered by the Center for Developmental Disabilities though the Human Development Department. The program focuses on early intervention and it is an evening program in order to facilitate attendance of working professionals. During academic year 1995-96 an MPH program with specialty in Gerontology and a program leading to a Master of Public Health Education were added, both evening programs.

A revision of the Master of Science in Environmental Health with specialty in Occupational Health Program gave birth to a new program approved by the Board of Trustees of the University of Puerto Rico. It grants a Master of Science in Industrial Hygiene and replaced the specialty in Occupational Health.

For the academic year 1998-99 the Department of Human Development added to its curricular offer two new programs, a Master of Public Health with Specialty in Nurse Midwifery and a Certificate in Nurse-Midwifery. These programs' objectives are to prepare professionals in the women health care area, before and during the pregnancy, during the childbirth process, as well as, in family planning and newborn care. Finally, the highest degree offered by the School is the Doctor of Public Health (Dr. PH) with Specialty in Environmental Health. The program began in academic year 1999-2000. The first degrees were conferred in 2005. The GSPH is actively working on the development of two new doctoral programs in public health core areas. These doctoral programs will grant Dr.PH. degrees in Health Systems Management, and Social Determinants of Health.

VISION

The Faculty of Biosocial Sciences and Graduate School of Public Health shall distinguish itself for its excellence and leadership in teaching and research activities and for its service to the Puerto Rican society and the international community needs, while respecting cultural diversity.

MISSION

The Graduate School of Public Health is the principal educational institution in the field of public health in Puerto Rico. It is committed to developing knowledge through research, documentation and the dissemination of information. The school trains professionals and specialists of excellence in public health for Puerto Rico and other countries with a social conscience and a sense of universal responsibility to respond to the complex, dynamic and culturally diverse world in which we live. The institution is distinguished for its contributions to the analysis and formulation of public policy, health advocacy and the development and evaluation of its interventions and integrated service models which have been proven to be effective.

The Graduate School of Public Health offers interdisciplinary programs in public health education, research and service. Its goal is to enhance capabilities and the work of the faculty, researchers and students, support personnel and graduates in promoting and protecting health, preventing disease and minimizing adverse socio-environmental conditions.

The school is committed to strengthening collaborations in order to respond to and overcome health challenges that affect communities. It also maintains partnerships and collaborative projects with organizations and entities in Puerto Rico and in other countries.

ORGANIZATION AND ADMINISTRATION

The School is headed by the Dean, who is assisted by the Associate Dean for Academic Affairs, the Assistant Dean for Student Affairs, the Associate Dean for Research

and administrative personnel. Five departments offer academic programs in basic areas of public health. These are the Departments of Health Services Administration, Biostatistics and Epidemiology, Environmental Health, Human Development, and Social Sciences.

The Division of Continuing Education and Professional Studies, the Curriculum and Evaluation Office, and the Office of the Dean for Student Affairs, as well as several research and service programs, are other significant components of the School.

PROGRAMS OF STUDY

The School currently offers nine professional masters' degree programs, five academic masters' degree programs, four graduate certificates and one doctoral program. The Master of Public Health Program has six specialty options: Epidemiology, Biostatistics, Maternal and Child Health, Nurse Midwifery, Gerontology and a General Option. Some of these programs are offered in day and evening schedules. The academic masters' degrees are Demography, Enviromental Health, Evaluation Research of Health Systems, Nutrition and Epidemiology. A Doctor of Public Health Program began in 1999-2000 offering a specialty in Environmental Health. Students are encouraged to contact individual programs for updates on requirements, curricula, and new offerings.

GENERAL ADMISSION REQUIREMENTS OF THE SCHOOL

Applicants for admission to the Graduate School of Public Health must meet the general admission requirements of the School as listed below and specific program requirements. The general admission requirements for the School are:

- Hold a bachelor's degree granted by a college or university of recognized standing, or have completed studies equivalent to those required for a bachelor's degree.
- Submission of scores obtained in the graduate entrance examination in Spanish (EXADEP) or in English (GRE).
- Fluency in Spanish and ability to read and understand English (Classes are conducted in Spanish).
- Personal interview.
- Submission of the official application and all required documents prior to the deadline established by the School.
- Meet the specific requirements of the student's program of choice. (See sections on individual programs).

MASTER OF PUBLIC HEALTH GENERAL OPTION (DAY AND EVENING PROGRAMS)

The Master of Public Health Program focuses on the study of concepts and practices related to the socio-cultural aspects of health. Its curriculum covers topics on community health problems, underscoring the identification and understanding of factors and circumstances that determine health and disease.

The study of public health requires skills in the diagnosis of community health problems and the planning, implementation, administration, and evaluation of community health programs. The field of public health seeks the integration of several areas of knowledge in order to design and implement health programs that will meet the needs of the community.

The public health graduate will be qualified to promote changes in public health policies, apply current concepts of management, research community health problems, and apply prevention and control methodologies in dealing with specific health problems. Graduates are usually employed by the government, as well as the private sector.

Within the Master of Public Health, students may choose the general program or one of five specialty areas, i.e., Biostatistics, Epidemiology, Maternal and Child Health, Gerontology, or Nurse Midwifery. Specific admission requirements for each option vary.

Specific Admission Requirements

Besides the general admission requirements of the School, the applicant should meet the following admission requirements:

- A minimum of two years work experience in a health field.
- Health professionals must present evidence of current license to practice in Puerto Rico.
- Completion of a college level algebra course.

Graduation Requirements

Upon meeting the following requirements the student will receive a Master of Public Health degree:

- Completion of the 54 credit-hour program (36 in required courses, and 18 in elective courses).
- Overall grade point average of at least 2.50 and 3.00 in the specialty.

MASTER OF PUBLIC HEALTH GENERAL OPTION

TOTAL TRIMESTER CREDIT-HOURS: 54

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
CISO 6538	Culture, Society, and Complex Organizations	2
SAAM 6528	Principles of Environmental Health	3
EVAL 6614	Evaluation of Health Services	2
ADSS 6572	Theory of Administration	4
EPID 6523	Epidemiological Methodology	4
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
SALP 6520	Public Health Field Laboratory	6
Electives		18

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN BIOSTATISTICS

The Master of Public Health with Specialty in Biostatistics develops in students the knowledge, skills, and attitudes needed to apply statistical methodologies in the planning and implementation of studies and research in the area of community health.

Specifically, the program graduate will deal proficiently with statistics in the health field, apply appropriate statistical methodology in the classification, presentation, analysis, and interpretation of health data, as well as collaborate in the design and implementation of evaluation models for health programs. Graduates also advise health agencies and organizations on the application of statistical theories and methodologies.

Program of Study

The Master of Public Health with Specialty in Biostatistics is a 55 credit-hour program with courses distributed in three trimesters and one summer. Students must complete the 36 required credits of the General MPH Program plus 19 credits in specialized courses in biostatistics.

Specific Admission Requirements

Applicants for the Specialty in Biostatistics should have approved a college level algebra course. Those who are health professionals must present a valid license to practice in Puerto Rico.

Graduation Requirements

Students will receive a Master of Public Health degree with Specialty in Biostatistics upon meeting the following requirements:

- Completion of the 55 credit-hour program.
- Overall grade point average of at least 2.50 and 3.00 in the specialty.

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN BIOSTATISTICS

TOTAL TRIMESTER CREDIT-HOURS: 55

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
CISO 6538	Culture, Society, and Complex Organizations	2
SAAM 6528	Principles of Environmental Health	3
EVAL 6614	Evaluation of Health Services	2
ADSS 6572	Theory of Administration	4
EPID 6523	Epidemiological Methodology	4
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
SALP 6520	Public Health Field Laboratory	6
BIOE 6535	Statistical Inference	4

BIOE 6537	Non-Parametric Statistical Inference	4
BIOE 6545	Introduction to Sampling Theory	4
BIOE 6555	Regression and Correlation Analysis	3
BIOE 6605	Statistical Computing Applied to Public Health	4

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN EPIDEMIOLOGY

The Master of Public Health with Specialty in Epidemiology prepares students to analyze data on diseases, investigate epidemics, and collaborate with other professionals in the prevention and control of diseases. As professionals in one of the main areas of public health, epidemiologists study the distribution of disease in the population, as well as factors associated with the increase or decrease in the incidence of such diseases.

Graduates often work for government agencies and the private sector in research programs focusing on the distribution of disease in the population and on related factors. They also participate in educational activities geared to prevention.

Specific Admission Requirements

The applicant should have approved a college level algebra course. Health professionals must present a valid license to practice in Puerto Rico.

Program of Study

This is a 54 credit-hour program with courses distributed in three trimesters and one summer session. Students must complete the 36 required courses of the General MPH Program plus 18 credits in specialized courses in epidemiology.

Graduation Requirements

Students will receive a Master of Public Health degree with Specialty in Epidemiology upon meeting the following requirements:

- Completion of the 54 trimester credit-hour program.
- Overall grade point average of at least 2.50 and 3.00 in the specialty.

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN EPIDEMIOLOGY

TOTAL TRIMESTER CREDIT-HOURS: 54

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
CISO 6538	Culture, Society, and Complex Organizations	2
SAAM 6528	Principles of Environmental Health	3
EVAL 6614	Evaluation of Health Services	2
ADSS 6572	Theory of Administration	4
EPID 6523	Epidemiological Methodology	4
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
SALP 6520	Public Health Field Laboratory	6
EPID 6528	Epidemiology of Mental Diseases	3
EPID 6529	Epidemiology of Chronic Diseases	3
EPID 6530	Statistical Methods in Epidemiology	5
EPID 6535	Epidemiology of Communicable Diseases and Epidemiological Surveillance	4
EPID 6536	Epidemiology and Pathogenesis of Cancer	3

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN MATERNAL AND CHILD HEALTH (DAY AND EVENING PROGRAMS)

The Master of Public Health with Specialty in Maternal and Child Health trains professionals who study the needs and health problems of mothers and children as a group, and who plan, implement, and evaluate programs serving that population.

Graduates plan, organize, direct community service programs, and train other health professionals in the field of maternal and child health. They are expected to advocate for a better quality of life for mothers and children and to understand the determinants of health relevant to this group.

Program of Study

Students must complete 22 credits, in addition to the 36 required courses in the Master of Public Health General Option. Of the 22 credits in Maternal and Child Health, 19 credits are required courses, and 3 credits are elective courses.

Graduation Requirements

Students will receive a Master of Public Health degree with Specialty in Maternal and Child Health upon meeting the following requirements:

- Completion of the 58 trimester credit-hour program.
- Overall grade point average of at least 2.50 and 3.00 in the specialty.

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN MATERNAL AND CHILD HEALTH

TOTAL TRIMESTER CREDIT-HOURS: 58

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
CISO 6538	Culture, Society, and Complex Organizations	2
SAAM 6528	Principles of Environmental Health	3
EVAL 6614	Evaluation of Health Services	2
ADSS 6572	Theory of Administration	4
EPID 6523	Epidemiological Methodology	4
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
SALP 6520	Public Health Field Laboratory	6
DEMO 6606	Use of SPSS Program and other Scientific Research	4
MANI 6535	Family Care in Health Services	3
MANI 6536	Research in Maternal and Child Health	4
MANI 6537	Integral and Comprehensive Care	8

Electives
Three (3) elective credits should be selected from these options:

MANI 6541	Population and Family Planning	3
MANI 6056	Programs and Services for the Handicapped Child	2
MANI 6525	Human Genetics	2
MANI 6055	Legislation in Maternal and Child Health	1
MANI 6570	Seminar on Maternal and Child Health Services in Developing Countries	2
MANI 6005	Maternal and Child Concepts and Strategies	5
MANI 6057	The Health of the School-aged Child	2

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN GERONTOLOGY (EVENING PROGRAM)

The main goal of the Master of Public Health with Specialty in Gerontology Program is to train students in the design and management of programs that meet the needs of the elderly. The program is geared to applied areas, both academically and in the community setting, stressing an interdisciplinary approach. Program graduates are expected to promote changes that will benefit the elderly by advocating for better and more adequate public policies and providing services for this segment of the population.

The curriculum has been designed to analyze the process of aging with a holistic and interdisciplinary approach. Psychological, biological, sociological, anthropological, clinical, nutritional, and administrative aspects are examined as they relate to the elderly and the aging process, and from a public health perspective. Knowledge and skills acquired are applied in a community practice activity.

Admission Requirements

Candidates for admission to the Master of Public Health with Specialty in Gerontology must comply with the general admission requirements of the School. In addition, applicants must have three credits in social sciences courses, three credits in biology, three credits in psychology, and a college level algebra course. They must also have 2 years experience in a health or health related field. Health professionals must present evidence of license to practice in Puerto Rico (foreign students are exempted).

Applicants will also be required to present evidence of computer literacy. If the applicant does not possess these skills, arrangements will be made to provide training during the course of studies.

Admission decisions are made based on the grade point average, graduate admission test scores, interview, work experience, and examination of the applicant's academic record.

Program of Study

The Master of Public Health with Specialty in Gerontology Program is an eight trimester evening program. It is a 54 trimester credit-hour program in which 30 credits are in theoretical courses, 15 credits in basic gerontology courses, 6 credits in a field experience in gerontology, and 3 credits in an elective course in gerontology.

Graduation Requirements

Students will receive a Master of Public Health degree with Specialty in Gerontology upon meeting the following requirements:

- Completion of the 54 trimester credit-hour program within three years of the date of first enrollment.
- Overall grade point average of at least 2.50 and 3.00 in the specialty. Rules and requirements at the time of the student's first enrollment will be applied at the time of graduation. Students who are not enrolled for more than one academic session, will be subject to rules and requirements in effect at the time of their re-enrollment. Students must have acquired the knowledge, skills, and attitudes defined by the faculty as desirable in a graduate in the field.

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN GERONTOLOGY

TOTAL TRIMESTER CREDIT-HOURS: 54

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
CISO 6538	Culture, Society, and Complex Organizations	2
SAAM 6528	Principles of Environmental Health	3
ADSS 6572	Theory of Administration	4
EPID 6523	Epidemiological Methodology	4
EVAL 6614	Evaluation of Health Services	2
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
GERO 6005	Introductory Seminar to Gerontology	1
GERO 6501	Biological Aspects of Aging	3
GERO 6503	Psychological Aspects of Aging	3
GERO 6505	Clinical Aspects of Aging	3
GERO 6507	Social Aspects of Aging	3
GERO 6509	Administrative Aspects of Gerontology	3
SALP 6520	Public Health Field Laboratory	6
Elective in Gerontology		2

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN NURSE MIDWIFERY

The Master of Public Health with Specialty in Nurse-Midwifery is a 2-year (7 trimesters) program for registered nurses with a baccalaureate degree in nursing (BSN). The curriculum includes a combination of courses in public health, maternal-child health, and the core competencies for the practice of nurse-midwifery as defined by the American College of Nurse-Midwives (ACNM).

Graduates are prepared to be safe, competent, nurse-midwives who can provide comprehensive and integrated health care for low risk women in the childbearing through menopausal years, their newborns, and families in a

variety of health care settings. They have the knowledge and skills necessary to influence change in the health care delivery system, in legislation, and in public policy affecting maternal and child health.

Graduates are eligible to become nationally certified nurse-midwives (CNM) after successfully passing the examination given by the ACNM Certification Council (ACC).

Specific Admission Requirements

The applicant should meet the following admission requirements besides the General Admission Requirements of the School.

- Minimum of a Bachelor of Science in Nursing (BSN).
- Current license to practice as registered nurse in Puerto Rico and membership in the College of Professional Nurses.
- Minimum 2.75 GPA.
- EXADEP or GRE taken within the last three years
- Proficiency in Spanish.
- Ability to read and comprehend English.
- Three letters of recommendation.
- Interview with program faculty.
- Current certification in Basic Life Support (CPR).
- Recent physical examination, negative tuberculin test or chest x-ray, and evidence of immunity to Rubella and Hepatitis B.

Graduation Requirements

Students will receive a Master of Public Health with Specialty in Nurse Midwifery upon meeting the following requirements:

- Complete the 75 credits of required courses.
- Pass examinations with 80% or above.
- Achieve a satisfactory rating in clinical experience.
- Pass the written comprehensive examination.
- Submit all required written reports and clinical statistics.

MASTER OF PUBLIC HEALTH WITH SPECIALTY IN NURSE – MIDWIFERY

TOTAL TRIMESTER CREDIT HOURS: 75

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
CISO 6538	Culture, Society, and Complex Organizations	2
SAAM 6528	Principles of Environmental Health	3
EVAL 6614	Evaluation of Health Services	2
ADSS 6572	Theory of Administration	4
EPID 6523	Epidemiological Methodology	4
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
MANI 6535	Family Care in Health Services	3
ENOP 6041	Basic Aspects of Research for Nurse-Midwifery I	2
ENOP 6042	Basic Aspects of Investigation for Nurse-Midwifery II	2
DEMO 6606	Use of SPSS Program and other Scientific Research	4
ENOP 6005	Reproductive Physiology for Nurse Midwives	2
ENOP 6006	Human Sexuality and Well Woman Gynecology	3
ENOP 6007	Basic Pharmacology for Nurse Midwifery	2
ENOP 6008	Normal Obstetrics Management	3
ENOP 6026	Genetics and Genetic Counseling in Nurse Midwifery	1
ENOP 6027	Problems and Complications of Obstetrics	3
ENOP 6028	Maternal and Infant Nutrition	2
ENOP 6029	Care of the Newborn	2
ENOP 6030	Planning and Organization of Maternal and Infant Nurse Midwifery Services	1
ENOP 6035	Nurse Midwifery Practice and Management I	2
ENOP 6036	Nurse Midwifery Practice and Management II	2
ENOP 6037	Nurse Midwifery Clinical Management and Practice	5

Credits in Education		3
	Choose among the following:	
EDSU6503	Principles of Curriculum Design and Development	3
EDSA6005	Learning Principles and Teaching Strategies in Health Education	3
EDSU6501	Systematic Planning of Instruction	3
Electives		3

MASTER OF SCIENCE WITH SPECIALTY IN EVALUATION RESEARCH OF HEALTH SYSTEMS

The curriculum of the Master of Science with Specialty in Evaluation Research of Health Systems Program consists of theoretical and experiential components that prepare graduates to analyze health care delivery systems, identify problems, and propose solutions to those problems.

The systematic evaluation of programs and services is essential for the betterment of health care delivery. Program graduates analyze health systems and propose alternatives and solutions to existing problems. Specifically, program graduates assess access to health care by particular groups, examine processes at health care organizations in order to increase effectiveness, examine information used in decision-making, evaluate manpower roles and productivity, assess the quality of consumer communication, and the results of health services for those who have accessed care.

Specific Admission Requirements

The applicant must have 6 credits in mathematics and 3 credits in statistics.

Graduation Requirements

Students will receive a Master of Science with Specialty in Evaluation Research of Health Systems degree upon meeting the following requirements:

- Completion of the 71 trimester credit-hour program.
- Overall grade point average of at least 2.50 and 3.00 in the specialty (EVAL courses).
- Submission of a thesis approved by the faculty.

MASTER OF SCIENCE WITH SPECIALTY IN EVALUATION RESEARCH OF HEALTH SYSTEMS

TOTAL TRIMESTER CREDIT-HOURS: 71

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
EVAL 6610	Principles of Evaluation	3
BIOE 6535	Statistical Inference	4
EVAL 6611	Evaluation Models	3
EVAL 6511	Introductory Proposal Seminar	1
EPID 6523	Epidemiological Methodology	4
EVAL 6615	Development of Measurement Instruments	3
BIOE 6605	Statistical Computing Applied to Public Health	4
BIOE 6555	Regression and Correlation Analysis	3
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
EVAL 6512	Intermediate Proposal Seminar	1
EVAL 6620	Applied Statistics for Evaluation Research Studies	3
EVAL 6650	Evaluation Practicum	1
EVAL 6513	Advanced Proposal Seminar	1
EVAL 6515	Conceptualization and Methodology for Evaluation Research	4
EVAL 6630	Strategies for Evaluation and Communication	3
EVAL 6628	Principles of Cost-Benefit Analysis	3
EVAL 6700	Thesis Project	3
Electives		12

MASTER OF HEALTH SERVICES ADMINISTRATION

The Master of Health Services Administration Program prepares health services administrators to be proficient in the planning, administration, operation, and evaluation of health services delivery systems.

In preparing highly qualified health services administrators to assume leadership positions in the health care field, the program emphasizes analytical research methodology focusing on an interdisciplinary approach

for the solution of problems in the health care field.

Upon completion of the program of studies, graduates are eligible to apply for the licensure examination in Health Services Administration. Once they are licensed, they may serve as executive directors of health services facilities, executives or managers in the health insurance industry, consultants for pharmaceutical companies, and evaluators of health services institutions.

Specific Admission Requirements

The applicant must have completed the following number of credits in the areas specified below:

Required Courses	Credit-Hours
Accounting	3
Statistics	3
Economics	3
College Algebra	3
Business Finance	3

Work experience in the health care field is desirable.

Graduation Requirements

Students will receive a Master of Health Services Administration degree upon meeting the following requirements:

- Completion of the 86 trimester credit-hour program.
- Overall grade point average of at least 2.50 and 3.00 in the field of specialty.

MASTER OF HEALTH SERVICES ADMINISTRATION

TOTAL TRIMESTER CREDIT-HOURS: 86

MEDU 6500	Core Course in Public Health	6
ADSS 6591	Quantitative Decision-Making for Health Services Administration I	4
ADSS 6592	Quantitative Decision-Making for Health Services Administration II	4
EPID 6523	Epidemiological Methodology	4
ADSS 6525	Introduction to Health Care Management	3
ADSS 6589	Bioethics in Health Care Management	1
ADSS 6584	Health Politics and Policy	3
ADSS 6579	Organizational Behavior	3
ADSS 6585	Health Economics	3
ADSS 6607	Health Care Cost Accounting	3
ADSS 6583	Legal Aspects in Health Services	3
ADSS 6586	Health Care Delivery Systems	3
ADSS 6594	Planning, Development, and Evaluation of Health Services	4
ADSS 6625	Human Resources Management	4
ADSS 6598	Information Systems in Health Services Administration	3
ADSS 6609	Health Care Financial Management	3
ADSS 6606	Capstone Seminar in Health Services Administration	3
ADSS 6597	Administrative Residency	0
ADSS 6535	Continuous Quality Improvement in Health Services Organizations	3
SAAM 6528	Principles of Environmental Health	3
ADSS 6610	Principles of Health Insurance and Managed Care	3
CISO 6538	Culture, Society, and Complex Organizations	2
Electives		18

Part of the eighteen (18) credits could be selected from these options in Health Services Administration:

ADSS 6568	Special Projects	3
ADSS 6571	Budgeting Theories and Practices	3
ADSS 6580	Health and Development	3
ADSS 6576	Comparative Health Systems	3

MASTER OF SCIENCE WITH SPECIALTY IN EPIDEMIOLOGY

The Master of Science with Specialty in Epidemiology Program prepares professionals proficient in the utilization of epidemiological methodology in the study and solution of community health problems, and who will engage in teaching, research, and service in this area.

Program graduates are employed by government agencies and the private sector as epidemiologists, research assistants, data analysts, and coordinators of programs focusing on prevention.

Specific Admission Requirements

Students requesting admission to the Master of Science with Specialty in Epidemiology Program must have completed the following number of credits in the subjects specified below:

Required Courses Credit-Hours	
Biology	4
Chemistry	4
Physics	4
Psychology, Sociology or Anthropology	6
Mathematics (Algebra and Calculus)	6

Graduation Requirements

Students will receive a Master of Science with Specialty in Epidemiology degree upon meeting the following requirements:

- Completion of the 76 trimester credit-hour program.
- Overall grade point average of at least 2.50 and 3.00 in the specialty.

MASTER OF SCIENCE WITH SPECIALTY IN EPIDEMIOLOGY

TOTAL TRIMESTER CREDIT-HOURS: 76

THIS IS A TWO-YEAR (6 TRIMESTERS AND ONE SUMMER) PROGRAM.

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
SAAM 6528	Principles of Environmental Health	3
EPID 6523	Epidemiological Methodology	4
BIOE 6535	Statistical Inference	4
DEMO 6546	Mortality	4
EPID 6552	Seminar in Epidemiology I	1
BIOE 6545	Introduction to Sampling Theory	4
BIOE 6605	Statistical Computing Applied to Public Health	4
EPID 6553	Seminar in Epidemiology II	1
EPID 6527	Epidemiologic Surveillance	2
EPID 6539	Epidemiological Aspects of Public Health Problems	2
BIOE 6555	Regression and Correlation Analysis	3
EPID 6529	Epidemiology of Chronic Diseases	3
EPID 6535	Epidemiology of Communicable Diseases and Epidemiological Surveillance	4
EPID 6561	Epidemiological Research I	4
EPID 6554	Seminar in Epidemiology III	1
EPID 6528	Epidemiology of Mental Diseases	3
EPID 6562	Epidemiological Research II	4
EPID 6555	Seminar in Epidemiology IV	1
EPID 6563	Epidemiological Research III	2
EPID 6556	Seminar in Epidemiology V	1
Electives		10

MASTER OF SCIENCE IN DEMOGRAPHY

The Master of Science in Demography Program prepares professionals in the theoretical and methodological aspects of the study of human populations. These include population growth, distribution, and characteristics, as well as mortality, fertility, migration, population problems, and policies.

Upon completion of the program of studies, graduates may conduct research, offer consulting services, and work as teachers in demography, population analysis, and other related areas. They will also be able to participate in programs geared to the solution of problems of a collective nature.

Specific Admission Requirements

Applicants must have approved the following number of credits in the subjects specified below:

Required Courses	Credit-Hours
Statistics	3
College Algebra	3

Graduation Requirements

Students will receive a Master of Science in Demography degree upon meeting the following requirements:

- Completion of the required 74 credit-hour program.
- Overall grade point average of at least 2.50 and 3.00 in the specialty.
- Completion of a research project in demography approved by the faculty of the program.

MASTER OF SCIENCE IN DEMOGRAPHY

TOTAL TRIMESTER CREDIT-HOURS: 74

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
EPID 6523	Epidemiological Methodology	4
DEMO 6500	Introduction to Demography	4
BIOE 6535	Statistical Inference	4
DEMO 6546	Mortality	4
DEMO 6555	Fertility and Population Growth	4
DEMO 6565	Migration, Population Distribution, and Urbanism	4
DEMO 6560	Research Methods	4
CISO 6547	Population and Society	3
DEMO 6615	Supervised Practice in Demography	3
DEMO 6607	Population and Economics	4
DEMO 6602	Seminar on Demographic Studies in Puerto Rico	3
BIOE 6545	Introduction to Sampling Theory	4
DEMO 6621	Research Project I	2
DEMO 6622	Research Project II	4
DEMO 6606	Use of SPSS Program and other Scientific Research	4
Electives		8

MASTER OF PUBLIC HEALTH EDUCATION (DAY AND EVENING PROGRAMS)

The Master of Public Health Education Program trains professionals to promote the health of individuals and families through education, behavior modification, and the development of attitudes that result in the protection and maintenance of health.

The program addresses today's health issues through teaching, research, consulting, and community services. The curriculum offers elective courses in areas such as patient education, school health, and human sexuality. The program seeks to promote quality of life and healthy life-styles among the population by means of an interdisciplinary and participatory approach.

Specific Admission Requirements

The applicant should have completed the following number of credits in the subjects specified below:

Required Courses	Credit-Hours
Education	12
Natural Sciences (Including a course on human biology)	6
College Level Algebra	3
Social Sciences (Including group dynamics)	9

Graduation Requirements

Students will receive a Master of Public Health Education degree upon meeting the following requirements:

- Completion of the 68 trimester credit-hour program.
- Completion of a research project approved by a committee.

The student has a maximum of 5 years from the time of the first registration to fulfill the requirements stated above.

MASTER OF PUBLIC HEALTH EDUCATION

TOTAL TRIMESTER CREDIT-HOURS: 68

EDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
EPID 6523	Epidemiological Methodology	4
SAAM 6528	Principles of Environmental Health	3
EDSA 6401	Foundations of Health Promotion and Health Education I	2
EDSA 6563	Intervention Methods in Health Promotion and Health Education I	3
EDSA 6402	Foundations of Health Promotion and Health Education II	2
EDSA 6405	Theory and Application of Communication in Health Promotion and Health Education	3
EDSA 6565	Administrative Aspects of Health Promotion and Health Education Programs	3
EDSA 6572	Health Promotion and Education Research Project	3
EDSA 6568	Health Professional as Group Facilitator	3
EDSA 6570	Health Promotion and Education Program Planning	3
EDSA 6571	Evaluation of Health Promotion and Health Education Programs	3
EDSA 6595	Supervised Practice	6
Electives		12

Twelve (12) elective credits can be selected from the following options in Health Education:

EDSA 6514	Organization and Administration of School Health in Puerto Rico	3
EDSA 6556	Community Mental Health	3
EDSA 6575	Intervention Methods in Community Mental Health	3
EDSA 6576	Mental Health Problems Seminar	3
EDSA 6577	Introduction to Theoretical Models of Human Behavior	2
EDSA 6578	School Health Child Problems and Needs Seminar	2
EDSA 6580	Introduction to Human Sexuality	3
EDSA 6581	Human Sexuality I	3
EDSA 6582	Human Sexuality II	3
EDSA 6585	The Teaching of Human Sexuality	3
EDSA 6586	Sexually Transmitted Diseases Education	3
EDSA 6587	Counseling in Human Sexuality	3
EDSA 6995	Special Topics in Health Education	3
EDSU 6501	Systematic Planning of Instruction	3
EDSU 6503	Principles of Curriculum Design and Development	3
EDSU 6505	Principles of Higher Education	3
EDSU 6507	Educational Evaluation Methods	3
EDSU 6509	Administration of Higher Education	3

MASTER OF SCIENCE WITH SPECIALTY IN ENVIRONMENTAL HEALTH (DAY AND EVENING PROGRAMS)

The Master of Science with Specialty in Environmental Health Program prepares specialists in environmental health with skills to assume responsibilities in the planning and administration of environmental health programs, conduct research, and work in numerous community programs focusing on environmental concerns.

The program graduate is familiar with social, economic, and scientific factors bearing on appropriate solutions to contemporary problems in environmental health, particularly those affecting Puerto Rico. This entails viewing natural resources, industrial growth, energy use, and demographic factors as they affect the environment.

Students are offered the opportunity to explore several areas of environmental health including water and air pollution, food hygiene, industrial hygiene, environmental radiation, solid waste management, environmental microbiology, environmental law, radiological health, and geographical information systems, among others.

Specific Admission Requirements

Applicants must have the equivalent of two semester courses in each of the following areas: biology, chemistry, physics, and mathematics. In mathematics, the applicant must have a course in calculus. Chemistry courses must include organic chemistry. Physical sciences and biological sciences courses offered by the University of Puerto Rico to all students during the first year of studies will not be considered in meeting this requirement.

Graduation Requirements

The student will receive a Master of Science with Specialty in Environmental Health degree upon meeting the following requirements:

- Completion of the 74 trimester credit-hour program.
- Submission of a master's thesis.
- Overall grade point average of at least 2.50 and 3.00 average in the field of specialty.

MASTER OF SCIENCE WITH SPECIALTY IN ENVIRONMENTAL HEALTH

TOTAL TRIMESTER CREDIT-HOURS: 74

MEDU 6500	Core Course in Public Health	6
EPID 6523	Epidemiological Methodology	4
SAAM 6535	Environmental Toxicology	4
SAAM 6541	Laws and Environmental Health Protection	3
SAAM 6544	Radiological Health	4
SAAM 6545	Food Hygiene	4
SAAM 6535	Introduction to Environmental Microbiology and Parasitology	5
SAAM 6695	Research Project	6
BIOE 6525	Statistical Analysis	5
CISO 6506	Social Environment	4
SALP 6584	Administrative Aspects of Health Programs	4
Electives		16

Sixteen (16) elective credits can be selected from the following options in Environmental Health:

SAAM 6005	Environmental Chemistry	3
SAAM 6530	Environmental Planning	4
SAAM 6533	Environmental Radiation	4
SAAM 6536	Readings in Environmental Health	2
SAAM 6537	Readings in Environmental Health	3
SAAM 6540	Solid Wastes Management	3
SAAM 6600	Domestic and Industrial Wastes	4
SAAM 6601	Water Pollution Control	4
SAAM 6602	Potable Water Treatment	4
SAAM 6603	Water Chemistry	4
SAAM 6607	Food Processing	3
SAAM 6608	Food Establishment Sanitation	3
SAAM 6609	Milk and Milk Products Hygiene	3
SAAM 6611	Radiochemistry	4
SAAM 6617	Statistical Methods for Environmental Sampling and Data Analysis	4
SAAM 6618	Principles of Environmental Geology	4
SAAM 6619	Geographical Information Systems Applied to Environmental Health	3
SAAM 6625	Special Topics in Environmental Health	3
SAAM 6626	Laboratory Practices for the Analysis of Environmental Samples	3

MASTER OF SCIENCE IN INDUSTRIAL HYGIENE

The Master of Science in Industrial Hygiene Program trains industrial hygienists to supply the demand for this professional in Puerto Rico. The industrial hygienist deals with the anticipation, recognition, evaluation, and control of occupational health hazards in the workplace and in the community. It is expected that these professionals contribute to the reduction of occupational injuries and illnesses among Puerto Rican workers.

The curriculum in this two-year program includes 19 trimester credit-hours in public health, 11 in environmental

health, 28 in industrial hygiene and related areas, and 10 in elective courses.

Specific Admission Requirements

Applicants must have the equivalent of two semester courses in the following areas: biology, chemistry, physics, and mathematics. In mathematics, the applicant must have a course in calculus. Chemistry courses must include organic chemistry. Physical sciences and biological sciences courses offered by the University of Puerto Rico to all students during the first year of studies will not be considered in meeting this requirement.

Graduation Requirements

Students will receive a Master of Science in Industrial Hygiene degree upon meeting the following requirements:

- Completion of the 68 credit-hour program.
- Submission of a master's thesis.
- Overall grade point average of at least 2.50 and a 3.00 average in the field of specialty.

MASTER OF SCIENCE IN INDUSTRIAL HYGIENE

TOTAL TRIMESTER CREDIT-HOURS: 68

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
SAAM 6528	Principles of Environmental Health	3
SAAM 6535	Environmental Toxicology	4
SAAM 6524	Occupational Health Principles	3
EPID 6523	Epidemiological Methodology	4
SAAM 6543	Industrial Hygiene	4
SAAM 6548	Industrial Hygiene Laboratory	4
SAAM 6547	Basic Principles in Occupational Safety	4
SAAM 6541	Laws and Environmental Health Protection	3
SAAM 6565	Control of Occupational Health Hazards	3
SAAM 6529	Seminar on Environmental Health	1
EPID 6547	Methodological Principles in Occupational Epidemiology	2
SALP 6584	Administrative Aspects of Health Programs	4
SAAM 6696	Industrial Hygiene Internship	6
SAAM 6566	Field Studies of the Workplace	2
Electives		10

MASTER OF HEALTH SCIENCES WITH SPECIALTY IN NUTRITION

The program leading to the Master of Health Sciences with Specialty in Nutrition trains health professionals in the field of public health nutrition. Graduates plan and implement nutrition programs, conduct research, and teach nutrition at graduate and undergraduate levels.

Program graduates develop skills in the methodology of health services research as it applies to nutrition, and study nutritional problems of the population. Most find employment in public and private teaching institutions, health services agencies, food industry, and pharmaceutical companies.

Specific Admission Requirements

The applicant must have the following number of credits in the areas specified below:

Required Courses	Credit-Hours
Inorganic Chemistry	5
Organic Chemistry	3
Biochemistry	3
Biology	6
College Algebra	3
Social Sciences	6

The Graduate School of Public Health offers numerous courses in the areas of administration, biostatistics, maternal and child health, epidemiology, and social sciences that may be of interest to nutrition students. If interested, students must take those courses as electives in addition to the program outlined below.

Graduation Requirements

Students will receive a Master of Health Sciences with Specialty in Nutrition degree upon meeting the following equirements:

- Completion of the 53 trimester credit-hour program.
- Completion of a research project and submission of a thesis.
- Overall grade point average of at least 2.50 and a 3.00 average in the area of specialty.

MASTER OF HEALTH SCIENCES WITH SPECIALTY IN NUTRITION

TOTAL TRIMESTER CREDIT-HOURS: 53

MEDU 6500	Core Course in Public Health	6
BIOE 6525	Statistical Analysis	5
DEMO 6606	Use of SPSS Program and other Scientific Research	4
EPID 6523	Epidemiological Methodology	4
NUTR 6528	Seminar in Public Health Nutrition	2
NUTR 6521	Biochemistry and Nutrition I	2
NUTR 6523	Biochemistry and Nutrition II	2
NUTR 6531	Human Nutrition	5
NUTR 6533	Nutrition in Public Health	5
NUTR 6538	Evaluation of Nutritional Status	5
NUTR 6540	Laboratory Techniques for Nutritional Investigation	3
NUTR 6555	Quality of Life and Nutrition of Persons Fifty Years and Over	2
NUTR 6560	Planning of Nutrition Program	2
NUTR 6535	Research Project	6

GRADUATE CERTIFICATE IN GERONTOLOGY (EVENING PROGRAM)

The Graduate Certificate in Gerontology Program trains professionals from diverse health professions by offering a basic content in gerontology and focusing on the biological, psychological, social, clinical, and administrative aspects related to the aging process. The program is geared to improve the professionals' knowledge, skills, and attitudes for a better understanding of the aging process, and in this way contribute to an effective service delivery to meet the health needs of the elderly population. The Graduate Certificate in Gerontology has a total of nineteen (19) credits, which emphasize a holistic perspective and an interdisciplinary health team approach in the delivery of health services to the elderly population.

Specific Admission Requirements

Applicants must hold at least a bachelor's degree and have completed a total of 3 credits in social sciences, 3 credits in biology, and 3 credits in psychology.

Persons holding a bachelor's degree must take the graduate admission test (EXADEP or GRE). Those with graduate degrees are not required to take the examination. School alumni may apply by submitting the application form along with an official transcript.

Graduation Requirements

Students will receive a Graduate Certificate in Gerontology upon completion of the 20 trimester credit-hour program.

GRADUATE CERTIFICATE IN GERONTOLOGY

TOTAL TRIMESTER CREDIT-HOURS: 20

GERO 6005	Introductory Seminar to Gerontology	1
GERO 6501	Biological Aspects of Aging	3
GERO 6503	Psychological Aspects of Aging	3
GERO 6505	Clinical Aspects of Aging	3
GERO 6507	Social Aspects of Aging	3
GERO 6509	Administrative Aspects of Gerontology	3
GERO 6495	Planning the Interdisciplinary Intervention in Gerontology	1
GERO 6511	Interdisciplinary Intervention	3

GRADUATE CERTIFICATE IN DEVELOPMENTAL DISABILITIES EARLY INTERVENTION (EVENING PROGRAM)

The Graduate Certificate in Developmental Disabilities - Early Intervention constitutes an innovative contribution to the academic offerings of the Medical Sciences Campus in a high priority area.

The curriculum has an interdisciplinary and transdisciplinary approach to intervention, with emphasis on prevention, rehabilitation, and family participation. It also has a strong component of hands-on experiences with a significant number of hours devoted to field experiences in programs servicing children 0 to 5 years of age who present developmental delay or who are at risk.

The program is open to professionals in the areas of health education, occupational therapy, physical therapy, speech and language pathology, audiology, special education, psychology, and social work who are currently working with children 0 to 5 years old with developmental disabilities or delay.

The program's interdisciplinary and transdisciplinary approach is achieved through curricular design, by faculty from various fields, a heterogeneous group of students, and varied field experiences. This is a three trimesters and one summer program in which students are expected to complete 22 credits in core courses and four credits in an area of interest (service coordination, public policy, or clinical intervention).

Specific Admission Requirements

In order to be admitted to the program, the candidates will be evaluated according to the following:

- Professional background in the fields of health, education, psychology, social work, or administration.
- General academic index.
- Faculty recommendation following an interview with the candidate.
- Analysis of academic record.
- License to practice a profession, when appropriate.
- Work experience (over one year).

Graduation Requirements

Students will receive a Graduate Certificate in Developmental Disabilities - Early Intervention upon meeting the following requirements:

- A grade point average of at least 3.00.
- Approval of 26 credits as indicated.
- Completion of practicum activities.

GRADUATE CERTIFICATE IN DEVELOPMENTAL DISABILITIES EARLY INTERVENTION

TOTAL TRIMESTER CREDIT-HOURS: 26

DDIT 6505	Introduction to Public Health and Developmental Disabilities	3
DDIT 6506	Typical and Atypical Child Development from 0 to 5 Years	3
DDIT 6507	Assistance to Families with Children with Special Needs	3
DDIT 6508	Assessment of Infants and Pre-Schoolers with Developmental Disabilities	3
DDIT 6509	Community Service Delivery in Early Intervention	3
DDIT 6510	Planning, Implementation, and Evaluation of Developmental Disabilities - Early Intervention Programs	3
DDIT 6545	Interdisciplinary Practicum in Developmental Disabilities-	

One (1) elective course must be selected from these options:

DDIT 6537	Service Coordination	4
DDIT 6539	Legislation and Public Police in the Developmental Disabilities - Early Intervention Area	4
DDIT 6535	Seminar in the Management of Conditions and Specific Risks	4

CERTIFICATE IN NURSE MIDWIFERY

The Certificate in Nurse-Midwifery is a one-year (four trimesters) program for registered nurses with a baccalaureate degree in nursing (BSN). The curriculum includes a course in fundamentals of public health and the core competencies for the practice of nurse-midwifery as defined by the American College of Nurse-Midwives (ACNM).

Graduates are prepared to be safe, competent, nurse-midwives who can provide comprehensive and integrated health care for low risk women in the childbearing through menopausal years, their newborns, and families in a variety of health care settings. They have the knowledge and skills necessary to influence change in the health care delivery system.

Graduates are eligible to become nationally certified nurse midwives (CNM) after successfully passing the examination given by the ACNM Certification Council (ACC).

Specific Admission Requirements

- Minimum of a Bachelor of Science in Nursing (BSN).
- Current license to practice as registered nurse in Puerto Rico and membership in the College of Professional Nurses.
- Minimum 2.75 GPA.
- EXADEP or GRE taken within the last three years.
- Proficiency in Spanish.
- Ability to read and comprehend English.
- Three letters of recommendation.
- Interview with program faculty.
- Current certification in Basic Life Support (CPR).
- Recent physical examination, negative tuberculin test or chest x-ray, and evidence of immunity to Rubella and Hepatitis B.

Graduation Requirements

Students will receive a Certificate in Nurse Midwifery upon meeting the following requirements:

- Complete the 32 credits of required courses.
- Pass examinations with 80% or above.
- Achieve a satisfactory rating in clinical experience.
- Pass the written comprehensive examination.
- Submit all required written reports and clinical statistics.

CERTIFICATE IN NURSE-MIDWIFERY

TOTAL TRIMESTER CREDIT-HOURS: 32

ENOP 6005	Reproductive Physiology for Nurse Midwives	2
ENOP 6006	Human Sexuality and Well Woman Gynecology	3
ENOP 6007	Basic Pharmacology for Nurse Midwifery	2
ENOP 6008	Normal Obstetrics Management	3
ENOP 6025	Fundamental Concepts in Public Health	4
ENOP 6026	Genetics and Genetic Counseling in Nurse Midwifery	1
ENOP 6027	Problems and Complications of Obstetrics	3
ENOP 6028	Maternal and Infant Nutrition	2
ENOP 6029	Care of the Newborn	2
ENOP 6030	Planning and Organization of Maternal and Infant Nurse Midwifery Services	1
ENOP 6035	Nurse Midwifery Practice and Management I	2
ENOP 6036	Nurse Midwifery Practice and Management II	2
ENOP 6037	Nurse Midwifery Clinical Management and Practice	5

GRADUATE CERTIFICATE IN SCHOOL HEALTH PROMOTION (EVENING PROGRAM)

The Graduate Certificate's objective is to train professionals that work in schools with students, their families and the community with the knowlwdge skills and attitudes required for health promotion so that they can contribute to the improvement of the quality of life of Puerto Ricans.

Any graduate of an accredited university with a bachellors, master or doctorate , degree, preferably but not exclusively, professionals that work in schools offering direct or indirect services to students, their family and the community can request admission to the Graduate Certificate Program. This includes school directors, teachers, social workers, counselors, librarians, doctors, nurses, psychologists, health educators, physical therapists, occupational therapists and speech pathologists, among others.

The Graduate Certificate in School Health Promotion Program is an academic offering based on a service training strategy for forward-thinking professionals who seek to develop skills that improve the quality of life of the Puerto Rican population. Agencies can develop incentives for their professionals to consider the certificate program.

Specific Admission Requirements

The applicant should meet the following admission requirements:

- Minimum of a Bachellor Degree.
- EXADEP or GRE taken within the last three years. Applicants that have completed a master's or doctorate degree are not required to take the EXADEP or GRE.
- The Program's specific requirement is to provide evidence of job experience in school health promotion.

Graduation Requirements

Students will receive a Graduate Certificate in School Health Promotion upon meeting the following requirements:

- Complete 20 credits of required courses.
- A grade pont average of at least 3.00.

GRADUATE CERTIFICATE IN SCHOOL HEALTH PROMOTION (EVENING PROGRAM)

TOTAL TRIMESTER CREDIT HOURS: 20

EDSA 6015	Foundations of Public Health, Health Promotion and School Health	3
EDSA 6029	Topics Related with School Health Promotion Seminar	2
EDSA 6025	Prevention in Use and Abuse of Alcohol, Tobacco and other Drugs in School Environment	2
EDSA 6055	Strategies and Intervention Methods in School Health Promotion	3
EDSA 6066	School Health Promotion Planning Projects	4
EDSA 6075	School Health Promotion Supervised Practice	3
Electives		3

DOCTOR OF PUBLIC HEALTH WITH SPECIALTY IN ENVIRONMENTAL HEALTH*

*This program is undergoing a curricular revision which includes admission requirements.

The Doctor of Public Health Program prepares students at the doctoral level in the field of Public Health, broadening their skills in applied sciences in order to offer solutions to health problems and exercise professional leadership in the area of community health services.

Admission Requirements

Applicants must meet the following requirements:

- Master's degree in a discipline offered by a public health school of recognized standing internationally. Other applicants may be accepted if they have approved graduate courses in health services administration, biostatistics, social sciences, epidemiology, and environmental health.
- Computer knowledge is highly recommended.
- Grade point average of 3.00 (on a scale of 4.00) at the master's level.
- Teaching, research, or service experience in the public health field.
- Fluency in Spanish and reading knowledge and comprehension of English.
- Graduate Studies Admission Test (EXADEP or GRE) scores.

- Interview with the program's Admissions Committee.
- Official transcript and Curriculum Vitae.
- Evidence of professional experiences of the past five years of employment issued by the Human Resources Department and the immediate supervisor.
- Three letters of recommendation (using format approved by the Admissions Committee). One of the letters of recommendation should be from a professor from the master's program.
- A 200 word (double spaced and in Spanish) personal statement indicating the applicant's professional and educational objectives, educational expectations from the program, and reasons for applying.
- The environmental health specialty requires that applicants present evidence of bachelor's or master's degree one-year courses in biology, physics, general chemistry, organic chemistry, and a semester of calculus.
- Graduate level courses in inferential biostatistics and epidemiological methodology. Applicants who have not approved these courses will be allowed to take them during the first and second trimester of the first year of doctoral studies.

Graduation Requirements

In order to be eligible for the degree, students must meet the following requirements:

- Approve the required 56 credits with a minimum grade point average of 3.00 (on a scale of 4.00).
- Full-time status during the first year of studies.
- Complete the 800 – hours internship.
- Approve the program's comprehensive examination.
- Submit a doctoral dissertation and obtain approval by the Dissertation Committee.
- Complete all requirements within an eight-year period.

DOCTOR OF PUBLIC HEALTH WITH SPECIALTY IN ENVIRONMENTAL HEALTH*

TOTAL TRIMESTER CREDIT-HOURS: 56 AND 800 HOURS OF INTERNSHIP

ADSS 8005	Organizational and Administrative Elements of Health Services	3
BIOE 8005	Advanced Methods in Biostatistics	3
CISO 8005	Culture, Social Inequity, and Community Health	3
EPID 8002	Advanced Methods in Epidemiology II	3
SAAM 8005**	Fundamentals of Environmental Health	3
SALP 8005	Health Promotion and Prevention Models	2
SALP 8105	Research in Public Health	3
SAAM 8007	Water Pollution	3
SAAM 8008	Meteorology and Atmospheric Contamination	3
SAAM 8009	Hazardous Waste Management	3
SAAM 8006	Environmental Physical Hazards	3
SAAM 8010	Environmental Instrumental Analysis	3
SAAM 8016	Environmental Policy and Management	3
SALP 8007	Bioethics and Public Health Practice	1
SALP 8025	Leadership Seminar	1
SAAM 8020	Current Environmental Health Issues	1
SALP 8015	Doctoral Dissertation in Public Health	9
SALP 8006	Doctoral Internship in Public Health	800 hrs
Electives		6

*This program is undergoing a curricular revision which includes admission requirements.

**Course for students who do not have an MS in Environmental Health.

Course Descriptions

Faculty

FACULTY OF BIOSOCIAL SCIENCES AND GRADUATE SCHOOL OF PUBLIC HEALTH

COURSE DESCRIPTIONs

ADSS 6505
Quantitative Decision Analysis. Four (4) credits. Pre-requisite: BIOE 6525.

This course introduces the student to the methods of operations research and its role in the decision making process, some topics to be covered will be: queueing theory, decisions under risk and uncertainty, decision trees, projection methods, break even and inventory analysis.

ADSS 6508
Written and Oral Communication. One (1) credit.

Course designed for the preparation of minute, memorandum, reports, bulletins, written messages, and the different types of oral communication through analysis, discussion, and practice exercises.

ADSS 6510
Seminar on Supervision. Four (4) credits.

This course provides the learning experiences necessary to guide the student in the development and clear understanding of the supervisor's role. The course emphasizes the development of skills necessary for supervision, such as: communication, delegation, and leadership. Different educational skills are used, giving emphasis to practical exercises and case studies.

ADSS 6515
Public Health Administration. Six (6) credits.

ADSS 6525
Introduction to Healthcare Management. Three (3) credits. Co-requisite: MEDU 6500.

The purpose of this course is to provide the student with a conceptual and applied vision of the organization theories and the inherent administrative processes to the field of the Administration of Health Services. Likewise, the impact in the dynamics of the health sector and the impact on the administration of the system of health care services. The administrative process is presented from a theoretical/practical perspective, considering that the essential of a certain system of health constitutes the group of services that you provide and how these services satisfy the necessities and the population's demand to serve. The objective of the course will be achieved through a series of lectures, case studies, presentations and selected readings. At the end of this course, the student will review the major aspects of management and the skills necessary to be successful as an executive in the healthcare system.

ADSS 6535
Continuous Quality Improvement in Health Services Organizations. Three (3) credits. Pre-requisite: ADSS 6525.

The course is designed to provide the Health Services Administration students with a conceptual framework of the continuous quality improvement movement and its application to healthcare. It examines The Philosophy of Continuous Quality Improvement (CQI) and Total Quality Management (TQM) and provides guidelines for its implementation in healthcare organizations. There are four prime components to the course: 1) Concepts, principles and theory driving the quality movement since these serve as the theoretical bases for quality requirements in health care, 2) Techniques commonly used in quality programs and strategies for its implementation through reading, discussion, and through a final project, 3) Some of the more common quality measurements used by regulatory, accrediting, or their institutions, 4) Correlation between quality and cost in healthcare.

ADSS 6548
Hospital Administration. Three (3) credits. Pre-requisites: ADSS 6572, ADSS 6586, ADSS 6587.

Basic concepts of hospital administration, focusing the hospital as a prototype of a complex organization, with multiple and diverse objectives. The hospital is presented as an open system, capable of solving problems related to its internal and external analyze environment. The organizational structure analyze its processes and the necessary behavior to solve the problems of the hospital organization with efficiency and effectiveness.

ADSS 6549
Problems in Hospital Administration. One to three (1-3) credit(s).

Mayor problems as well as typical situations of hospital administration are reviewed. Basic concepts are then applied using methodology and simulation models to provide the student a practical experience using updated management knowledge and techniques.

ADSS 6550
Introduction to Health Care Management. Zero (0) credit.

The student will acquaint himself with general field of administration and in addition, according to the individual students' interest, he will be able to intensify his knowledge in any one of the following subtopics: Health Financing, Health Care Organization or Quality,and Patterns of Health Care Utilization.

ADSS 6551
Legal Aspects in Medicine. Six and a half (6.5) credits.

This course provides the medical student an opportunity to learn the laws and jurisprudence which affects the practice of medicine as well as to learn the importance of informed consent and new medico legal trends in medicine such as abortion, family planning, euthanasia, etc.

ADSS 6568
Special Projects. Three (3) credits.

Discussion of administrative problems in the field of Public Health. Emphasis is given to hospital problems.

ADSS 6571
Budgeting Theories and Practices. Three (3) credits.

Modern budgeting concepts as instruments for the planning and programming of private and public activities in the health sector. Budgeting theories are studied and applied to the practice of designing and administering a budget.

ADSS 6572
Theory of Administration. Four to five (4-5) credits.

Examination, study, and analysis of the content and development of both the public and private sectors of the administrative field, as applicable to the Health Services Administration. The administrative process is also considered as a social process designed to solve problems through the organized used of resources for the accomplishment of organizational objective.

ADSS 6576
Comparative Health Systems. Three (3) credits.

Health system in our contemporary state as basic source of comparison and study. Analysis of the ecology of the sector with special emphasis in the relation of bureaucratic models, political, and economic systems. The course included the study of bureaucratic and political models in development stage, with special attention given to the role of health administration in the promotion and development of emergent health systems.

ADSS 6579
Organizational Behavior. Three (3) credits. Pre-requisites: ADSS 6525 or ADSS 6572 or SALP 6584.

The course is designed for students in the Program of Health Services Administration. This course examines the nature and dynamics of organizational behavior affecting the health services administrator and other individuals. Aims to students' awareness of their own behavior and how it can affect their work within health services organizations. Behavioral patterns, organizational design, organizational development and assessment are studied in order to guide students in the decision making process within health organizations and their role as health services administrators. At the end of the course the students will evaluate the importance of individuals characteristics of the members of the organizations and the impact in the performance of the organizations in the healthcare sector. The instructional mode includes lectures, case discussion, oral presentations and web interactions.

Course changed from 4 to 3 credits since 2nd trimester 2007-2008.

ADSS 6580
Health and Development. Three (3) credits.

Structural innovations in the health sector facing the changing needs and opportunities of developing countries. Is based on the assumption that in a society with accelerated social change innovation goes further than the mere satisfaction of the additive growth of the society. To preserve its relevance the health sector must kept open the real innovative change. The economic and social structural change that occurs in the development process and the effect of this process on the health of the population is discussed.

ADSS 6581
Labor Relations. Two to three (2-3) credits.

Comprehensive overview of the nature, origin, development, and dynamics of the labor movement, the important legal aspects and regulations that govern the labor relations; the structures and processes to channel those of unions and employers to deal in each one of those stages with special emphasis on the aspects of collective bargaining.

ADSS 6582
Personnel Administration. Two to three (2-3) credits.

Manpower development and direction are viewed as the focal point of personnel administration. Personnel administration concepts are correlated with general administration generally in order to have a complete overview of the personnel administration spectrum.

ADSS 6583
Legal Aspects in Health Services. Three (3) credits. Pre-requisites: ADSS 6525 or ADSS 6572 or SALP 6584

This course is designed to provide a thorough insight of the ever-expanding interface between the law and health services administration in the civil and administrative realms focusing in risk management to the health service administration students. The course familiarizes the student with the application of legislation and regulations both in the commonwealth as well as the federal scenario. Lectures will be held covering those topics of major relevance and interest to the practice of health care services. Ethical issues will be attended as part of every topic discussed in class. At the end of the course, the student will be able to interpret the basic legal principle affecting how healthcare services operate upon health policy issues.

ADSS 6584
Health Politics and Policy. Three (3) credits. Pre-requisites: ADSS 6572 or SALP 6584.

This course is designed to introduce students pursuing a career in the health care field to public policy formulation, and its' impact on the organization, financing and delivery of health services. The course examines the role of major actors and institutions, including government, providers, consumers and insurers as well as professional policies. Topics are presented from the perspective of the health care environments of Puerto Rico and The United States, with a comparative approach in each topic. Also, the policy decision process at different levels will be presented and discussed using political, social and economic frameworks. The latter part of the course addresses specific issues that are currently being debated in the health care environment.

ADSS 6585
Health Economics. Three (3) credits. Pre-requisite: ADSS 6572.

This course has the main purpose of providing the student with analytical tools of economic theory to better understand the economic forces shaping the health care sector. Emphasis is given to issues related to demand, and supply of health services cost containment measures, the role of health insurance, provider reimbursement and theories regarding health care cost inflation.

ADSS 6586
Health Care Delivery Systems . Three (3) credits. Pre-requisite: ADSS 6525.

This course has as purpose to carry out a critical analysis of the different systems and models of health services delivery, particularly in Puerto Rico and in the United States. It discusses the organizations of government and private health services from a historical perspective and the same one is compared with the current state of these systems, especially by the light of the Healthcare Reform of Puerto Rico and the United States. Also analyzes,

these systems of health in function of generally accepted approaches of accessibility, quality, effectiveness, efficiency and integrity. The course is designed for students in the Program of Health Services Administration. At the end of the course the students acquire a critical knowledge of the health systems for analysis and evaluation considering the application of the conceptual models. The instructional mode includes lectures, case discussion, oral presentations and team work experiences.

Old Title: Health Systems I

Course changed from 4 to 3 credits since 2nd Trimester 2007-2008.

ADSS 6587
Health Systems II. Two (2) credits. Pre-requisite: ADSS 6586.

Students spend most of the time in a health institution, service or program to become acquainted with its day-to-day operation. May be considered a pre-residency, a bridge between the theoretical framework and the intensive work experience to be provided in the residency.

ADSS 6589
Bioethics in Healthcare Management. One (1) credit. Pre-requisite: ADSS 6583.

The purpose of this course is to provide the student a framework for addressing bioethical issues in business, medicine and health care delivery with emphasis on the role of the manager. The course approaches bioethical issues in health care from societal, institutional and individual, and clinical perspectives. To achieve the objectives of the course the student will analyze case studies from the medical, scientific, moral and socioeconomic bases and examine the decision processed involved. Students will be encouraged to use the available institutional resources in bioethics, located at The Medical Library of The Medical Sciences Campus. There will be case studies discussion, guest lectures, and final, short-essay exam designed to explore the concepts.

ADSS 6590
Administrative Aspects in Laboratory Clinics. Two (2) credits.

Health Services Administration Theory is presented to provide student with basic fundamentals of administrative aspects of health care. Particular administrative aspects of laboratory clinics are viewed, including systems theory, quality assurance, legal aspects, and the administrative process in general.

ADSS 6591
Quantitative Decision-Making for Health Services Administration I. Four (4) credits.

This course introduces Health Services Administration graduate students to statistical methods for decision making. Topics covered will be Operation Research, Break-Even Analysis, Probability Theory, Random Variables, Cybernetic and Statistical Process Control, Inventory Analysis, and Sampling. The applications will be on the management and control of health services. A user-friendly statistical program will be used for all calculations and estimations in order to emphasize intuitive reasoning. Students will have opportunity to work in teams.

ADSS 6592
Quantitative Decision-Making for Health Services Administration II. Four (4) credits. Pre-requisite: ADSS 6591.

Statistical inference applied to the Health Services Administration; operation research methods like queueing theory and linear programming will be introduced. Emphasis is on application using microcomputer software programs.

ADSS 6593
Capstone Seminar. Three (3) credits. Pre-requisites: All the required courses for the master degree up to the First Trimester of the Second Year of Studies.

This course is designed to integrate the coursework covered in previous trimesters. The course enables students to build linkages areas of study and provides a setting for testing their own level of knowledge and analytical skills, as well as identifying the need for

tutoring and advising in specific areas. The case method is used as the primary teaching tool with guidelines for completing the assignments.

Grading System: Passed (P), Not Passed (NP)

ADSS 6594
Planning, Development, and Evaluation of Health Services. Four (4) credits. Pre-requisites: ADSS 6525 or ADSS 6572 or SALP 6584.

Planning is viewed as a dynamic and continuous process aimed toward the implementation of programs and projects necessary to achieve goals and objectives established in policies adopted by public and private entities.

ADSS 6595
Mental Health Care Utilization. Three (3) credits.

Different conceptualizations about mental health and their prevention are discussed. Specifically, we analyze different mental health problems prevalent in our society. The need for preventive programs and factors that facilitate or impede the utilization of available services are examined.

ADSS 6597
Administrative Residency. Zero (0) credits.

This residency is a logically planned extension of the previous academic quarters. It provides an integrated experience for the application of theoretical concepts and principles in real life situations. Each student will be under the supervision of a preceptor.

ADSS 6598
Information Systems in Health Services Administration. Three (3) credits. Pre-requisites: ADSS 6525 or ADSS 6572 or SALP 6584.

Basic concepts required to design and operate an information system.

ADSS 6600
Management of Healthcare Organizations. Three (3) credits. Pre-requisites: ADSS 6572, ADSS 6587, ADSS 6594, ADSS 6598, ADSS 6609, ADSS 6658.

This course is designed to served as an integrative experience of the managerial decision making process, as viewed through different management-oriented courses of the Health Services Administration Curriculum. The course follows a lecture and discussion format in which the student is confronted with the managerial decision making process in real world situations, brought by invited speakers. This experience is further strengthened by site visits to selected organizations that serve as a direct observation experience for the topic areas: Organized Integrated Delivery Systems; The Role of Managed Care in Different Reform Proposals; Issues of Health Care Financing, and Leadership Through Human, Capital and Information Resources Management.

ADSS 6606
Capstone Seminar in Health Services Administration. Three (3) credits. Pre-requisites: All the required courses except ADSS 6610.

The Capstone Seminar in Health Services Administration is designed to provide the Health Services Administration student an integrative learning experience in the final trimester of the on-Campus academic experience. The course enables students to build linkages between the different curriculum content areas, by testing their level of knowledge and analytical skills through seminar and research as the main instructional strategies. Thorough the course students will apply team-effectiveness skills during the analysis of knowledge content areas, professional competencies, and research production.

ADSS 6607
Health Care Cost Accounting. Three (3) credits. Pre-requisites: ADSS 6572, ADSS 6585. Co-requisite: ADSS 6586.

This course provides the student enrolled in the Health Services Administration Program the necessary analytical tools to determine the cost of the different components that intervene in the delivery of health services. The student will acquire skills in determining the human, technical, and capital resources that comprise the production of health services. These skills are of special importance in the new

health care scenario, in which resources are limited, and managed care arrangements rely heavily cost data to meet extensive demands for multiple health priorities. The course will be taught through lectures and discussion.

ADSS 6609
Health Care Financial Management. Three (3) credits. Pre-requisites: ADSS 6607.

This course is designed to develop health care financial management competencies in the Health Services Administration student, to be applied in different health care settings. The course focuses specifically on investment and financing decisions in the health care corporate and institutional levels. The course includes topics in Capital Budgeting, Uses of Capital Financing, Evaluation of Investment Projects, Financial Reporting and Statement Analysis, Rate-Setting and Negotiation, and The Effect of Managed Care on Financial Management. The course will be offered principally through lectures and class discussions.

ADSS 6610
Principles of Health Insurance and Managed Care. Three (3) credits. Pre-requisites: ADSS 6572, ADSS 6579, ADSS 6585, ADSS 6586, ADSS 6607, ADSS 6609.

The course is designed for students seeking a working knowledge of Health Insurance and Managed Care at a time when The United States and Puerto Rico are facing a major Health Care Reform. Students will acquire a working knowledge of managed care concepts as it relates to the Puerto Rico and United States health insurance industry. Upon the completion of the course, students will be able to apply the concepts of Managed Care to their work environment and evaluate the performance and outcomes of health care organizations.

ADSS 6625
Human Resources Management. Four (4) credits. Pre-requisite: ADSS 6572.

The course is designed for students undergoing graduate-level training to assume executive positions in the health care field. The course provides the student the opportunity to became familiarized with the managerial and labor legislation activities in the field of Human Resources Management and Labor Relations, and emphasizes the application of concepts and methods from this field to the healthcare scenario. It also has the purpose of generating Interpersonal and organizational skills that are critical to Human Resources Management. The course is organized in four (4) areas: 1) Concepts, Scope, and Approach to Human Resources Management, 2) Methods, Roles, and Activities in Human Resources Management, 3) The Dynamic Nature of the Labor Relations, 4) Interpersonal and Organizational Skills. The teaching methodology includes lectures, group discussions, student presentations, and practice exercises.

ADSS 6705
Applied Research Seminar. Three (3) credits. Pre-requisites: All the required courses for the master degree except ADSS 6597. Co-requisite: ADSS 6597.

The Applied Research Seminar is a practicum investigation, focusing on particular issues and situations impacting managerial decision making in health services organizations. Students work closely with a faculty member and the residency preceptor in formulating and implementing the study. This course provides the students with the opportunity to apply the managerial skills obtained in previous courses to a research problem in their residency setting; In turn health organizations benefit from the outcomes of the research process.

ADSS 8005
Organizational and Administrative Elements of Health Services. Three (3) credits.

This course provides a comprehensive introduction to theories and applications of organization and management in the Public Health field. The student will acquire skills that are necessary to operate effectively in normative positions at health agencies, institutions, and programs. The course focuses on subject matter related to Management, Budgeting Strategic Planning, Public Policy Making, and Community Participation. It also addresses current regulation in the health field, the design and evaluation of programs, and the monitoring of the quality of services. The course is presented mainly in a lecture format, and is augmented with case studies and guest lectures related to current health conditions in Puerto Rico.

BIET 6005
Foundations of Bioethics. Three (3) credits.

The course introduces the student to ethics as a philosophical discipline that studies moral life from the values perspective, moral duties and principles. Ethics and moral concepts, genesis of moral phenomenon and the relation between moral experiences and ethical theories are examined through the discussion of the most important theories in the western tradition. The second part of this course introduces bioethics as an ethic applied to the field of life sciences and health professions. Also, some of the most important current theoretical paradigms are studied. The student is expected to apply studied theories to critical analysis and discussion of cases related to public health and health services delivery.

BIET 6009
Bioethics in Research. Three (3) credits. Pre-requisites: BIET 6005.

The course introduces graduate students into the analysis and value of scientific research and its dimensions, and in the development of value judgments to correct or improve scientific activity with human beings as research subjects. Historical antecedents of ethics in scientific research, resources for the protection of research subjects and human research subject protection committees are discussed. It emphasizes the concept of scientific integrity as the investigator's commitment with honesty and correspondence towards the research subjects. The course design is mainly based on the inductive method and activities that promote active learning and critical analysis. Instructional methods such as lectures, case study analysis, group exercises and axiological evaluation of research protocols will be used. Upon completing the course, students will be able to apply bioethical considerations to the critical analysis of biomedical and biosocial research proposals.

BIET 6015
Clinical Bioethics. Three (3) credits. Co-requisites: BIET 6005.

The course initiates the graduate student in the theory and methods of bioethics in clinical contexts. Special attention will be given to the professional-patient relationship and ethical balance in the professional-patient decision making process related to patient's health and well being. The following concepts are examined: principles of bioethics in clinical contexts, clinical judgement and uncertainty in decision making, patient's preferences from diverse perspectives, informed consent, truth-telling communication, religious and cultural diversity, patient's quality of life, process of clinical bioethical analysis, among others. Course methodology will promote critical construction of knowledge through case and socialized discussions and utilizing exploration, conceptualization and application strategy.

BIET 6025
Social Organizational Bioethics. Three (3) credits. Pre-requisites: BIET 6025.

The course introduces the student to decisions at the level of the macrobioethics in the field of the social, organizational and public health ethics. Organizational ethics is identified as a point of departure to discuss own matters of the commercial and professional ethics, and social bioethics. The most important ethical challenges that face the field of the public health will be analyzed critically from a social bioethics perspective: the civil ethics in the western societies, the health system in Puerto Rico, the ecology and environment, and the populations in conditions of vulnerability, among others. The course learning strategies are based to promote the active learning and the critical analysis, such as, problem based learning and the strategies of exploration, conceptualization, and application. At the end of the course is expected that the student develop a proposal to establish an organizational ethics program in a public health setting.

BIET 6035
Teaching Methods in Bioethics. One (1) credit. Pre-requisites: BIET 6005.

The course is designed for graduate students of Health Professions. Students will have the opportunity to apply theoretical concepts and professional experience to the design of learning experiences in bioethics. The components of the systematic planning of instruction applied to bioethics content will be discussed and appropriate models for teaching bioethics will be

critically analyzed. The course will promote active learning among students through seminars, oral reports and presentations, and the development of a learning experience in bioethics. Upon course completion, students are expected to apply the theoretical content studied in bioethics basic courses to design a short course of learning activity that promotes the development of the bioethics competency in the learner and that is useful in their professional scenario/context.

Grading System: Passed (P), Not Passed (NP)

BIET 6037
Special Topics in Bioethics. Three (3) credits. Pre-requisites: BIET 6005.

The course examines current ethical issues that emerge from developments in biotechnology and biomedics, and from the complexity of contemporary society. Emergent topics in the bioethics field related to global bioethics, ethics at the beginning and the end of life, bioethics and genetics, social construction of human suffering, among others, will be presented. The course will be developed through discussion seminars and critical analysis of special topics investigated and presented by students in team work groups. Also, lectures and discussions will be presented by invited professors. During the course, student is expected to integrate and apply the theories presented in previous courses to the discussion and critical analysis of the topics.

BIET 6105
Research Seminar in Bioethics. Three (3) credits. Pre-requisites: BIET 6005, BIET 6009, BIET 6015, BIET 6025.

The course provides an integrative experience in which the students can apply concepts acquired in bioethics theoretical courses in order to develop a research project or a practicum experience in a health services institution. The students will select a topic relevant to bioethics, to conduct a research or a service project with publishable results. Project could be on topics of student's interests, related to organizational ethics, clinical bioethics, social bioethics, research ethics, intellectual foundations of ethics, and others. The course consists of seminars, independent study, and presentations of student's projects. Students will conduct their projects with the assistance and supervision of a professor expert in the topic. At the end of the course, the student will present their projects orally and submit a written document that can be published.

BIOE 6500
Biomedical Statistics. Four (4) credits.

BIOE 6501
Introduction to Statistical Methodology. Four (4) credits.

BIOE 6525
Statistical Analysis. Five (5) credits.

Statistical Analysis for the application of the Scientific Method to the health field. Descriptive analysis of qualitative and quantitative variables, principles of regression and correlation analysis, time series, basic theory of probability distribution and simple significance tests.

BIOE 6535
Statistical Inference. Four (4) credits. Pre-requisite: BIOE 6525 or equivalent.

Statistical Inference and its application to decision making utilizing experimental and survey data. The course includes lectures and problems sessions on the following topics: Mathematical Theory of Probability, Binomial Model, Normal Distribution, Poisson Distribution, Use and Interpretation of Significance Tests, Basic Regression Analysis of Variance, and Non-Parametric Tests.

BIOE 6537
Non-Parametric Statistical Inference. Four (4) credits. Pre-requisites: BIOE 6525.

Review of tests of hypothesis followed by a discussion about the choice of that statistical technique which is best suited for analyzing a given batch of data. Includes a comparison of parametric statistical tests, and introduces the student to the Theory of Measurement. The principal topics included are: Chi-Square, The Sign Test; The Kolmogorov Test; The Fisher Exact Probability Tests; The Cochran Q Test; The Friedman Two-Way Analysis of Variance by Ranks; The Kruskal-Wallis Analysis of Variance by Ranks; The Spearman Bank Correlation Coefficient; The Contingency Coefficient C. And other measures.

BIOE 6545
Introduction to Sampling Theory. Four (4) credits. Pre-requisite: BIOE 6535.

The theory and application of sampling is presented. Simple random, stratified and systematic samples, subsampling, cost factors and sources of error are discussed. The use of Sampling Theory in surveys is emphasized.

BIOE 6555
Regression and Correlation Analysis. Three (3) credits. Pre-requisites: BIOE 6535.

Covers the Regression and Correlation of Paramedic Statistics: linear and simple nonlinear regression and correlation, minimum squares biased and umbiased estimators; confidence intervals, and variance analysis of residual errors; and review of the literature concerning matrixes and determinants.

BIOE 6575
Basic Medical Statistic. Four (4) credits.

Study of statistical concepts and methods of current application in medical research, that enables the student to critically read medical literature and conduct and interpret common statistical tests. Reading, tutoring, and discussion sessions.

BIOE 6605
Statistical Computing Applied to Public Health. Four (4) credits. Pre-requisites: BIOE 6525, BIOE 6535.

This course introduces the students to the use of statistical computing packages and its use in the management of Public Health statistics.

BIOE 6615
Applications of Epi-Info. Two (2) credits. Pre-requisite: BIOE 6525. Co-requisite: EPID 6523.

The course is designed for health professionals with interest in the analysis of epidemiologic data with the computer package Epi-Info. Themes to be covered include Creations of Questionnaires, Protection of Data Against Errors by Setting Up Ranges and Legal Values, Data Entry and Statistical Analysis. The student is expected to develop the skills to create databases and analyze data derived from epidemiologic study designs using the computer package Epi-Info. The course will be offered as a workshop where each session features a discussion of theory and computer laboratory exercises.

BIOE 8005
Advanced Methods in Biostatistics. Three (3) credits. Pre-requisite: BIOE 6535 or equivalent.

The main purpose of this course is to facilitate that doctoral students from Public Health learn and be able to apply advanced statistical methods to research studies related to the Public Health field. It is expected that students integrate the lineal models concepts, sampling, use of statistical package and its application in research projects. The course covers the following topics: Power of a Statistical Test and Sample Size, Analysis of Variance for Factorial Experiments, Multiple Regression Models, Tests for Confounding and Interaction Effect, Residual Analysis, Logistic Regression, Adjusted Odds Ratio, Poisson Regression, Adjusted Relative Risk, Kaplan-Meier Survival Function, Cox Proportional Hazard Model, Principal Components, and Factor Analysis. During the course the students will used some statistical software packages such as SAS, SPSS, GLIM and Minitab to perform the necessary computations.

CISO 6099
Special Topics in Social Sciences. One to six (1-6) credit(s).

This course will be offered by a special arrangement where the student agrees to carry out a study or research project or an independent study with a faculty member of the Social Sciences Unit. It may include the following activities: readings, literature review, field work, etc. A minimum of 24 hours are required for each academic credit, to be determined according to the type of project proposed by the student and the average time that it will require. It will be counted as an elective course.

CISO 6500
Socio Cultural Aspects. Three (3) credits.

This course is designed for students in the masters programs in Hospital Administration and Public Health. It offers a general overview of the nature and functioning of the social system from the health systems perspective.

The socio-cultural and psychological dimension of health conduct will be explored. The systems of health such as the hospital health services systems, etc., will be examined from a sociological and psychosocial perspective. This course is offered during the second trimester.

CISO 6501
Social Structure and Social Change. Six (6) credits.

This course offers an intense and systematic analysis of the various theories of the social structures and the social processes underlying this structure. It emphasizes the systemic character of the social order and its interdependent character. The course also examines the focuses and explanatory theories of social change and analysis of various monograph of divergent theoretical orientations. This course seeks to make the student conscious of the need to analyze social facts in the light of the social context in which they originate. It will expose them to the necessary theoretical elements that will enable them to examine the dynamics of social change in its historical development. This course is designed for any graduate student in the School of Public Health. It is offered during the third trimester.

CISO 6503
Group Process. Two (2) credits.

CISO 6504
Principles of Economics. Three (3) credits.

CISO 6505
Social Psychology. Four (4) credits.

This course will intensively explore the mayor psychosocial phenomena of group behavior, most particularly those associated with change and communication, particularly processes such as motivation, perception, and cognition. The seminar utilizes the group as a vehicle for instruction. The student through this process becomes an object and subject of learning. This is designed for any graduate student in the School of Public Health. Exercise of group dynamics and conferences will be the pedagogical techniques of the course. The student will be required to present a written report at the end of the semester.

CISO 6506
Social Environment. Four (4) credits.

This course examines the processes of human in interaction with the environment from an ecological perspective. The causes and effects of the rupture of human's ecological equilibrium are discussed emphasizing the phenomenon of human growth.

CISO 6508
Social Anthropology. Four (4) credits.

Study of the fundamental of social dynamics and structure with special emphasis in the family and the community. Study of the values, norms, and behavioral patterns as related to health and nutrition as factors of directed social change, are also studied. The course meets four hours a week.

CISO 6538
Culture, Society, and Complex Organizations. Two (2) credits.

The main objective of this course is to offer academic experience leading to an understanding of social, cultural, and psychological variables which affect the integration of the health organizations to the community. The course will cover the following areas: circumstances by which the organization integrates with sociocultural process of society; interorganizational variables, such as, organizational structure, complexity, communication, etc. some of the topics discussed are: Interorganizational Level; Structural Integration of the Organization to the Society; Communication within the Organization, The Community and the Clients; Decision Making Process, Mechanisms to Detect Needs and Social Indicators.

CISO 6541
Group Process II. Two (2) credits.

CISO 6542
Mental Health in Puerto Rico Culture. Three (3) credits.

This course is designed for graduate students in the Master Program in Public Health Education. It will discuss some definitions, uses and abuses of the term "mental health", common notions and perceptions of the Puerto Rico concerning "mental health and mental illness" and some theoretical models that offer a vision of the health individual. Upon analyzing some of the criteria that

have been utilized in the attempt to define mental health, the applications for our culture will be discussed. Some indicators of mental health will be identified. The emphasis will be upon identifying the interrelation of cultural factors at level of the family, community, and society that significantly influence the mental or emotional health of the individual. The course will be offered in the third semester and is programmed for three hours of conference and/ or group discussion. The student will carry out a research project that will elaborate upon one of the indicators of mental health.

CISO 6545
Women: A Biosocial Perspective. Three (3) credits.

This course is oriented to all graduate students at the Medical Sciences Campus. It provides an overview of the interrelationship between social and health aspects of contemporary woman, and how it affects their present situation. Emphasis is placed on women in Puerto Rico. It includes the following topics: The Social Construction of Sexual Identity, Theories of Women's Status and Roles, Gender as a Social Stratifier, Existing Differences in Female Subordination, Female Sexuality, Interrelationship Between Social and Health Aspects by Age, Groups, and Women and Health Delivery System.

CISO 6547
Population and Society. Three (3) credits.

This course offers an introduction to the study of social structure and social change and their interaction with population dynamics. The course will offer an overview of the different theoretical approaches that attempt to explain social change. It will also analyze the social structure and the social changes that have taken place in Puerto Rico and how these have affected some of Puerto Rico's demographic processes and dynamics.

CISO 6600
Research Methods. Four (4) credits.

Basic principles about the selection, planning, and performance of research projects. Emphasis is given to the survey methodology; the basic principles of the design of forms and questionnaires is discussed, interviewing and processing statistical data is also discussed. The students meet four hours a week.

CISO 8005
Culture, Social Inequity, and Community Health. Three (3) credits.

This course, directed toward Public Health doctoral students, emphasizes the social and cultural circumstances of the health-illness continuum. The student will analyze critically the health and illness processes from the own interpretation of the individual given the social circumstances of individuals and communities. It includes concepts such as social organization, social inequity, and the manner in which these affect the health of the individual and the community. This course will also explore the social and cultural context of behaviors in health and illness; accessibility to health care services; and the diverse responses to health problems taken by communities and individuals. The course includes topics such as the need for a social and cultural approach to health and illness; culture, behavior and health; social inequality and illness; health and illness in the world's economy; social support networks; social and cultural determinants of health and illness in the different phases of human development; health care services and the cultural and social diversity of users. The course has a theoretical and an applied approach through the use of conferences, groups discussions, and independent study.

DDIT 6505
Introduction to Public Health and Developmental Disabilities. Three (3) credits.

This course provides the student the fundamental knowledge in the basic areas of Public Health such as level of prevention, ecological system, risk, health indicator, and introduction and conceptualization of team work and interdisciplinary intervention. The framework of the above will be presented using the developmental disabilities concepts as framework.

DDIT 6506
Typical and Atypical Child Development from 0 to 5 Years. Three (3) credits. Co-requisite: DDIT 6505.

This course provides the student the fundamental knowledge in the basic areas of typical development of infants and toddlers. The course emphasizes toward the development and visualizes the development of infants and toddlers within the family and the social context. The course includes observation and participation exercises.

Through out this course the student will study the child growth and development with an integral vision. This will be in a interdisciplinary perspective, were the student will study different development theories as a frame work of the course. The course will discuss the growth and developmental stages from birth to five years old, including the factors that could affect or impact these stages, interrupting the normal development.

DDIT 6507
Assistance to Families with Children with Special Needs. Three (3) credits. Pre-requisites: DDIT 6505, DDIT 6506. Co-requisite: DDIT 6508.

This course provides the students the fundamental knowledge in the area of family development with special emphasis on those families that have children with special needs. This course includes a perspective about the familiar ecological systems and the attention of the family as a nucleous. The course is directed to enable the professionals that works with families of children with developmental disabilities.

DDIT 6508
Assessment of Infants and Pre-Schoolers with Developmental Disabilities. Three (3) credits. Pre-requisites: DDIT 6505, DDIT 6506. Co-requisite: DDIT 6507.

This course provides to the student knowledge and the application of assessment procedures for the identification, screening and evaluation of infants and pre-schoolers with developmental disabilities or high risk.

DDIT 6509
Community Service Delivery in Early Intervention. Three (3) credits. Pre-requisites: DDIT 6505, DDIT 6506. Co-requisites: DDIT 6507, DDIT 6508.

This course offers the student fundamental knowledge and apply experiences in early intervention models of services, its legal and theoretical bases. In the course the students will discuss the agencies, and professions function in early intervention in the process of the laws implementation. Also the course includes observation and participation exercises, using different team models as reference. The student will realize a critical analysis of this services and of the controversies related with them.

DDIT 6510
Planning, Implementation, and Evaluation of Developmental Disabilities-Early Intervention Programs. Three (3) credits. Pre-requisites: DDIT 6505, DDIT 6506, DDIT 6507, DDIT 6508, DDIT 6509.

This course offers the student fundamental knowledge and techniques in the planning, implementation and evaluation process of early intervention services. The course content attended to describe the service program philosophy, the need assessment and the identification of appropriate models: family centered, based in less restrictive environment, in individualize approach; and the funding strategies to the implementation. It is expected that the student presented a service of program proposal at the end of the course.

DDIT 6535
Seminar in the Management of Conditions and Specific Risks. Four (4) credits. Pre-requisites: DDIT 6505, DDIT 6506, DDIT 6507, DDIT 6508. Co-requisites: DDIT 6509, DDIT 6510.

This course provides the conceptual and clinical framework to examine the management of conditions and specific risks of age groups from neonate to five years from a preventive perspective of early intervention. The developmental model is discussed as an interaction of constitutional, maturational, and environmental variables. The educational methodology and application activities are framed within the interdisciplinary and transdisciplinary intervention models.

DDIT 6537
Service Coordination. Four (4) credits. Pre-requisites: DDIT 6505, DDIT 6506, DDIT 6507, DDIT 6508. Co-requisites: DDIT 6509, DDIT 6510.

This course provides integrating experiences so that the student develop competences that will enable them to link the services system for the child with developmental deficiencies and the family. The student will learn to coordinate various components at the system with the aim of attending optimal results and guarantee the continuity of services. The educational methodology and application activities will be framed within the

interdisciplinary and transdisciplinary intervention models.

DDIT 6539
Legislation and Public Policy in the Developmental Disabilities – Early Intervention Area. Four (4) credits. Pre-requisites: DDIT 6505, DDIT 6506, DDIT 6507, DDIT 6508. Co-requisites: DDIT 6509, DDIT 6510.

In this course students examine existent legislation and public policy in the area of early intervention and developmental deficiencies. It is discussed the process of formulation of public policy as well as the needed roles and skills during the process. They study strategies to influence and modify the public policy for the benefit of the population to 0-5 years and their family.

DDIT 6545
Interdisciplinary Practicum in Developmental Disabilities - Early Intervention. Four (4) credits. Pre-requisites: DDIT 6505, DDIT 6506, DDIT 6507, DDIT 6508, DDIT 6509, DDIT 6510, DDIT 6535*,DDIT 6537*,DDIT 6539* (*Requisite according to the student selected area of interest).

This course provides experiences in the area of early intervention with children with developmental deficiencies and their family according to selected area of interest: clinical/educational intervention, service coordination, or public policy. Throughout the practicum students demonstrate conceptual and methodological competency as well as the needed attitudes, roles, and skills for the management of different conditions or situations in public and private community settings. The educational methodology and application activities are framed within the interdisciplinary and transdisciplinary intervention models.

DDIT 6547
Core Developmental Disabilities. Four (4) credits.

This course has been designed for students, professionals, service providers who are interested in acquiring basic knowledge on developmental disabilities. This course does not substitute the specialty courses in the Graduate Certificate in Developmental Disabilities: Early Intervention. The course intends to prepare students and professionals in the field of Public Health, and other related fields in the provision of services for this population. By means of a variety of educational strategies; including inmersion into the world wide web. Students will have direct and continuos access to the professor and fellow students through e-mail, bulletin boards, discussion groups. Tests and papers will be submitted electronically. Topics will be presented in class by experts in the field. Students will have access to reading materials on each topic previous to class. As part of the course requirements students will participate in a field visit and practical experience. Course subjects cover the life span.

DEMO 6500
Introduction to Demography. Four (4) credits.

This is an introductory and required course for the students of the Master in Demography. It presents a global vision of the study of human populations from a demographic perspective. The course provides for an analysis of the dynamics and interrelation of the different demographic variables. The course is presented through conferences and discussions.

DEMO 6518
Human Ecology. Four (4) credits.

This course is oriented to an analysis of the spatial distribution of population and institutions and the interactive relations between individuals and groups and how these influence or are influenced by specially determined forms and processes. Emphasis will be placed on the influence socio-cultural factors such as the environment, population, technology, and organization of a society.

DEMO 6545
Introduction to Demography. Five (5) credits.

This introductory course presents a global vision of the study of human population from a demographic point of view. It analyses the status of population as well as its dynamics and the interrelation between the different demographic variables.

DEMO 6546
Mortality. Four (4) credits.

In this course the levels of mortality and the factors which explain the differences in mortality between some population groups and others are discussed. It also discusses the methods used for the analysis of mortality emphasizing the life table technique.

DEMO 6547
Principles of Family Planning. Three (3) credits.

This course will review some aspects of the biology of human reproduction and the basic principles of family planning programs, the different types of birth control methods, their advantages and disadvantages, health implications, cost and efficiency. Also the processes of motivation and communication in relation to family planning, the diffusion and adaptation of innovations. The investigation and evaluation of these programs will be discussed.

DEMO 6548
Demographic Aspects of Health. Three (3) credits.

This course is designed for graduate students not enrolled in the Demography Program. It offers a global vision of the study of human population from a demographic point of view. It analyses the status of population as well as its dynamics and the interrelation between the different demographic variables. Different demographic techniques for the study of the status and dynamics of human populations are offered.

Old title: Dynamics of Population (changed 1991-92)

DEMO 6549
Fertility and Population Growth. Five (5) credits.

In this course the changes which occur throughout the years in the levels of fertility and factors associated with differences in fertility between some population groups and others are discussed. It analyses the historic population growth trends and the determinants used in the analysis of fertility and population growth.

DEMO 6550
Migration, Population Distribution, and Urbanism. Five (5) credits.

This course discusses the trends and differences observed in migration movements, population distribution, and urbanism within the context of an analysis of social change and development. Sources of data and different methods used in the analysis of each one of these demographic aspects are studied. The main current and characteristics of international and internal migration, settlement patterns and the structure and distribution of urban population in different types of societies are discussed. In addition the development of different theoretical approaches in relation to migration, population distribution, and urbanism are studied.

DEMO 6552
Economics and Population. Five (5) credits.

This course offers a general overview of the problem and central ideas of the contemporary sciences of economics, emphasizing its interrelation with demography in the theoretical as well as the empirical levels. In addition, the demographic transition of Puerto Rico is analyzed within the context of its socioeconomic development.

DEMO 6555
Fertility and Population Growth. Four (4) credits. Pre-requisite: DEMO 6500. Co-requisite: DEMO 6546.

This is a graduate course in which changes in fertility levels and patterns are discussed. Techniques of demographic analysis are emphasized as well as factors associated with differences among some population groups. Theories and techniques of analysis of population growth are also presented as well as factors associated with fertility differences among some population groups. Fertility and population trends are analyzed and the most important theories developed to explain these changes are discussed. The most important techniques of fertility and population growth analysis are emphasized. Exercises to apply these changes are an important component of the course as well as discussions of some relevant readings.

DEMO 6560
Research Methods. Four (4) credits. Pre-requisite: DEMO 6500 or DEMO 6548.

In this course, the different steps involved in the research process will be addressed, as well as those methods mostly used in Demography. Special attention will be offered to those studies based on survey data since these

are very useful for demographers. It is expected that at the end of the course students will have acquired basic skills to do research in Demography. The course will be carried out mainly through conferences and discussion.

DEMO 6565
Migration, Population Distribution, and Urbanism. Four (4) credits. Pre-requisites: DEMO 6500, DEMO 6546.

The trend and characteristics of migratory movements of population distribution and of urbanism are analyzed in this graduate course within a framework of social change and economic development through lectures, class discussion, and exercises. Development of several explanatory theories of these three processes are also analyzed, as well as the data sources and methods used in their analysis. The main internal and external migrations, the population distribution patterns and the structure of the urban communities in different types of societies are studied. It is expected that at the end of the course the student had developed analysis skills for the study of these three components as well for the evaluation of the components' trends and causes.

DEMO 6601
Population Theories and Policies. Four (4) credits.

This course analyzes the main theories concerning population dynamics since Malthus population essay. In addition, population policies derived from the different theoretical framework are studied.

DEMO 6602
Seminar on Demographic Studies in Puerto Rico. Three (3) credits.

This seminar is devoted to the analysis of the demographic situation of Puerto Rico considering its historical trend. Changes in mortality and fertility levels, as well as the phenomenon of emigration (between The United States and Puerto Rico) and internal migration are analyzed. In terms of this analysis, population growth, its geographic distribution and population characteristics will be studied. In addition, population policies adopted in the island are studied.

DEMO 6604
Research Project. Six (6) credits.

This course consists of the planning and execution of a research project in the field of Demography under the close supervision of the faculty of the Demography Program. Each student will select at least two preceptors according to the interest and needs of the project he wishes to conduct.

DEMO 6606
Use of SPSS Program and other Scientific Research. Four (4) credits. Pre-requisite: BIOE 6525 (old codification BIOE 6521).

Introduce students to programming and processing of data by means of SPSS (Statistical Package for the Social Sciences). By using this program students will learn to process data from their research, regardless of the concerned discipline. Besides, this course will provide knowledge on concepts and language used in programming so that the researcher will be able to communicate effectively with experts in this area. Students will be also initiated in the use of the software SAS.

DEMO 6607
Population and Economics. Four (4) credits. Pre-requisites: DEMO 6500, DEMO 6546, DEMO 6555, DEMO 6565.

This course offers a general vision of the central problem and ideas of contemporary economics. It emphasizes the relationship between economics and the study of population at both, theoretical and empirical levels. In addition, this course presents the demographic transition of P.R. within its economic development. In this way we can visualize with a real example the relationship between economic and demographic variables. The principal methods used in the analysis of the economic situation of a country are discussed. It is expected that at the end of the course students will understand and could explain the demographic processes in its relation with economic development. To attain this, lectures, group discussions and exercises will be used.

DEMO 6615
Supervised Practice in Demography. Three (3) credits. Pre-requisites: BIOE 6525, DEMO 6500, DEMO 6546, DEMO 6555, DEMO 6560, DEMO 6565.

This is a graduate course whose objective is to provide the student the opportunity to apply to real life situations the theoretical and methodological knowledge acquired in previous courses. This experience will facilitate the student's transition from the academic to the occupational environment, since he will assume the tasks and responsibilities that a demographer can undertake at work. These will vary in terms of place as well as in content and type of problem encountered. The student will be exposed to programs at different agencies so as to become familiar with the diversity of contributions that demographers can make to the social, economic, and health life of the country. He will undertake a demographic analysis as demanded by the different institutions. In this practice, the student will be assigned to a specific agency depending on his particular interest. He or she will be directly supervised by the chosen persons at the agency and by faculty from the Demography Program.

DEMO 6621
Research Project I. Two (2) credits. Pre-requisites: BIOE 6525, DEMO 6500, DEMO 6546, DEMO 6555, DEMO 6560, DEMO 6565.

This course is a graduate course in which students will plan and develop the proposal of their research project in Demography under close supervision of at least one faculty member of the program. During the course, students will select their research theme, will present an annotated bibliography, will write the objectives of the research, and will submit the complete proposal in typewriting. They will make also an oral presentation of the proposal. The course will be offered as a workshop. Meetings and discussion will be held with the student in order to develop his/her proposal.

DEMO 6622
Research Project II. Four (4) credits. Pre-requisites: BIOE 6525, DEMO 6500, DEMO 6546, DEMO 6555, DEMO 6560, DEMO 6565, DEMO 6621.

This is a graduate course which comprises the development of a research project in some demographic topic under the supervision of a dissertation committee. During the course the students will: collect the needed data, create data files, process and analyze the data and will produce a written document with the results. Students will make, also an oral presentation. Periodic meetings with the members of the thesis committee will be held so as to monitor student's progress.

DEMO 6990
Reading Course Seminar. One to five (1-5) credit(s).

This course will offer students the opportunity to carryout research in an area in which they are most interested. Once the student selects a topic, the faculty provides a bibliography about the topic selected and the student has to prepare a report to the faculty of the course.

EDSA 6005
Learning Principles and Teaching Strategies in Health Education. Three (3) credits.

This course is geared to develop knowledge and skills of health education; especially in planning, development and evaluation of activities and educational programs. It is expected that the students analyze the different theories of learning and the models of change in behavior and develop skills in the adequate use of methods and techniques of teaching and educational planning of activities. Conferences, group discussions, oral presentations and written reports will be used to achieve the course objectives.

EDSA 6015
Foundations of Public Health, Health Promotion and School Health. Three (3) credits.

The course introduces students in Foundations of Public Health, Health Promotion and Health Education. The emphasis to the conceptual and methodological approaches to Public Health, Health Promotion and Health Education and the application to school environment. Through lectures and discussion groups will analyze the historical perspectives, approaches, structures and programmatic orientations tie to school health scope in Puerto Rico and in the international community. At the end of the course, the students will evaluate models associated with school health education in Puerto Rico and the international community from the perspective of Public Health.

EDSA 6025
Prevention in Use and Abuse of Alcohol, Tobacco and Other Drugs in School Environment. Two (2) credits.

The course is designed to guide the students and the school community to the knowledge of risk factors associated to the use and abuse of alcohol, tobacco and other drugs in the school environment. Special emphasis will be offered to the analysis of patterns of mental, social, economic and cultural conduct that prevent the use and abuse of alcohol, tobacco and other drugs and the physical impact, that causes its use. Also special emphasis in the development will be made of skills to implant and evaluate programs of prevention for the reduction of the use of alcohol, tobacco and other drugs. At the end of the course, the students will develop skills to diminish the risk of use of alcohol, tobacco and other drugs.

EDSA 6029
Topics Related with School Health Promotion Seminar. Two (2) credits.

The course brings students of School Health Certificate in topics related to School Health. In this course, the principal problems and needs of students and school community will be discussed. The themes will be analyzed from the holistic perspective, emphasizing the following dimensions: social, cultural, epidemiological, behavioral, educational and in-service. The themes discussed correspond to the priorities of health in the school setting as defined in the public policy of health of Puerto Rico and by the agencies of health and school health in international level. Through discussion groups, oral presentations, reflective diary and field trip the themes will be treated. At the end of the course the students demonstrate knowledge, attitude, values and skills necessary to develop school health interventions.

EDSA 6035
Personal Development Workshop. Zero (0) credits.

This workshop will provide the students with a group experience in which different aspects related to their adjustment to the university will be discussed. It is expected that this experience will help the students in their group process integration. This workshop is a complement to EDSA 6557- Group Facilitator.

EDSA 6045
Social Participation and Community Empowerment in Public Health. Three (3) credits.

This course focuses in the conceptual and methodological aspects of the process of social participation, community empowerment, and popular education in the context of Public Health. Themes related to the empowerment, as the lack of power, power theories, community empowerment, and social participation are discussed. One of the innovative aspects of the course is the teaching-learning experience based on the methodology of popular education developed by Freire. The students will have the opportunity to learn how this methodology facilitates the active participation in the discussion of different themes and offers them opportunity for a dialogue about the theory and practice of Public Health. This course is addressed to students of Health Education Program and health professions graduate students with interest in health promotion. At the end of course, students will have knowledge and skills for develop intervention with empowerment model.

EDSA 6055
Strategies and Intervention Methods in School Health Promotion. Three (3) credits.

This course intends to guide the students in the development of intervention strategies directed to promote the health of students, the teachers, the non-teaching personnel and the community in general. Through active learning, will analyze the strategies and the intervention models on individuals, group and community scale directed to promote the school health. Also, will analyze the intervention strategies used in different programs in Puerto Rico and other countries that have contributed to promote the integral health of the students and the school community. At the end of the course the student will apply strategies and intervention models of health promotion to school community and/or environment.

EDSA 6066
School Health Promotion Planning Projects. Four (4) credits.

This course intends to guide the students in the development of school health promotion planning projects. The theoretical

aspects of the planning process and the principles and design of projects directed to school health promotion are studied. Through lectures and group discussions the student will develop the skills for the conceptualization, designing, implementation and evaluation of school health projects in the school environment. At the end of the course the student will design a school health project.

EDSA 6075
School Health Promotion Supervised Practice. Three (3) credits. Pre- requisites: EDSA 6015, EDSA 6029, EDSA 6055, EDSA 6066.

The course is directed to the students of the Graduate Certificate in School Health Promotion. This course provides practical experience in a school setting for the integration of competences in the area of the school health promotion. In this practice, the student will show the methodological and conceptual control for the interventions carried out with the population in the school environment. Similarly, he (she) will integrate his skills attitudes in the management of the problems of this population and his environment. Through group meetings and visits to the field, it is expected that the student carry out interventions of health promotion according to those proposed in his (her) plan of action and to present a final report of the interventions carried out.

EDSA 6401
Foundations of Health Promotion and Health Education I. Two (2) credits.

This course seeks to expose students to the theoretical bases of Health Education and Health Promotion. The historical development of each concept, its philosophy goals and objectives are studied. Students will have the opportunity to see the scope of Health Education through the settings where it takes place. Students will also examine ethical issues of the practice of the profession. Theoretical experiences include conferences and group discussions. This will be complemented with visits to programs of agencies offering education for health services.

EDSA 6402
Foundations of Health Promotion and Health Education II. Two (2) credits. Pre-requisite: EDSA 6401.

This course is geared to the analytic examination of different theories, models, and approaches in Health Education. Traditional and innovative educational methods and techniques that can be used by health educators to stimulate changes in health behavior of groups through health education and health promotion will be addressed. Lectures, oral presentations, group discussions, readings and term papers and field visits will be used to attain the course objectives.

EDSA 6405
Theory and Application of Communication in Health Promotion and Health Education. Three (3) credits. Pre-requisites: EDSA 6401.

This course is geared to developing communication skills for Health Promotion and Health Education. The student will develop skills in interpersonal, group and mass communication. The importance of social communication in Health Promotion and Health Education is discussed. To achieve the proposed objectives strategies such as exercise, presentations, group discussion will be used. The student will develop a health communication plan for a specific health area.

EDSA 6500
Community I. Three (3) credits.

EDSA 6502
Health Education I. Three (3) credits.

EDSA 6503
Health Education II. Three (3) credits.

EDSA 6509
Community Laboratory. Two (2) credits.

EDSA 6511
Seminar on Education Aspects. Two (2) credits.

EDSA 6514
Organization and Administration of School Health in Puerto Rico. Three (3) credits.

Study of the objectives, organization, and administration of a school health program. The student will get acquainted with the theory practice of organizing and developing school health program. Emphasis is given

to main components of such program: healthy school environment, medical services, and health education.

EDSA 6518
Fundamentals of Health Education. Two (2) credits.

Presentation of educational principles and methods used for Health Education. Emphasis is placed on working with group, and with the community in general.

EDSA 6521
Educational Process I. Three (3) credits.

This course is aimed to make the student ready to interpret the following basic concepts: education, teaching, learning and the psychological determinants of the human behavior. Emphasis will be given to the study of learning theories and the psychological principles of learning that come from them. The student shall demonstrate his communication skills through activities aimed to that purpose.

EDSA 6522
Educational Process II. Three (3) credits.

This course aims to the study of Health Education as a profession , its philosophy, long range objectives and its historical development in Puerto Rico. Traditional and innovative strategies that can be used by health educators to assure changes in health practices of their clients are also studied. Conferences, group discussions, readings, field visits and oral presentations will be used in order to achieve the stated objectives.

EDSA 6524
Health Education Program Planning. Three (3) credits. Pre-requisites: EDSA 6521, EDSA 6522, EDSA 6531, EDSA 6532. Co-requisites: EDSA 6557, EDSA 6668.

In this course, theoric aspects of the planning process are studied. Also the steps and principles applied to health education projects and programs are studied. Emphasis will be given to the design, organization and implementation of the Health Education program in different settings and levels . The student is required to design the action plan for his or her supervised practice at the end of the course.

EDSA 6531
Health Education Intervention Methods I. Two (2) credits.

The purpose of this course is to analyze the nature and scope of Public Health Education as a behavioral change process in regards to matters of health. Special emphasis is given to the different strategies utilized to promote changes in people's life styles and in the role of the health educator as a change agent.

EDSA 6535
Research Methods in Education. Three (3) credits. Pre-Requisites: EDSA 6521, EDSA 6522, EDSA 6531, EDSA 6532, BIOE 6525.

This course enables the student to design a research project in the education field. Different research designs in education and the application of principal statistical procedures for analyzing data are discussed.

EDSA 6536
Intervention Methods II. Three (3) credits. Pre-requisites: EDSA 6521, EDSA 6522, EDSA 6531. Co-requisite: EDSA 6535.

The course objective is to study the health educator's role in the community and to analyze different intervention methods used to promote changes in community and organizations. Opportunity to observe health education community based programs and projects and to identify intervention strategies used by health educators is provided. At the end of the course, the student will demonstrate on class strategies used on each model studied.

EDSA 6550
Psychosocial Aspects of the Education of the Patient in the Hospital. Two (2) credits.

EDSA 6551
Education to Patients. Two (2) credits.

Basic concepts in patient education as an essential process in health care. Emphasis in detection of present and future needs of the patient and his family planning; and developing a health education program.

EDSA 6553
Psychosocial Aspects of the Education of the Patient in the Hospital. Two (2) credits.

EDSA 6555
Health Education Programs Supervision. Two (2) credits.

This course is designed to develop in the student skills in supervision. Special emphasis is placed on the educational, administrative, consultant, and evaluative functions works. Laboratory exercises are conducted which demonstrate these functions.

EDSA 6556
Community Mental Health. Three (3) credits.

In this course, the philosophical and historical foundations of community mental health are considered. The impact of social and cultural factors upon life style of individuals in contemporary society is analyzed. Emphasis is given to the way people deal and adjust to their environment, and the different theories of personality development.

EDSA 6558
The Health Educator as Group Facilitator. Three (3) credits. Pre-requisites: EDSA 6521, EDSA 6522, EDSA 6531, EDSA 6532. Co-requisites: EDSA 6508, EDSA 6668.

This course is designed to develop skills in the student as group facilitator. Different aspects of the facilitator's role are analyzed as well as factors that affect his/her performance.

EDSA 6563
Intervention Methods in Health Promotion and Health Education I. Three (3) credits. Pre-requisites: EDSA 6401 or EDSA 6561, MEDU 6500.

The purpose of the course is to study Health Promotion and Health Education as a process for the development, maintenance and behavior modification in the human being. The goal is to develop the optimum state of health in the individuals. Emphasis will be given to the study of strategies to change individual health behaviors such as: behavior modification, assertive training, micro counseling, and management of emotion through the life. Emphasis will be given to categories of intervention methods, and strategies to be used in small groups interventions. The students will apply these strategies in their interventions. There will be conferences, group discussions, role playing, lectures, and field experiences.

EDSA 6565
Administrative Aspects of Health Promotion and Health Education Programs. Three (3) credits. Pre-requisites: EDSA 6405 or EDSA 6564, EDSA 6563.

This course is geared to provide students with an overview of the administrative theories and their application to Health Promotion and Health Education programs. General principles of supervision as well as the roles of the supervisor are also included. In addition, the course seeks to initiate in the students the development of the necessary skills that contribute to assume an effective administrative role. Theoretical component of the course will be given through lectures and group discussions and will be also complemented with practical experiences in public and private organizations that have health promotion and health education programs.

EDSA 6566
Research Methods in Health Promotion and Health Education. Four (4) credits. Pre-requisites: BIOE 6525, EDSA 6402 or EDSA 6562, EDSA 6563. Co-requisite: EDSA 6567.

This course is aimed to provide students information and practical experience in the different stages of proposal design in the field of Health Promotion and Education. Several research designs and methodological procedures are discussed. The students will apply their knowledge by developing a research proposal. Conferences, group discussion, analysis of research articles and instruments for gathering data and written work will be used.

EDSA 6567
Intervention Methods in Health Promotion and Health Education II. Three (3) credits. Pre-requisites: EDSA 6402 or EDSA 6562, EDSA 6563.

The purpose of the course is to analyze the principal intervention methods in the field of Health Promotion and Health Education. Emphasis will be given to the study of strategies at the community level. The emphasis is to

evaluate the effectiveness of these strategies in achieving the optimum state of health. The principal instructional strategies are paper analysis, group discussion, lectures, and study visits to Health Promotion and Education programs.

EDSA 6568
Health Professional as Group Facilitator. Three (3) credits.

This course is aimed to help students develop group facilitator's skills. There will be opportunity to perform this role as well as the co-facilitator and observer role. The facilitator's function as seen in communities and health promotion and education programs and factors that influence group processes are analyzed. The importance of this function in health profession is discussed. Progressive skills as group facilitator and observer will be developed by students. Conferences, exercises and group discussions, role playing, community educational interventions and written work will be used.

EDSA 6570
Health Promotion and Education Program Planning. Three (3) credits. Pre-requisites: EDSA 6402 or EDSA 6562, EDSA 6563.

In this course, theoric aspects of the planning process are studied. Also the steps and principles applied to Health Education projects and programs are studied. The students will develop the skills for the design, organization, and implementation of the health promotion and health education program in different settings and levels. The course will be offered through conferences and group discussion.

EDSA 6571
Evaluation of Health Promotion and Health Education Programs. Three (3) credits. Pre-requisite: EDSA 6570.

The evaluation of educational programs, within Health Education context, is studied. The main evaluation models, methods and techniques and their use in the evaluation of educational programs will be discussed. Each student will design an evaluation plan for a Health Education program. The course will be offered through conferences and group discussions. The students will design an evaluation plan for a particular Health Education program.

EDSA 6572
Health Promotion and Education Research Project. Three (3) credits. Pre-requisites: BIOE 6525, EDSA 6566.

In this course, student must implement a research project that represent a contribution to the knowledge and practice of Health Promotion and Education. An oral presentation must be made to the research committee. Student must complete the research project under the supervision of the research committee. Individual and group discussions and meeting with members of the research committee, independent study and written work will be used.

EDSA 6575
Intervention Methods in Community Mental Health. Three (3) credits.

This course presents an overview of the different intervention methods derived from the study of theoretical models of human behavior. Different methods utilized in Health Education practice to promote changes in the community and in organizations will be analyzed from the mental health point of view. The student will design an action plan for an educational intervention.

EDSA 6576
Mental Health Problems Seminar. Three (3) credits.

Priority problems in mental health in Puerto Rico will be considered in this course. The psychosocial aspects of problems such as: violence, substance use and abuse, family conflicts, and problems related to sexual behavior will be analyzed. Students will have the opportunity to make field visits to related programs and agencies.

EDSA 6577
Introduction to Theoretical Models of Human Behavior. Two (2) credits.

In this course some of the theoretical models developed to explain human behavior will be studied. Emphasis

will be given to the following models: medical, system, existential, and holistic. The basic concepts, methodology, application, limitations, and evolution of these models will be considered. The course will include visits and case discussions.

EDSA 6578
School Health Child Problems and Needs Seminar. Two (2) credits.

In this course the fundamental health problems and needs of the school-age child in Puerto Rico will be analyzed, particular consideration will be given to strategies geared to deal with these problems in a school health program, as well as the role of a school health educator and other members of a school health team.

EDSA 6580
Introduction to Human Sexuality. Three (3) credits.

Primarily a content course for health personnel and others who will use the subject matter in their professional work. Topics include Anatomy and Physiology of the Reproductive System (male and female), Pregnancy, Prenatal Anatomic and Physiologic Sexual Differentiation and Development, The Physiology of Childbirth and Fertility Regulation.

EDSA 6581
Human Sexuality I. Three (3) credits.

Social psychological approach to the study of human sexual behavior with emphasis on attitudes and values. The focus is on the functional rather than dysfunctional aspects of sexuality. Autoerotic, homosexual, bisexual, and heterosexual behaviors are examined. There will be site visits and interviews.

EDSA 6582
Human Sexuality II. Three (3) credits.

Presents an overview of the dysfunctional aspects of human sexuality. Non-standard forms of human sexual behavior are examined. Emphasis on attitudes and values. Recent research reviewed. Case studies.

EDSA 6585
The Teaching of Human Sexuality. Three (3) credits. Pre-requisite: EDSA 6580.

A practical course for the development of educational programs in human sexuality for schools, churches, agencies. Role of the family and school in sex education. Methodology and resource materials are examined. Basic questions concerning teacher's role are explored. Laboratory experience in individual and small group developments of teaching programs in human sexuality.

EDSA 6586
Sexually Transmitted Diseases Education. Three (3) credits.

Review and analysis of the role and impact of education in the modification of sexual practices with emphasis in the prevention of sexually transmitted diseases. Includes the etiology of selected STD diseases, the group or individuals at risk, those exact behavior that education efforts must be design to influence and the STD control components which play a role.

EDSA 6587
Counseling in Human Sexuality. Three (3) credits. Pre-requisite: EDSA 6580.

Application of individual and counseling theories and techniques to the ever emerging needs of individuals in the area of human sexuality. Psychological and social foundation underlying the counseling process; examination of relevant research data. Case studies, demonstrations and supervised practicum.

EDSA 6595
Supervised Practice. Six (6) credits.

Provides the opportunity to apply and corroborate Health Education concepts and principles assuming an educator role with all its responsibilities.

EDSA 6668
Research Proposal Seminar. Two (2) credits.

This course is designed to assist individual student in the preparation of an outline or proposal for the project

he or she proposes to undertake. The student will have the opportunity to study in depth the research design selected for his/her project.

EDSA 6669
Research Project in Health Education. Six (6) credits.

The student will develop a research project dealing with a relevant problem or issue in Health Education or in a related area. The research proposal submitted by student must have the approval of his research project committee (three health professionals) before he or she begins to work in the project. This committee selected by the student and the Health Education staff, has to be in accordance with the research theme. The research project is an individual endeavor unless exceptional circumstances require otherwise. The student is required to submit the completed research paper in original and two copies to his or her committee for approval, following the rules established by one of the existing styles guides published for these purposes.

EDSA 6995
Special Topics in Health Education. One to four (1-4) credit(s).

Individual arrangement for the graduate students to study a specific area under the guidance of a faculty member of the program. May include readings, literature reviews or other special projects. Minimum of 24 hours required for each unit of credit, up to a maximum of four credit units, to be taken as an elective course.

EDSU 6501
Systematic Planning of Instruction. Three (3) credits.

This course provides the student the opportunity of developing the knowledge, skills, and attitudes to the roles of teacher: learning facilitator, academic counselor, human relations facilitator, member of a teaching team and a health specialist. Special consideration is given to the systematic planning and design of learning experience.

EDSU 6503
Principles of Curriculum Design and Development. Three (3) credits.

This course is designed to develop in the participants basic skills and positive values in the area of curricular design and development, as it relates to the educational programs in the Health Sciences.

EDSU 6505
Principles of Higher Education. Three (3) credits.

This course presents the fundamental concepts and principles of education and its philosophical, psychological, sociological, economical, and historical bases. Laboratory exercises are directed towards the conceptualization of the principles of learning and the variables intervening in the instructional process.

EDSU6507
Educational Evaluation Methods. Three (3) credits.

The course presents an overview of the different methods and techniques of educational evaluation and measurement most commonly used in the teaching of Health Sciences at the university level. Special emphasis will be given to the role of testing in education, test construction and other measurement instruments. Furthermore, analysis techniques for the appraisal of students base on the data or information collected through the measuring processes will be discussed.

EDSU 6509
Administration of Higher Education. Three (3) credits.

The course has been designed to facilitate educational programs administrator in higher education, the acquisition of knowledge, skills, and attitudes that will enable to play their administrative roles in an efficient and effective way. The course encompasses a multidisciplinary vision of the administration as a social system. An administration model is presented integrating two schools and theories within each one. The administrative process is viewed as a complex set

of activities as a mean to keep, maintain, and improve educational organizations. The methodology includes seminar, practical experiences, and the application of administrative theory to higher education settings. The course is offered to graduate students and facility members with interest in this field.

EDSU 8001
Structuring Learning and Instructional Design in the Health Sciences. Three (3) credits.

This course is designed to train interested faculty and graduate students in the Health Sciences, with the knowledge, skills and attitudes required for systematic planning of instruction in the Health Sciences context. The students are provided with the opportunity to develop an analytical approach to pedagogical decision-making related to the process of designing instruction. The essential aspects basic to the teaching process and to the structuring of learning will be studied in an analytical way. The course will include the study of systematic planning of instruction such as: selection and construction of learning objectives; selection and organization of content to be taught; selection of educational strategies and the design of instructional activities which promote construction of knowledge and critical thinking in the students; selection of resources, and design of instructional evaluation. Current topics related to the educational process will also be discussed. The student is expected to integrate and apply the concepts acquired in the planning and development of different types of instructional designs, such as units of study, instructional guides, auto-instructional modules and course syllabi, among others. The course will be developed through group discussions and applied exercises. Three seminars will be conducted where current topics related to the instructional process will be discussed. The students will be divided in collaborative groups for researching and presenting a topic of interest to the students. The three topics will be selected according to the needs and knowledge of the students enrolled in the course.

EDSU 8005
Teaching and Learning in the Health Sciences and the use of Media and Information Technologies. Three (3) credits. Pre-requisites: EDUC 8028, EDUC 8029, Six (6) credits - Foundations of Education Component, Six (6) credits - Plannification, Evaluation, Research, and Statistics Component.

Course of the teaching of the Health Sciences component, for students of the Experimental Graduate Program-Doctor in Education (RPC-MSC). Includes the use of media and technologies of information to positively impact the process of teaching and learning. Using seminars, laboratory and independent study, the following areas are covered: availability of media and technologies of information in the MSC and the UPR system; teaching, learning, media and technology; information access and; multimedia. Culminates in particular projects, in which each student will integrate media and technologies of information to his/her teaching.

EDSU 8015
Planning Educational Programs for the Development of Health Professionals and Health Care Systems in Puerto Rico. Three (3) credits. Pre-requisites: EDUC 8028, EDUC 8029, Nine (9) credits in Philosophical, Sociological, and Psychological Foundations of Education.

This course is based on the principles of strategic planning, its epidemiological basis, philosophical contents of quality in health care and on the design and evaluation of educational programs for health professionals. In-depth study is pursued of the implications of organizational and financial changes of the health care system and of educational programs for health manpower development in Puerto Rico. In this course, students will develop knowledge, skills and attitudes for multidisciplinary educational planning for health professionals, attuned to societal realities and needs. It is designed with active student participation. In general, the course is directed to the integration of knowledge from several disciplines; such as, Management, Education and Health Sciences. It is geared to the development of educational experiences that integrate theory and practice, by the application and transference of knowledge to new ventures in the health sector. The course is directed to students of the Experimental Graduate Program, Education Doctorate of the Rio Piedras and Medical Sciences Campus, of the University of Puerto Rico.

EDSU 8017
Quality Improvement in Health Professional Practices, Health Professions Education Programs and Health Care Organizations. Three (3) credits. Pre-requisite: Biostatistics or equivalents.

This course provides a conceptual framework on continuous quality improvement. It examines the philosophy and provides guidelines for its implementation in health professions education programs and health care organizations, with active participation of health professionals through interdisciplinary teams. The course utilizes the educational methodology ECA, that promotes the exploration and conceptualization of knowledge and skills, and the application and integration of theory and practice. Students will work as team members throughout the educational seminar-type experience.

ENOP 6005
Reproductive Physiology for Nurse Midwives. Two (2) credits. Co-requisites: ENOP 6007, ENOP 6008, ENOP 6035.

The course addresses the physiology of human reproduction in order to gain proficiency in diagnosis of the normal pregnancy and recognition of deviations from the normal. During class discussions and independent study the following content is emphasized: menstrual cycle, physiologic changes of pregnancy, labor and delivery, reproductive endocrinology, conception, interrelationships between mother and fetus, maternal-fetal-placental physiology and introduction to gynecology.

ENOP 6006
Human Sexuality and Well Woman Gynecology. Three (3) credits. Pre-requisite: ENOP 6005.

This course is designed to increase students understanding and acceptance of their own sexuality and that of others. The psychosexual development of the individuals is discussed; as well as preparation for marriage and family living. This course emphasizes the management of common gynecologic problems including sexually transmitted diseases. Parameters for differential diagnosis, treatment modalities including, co-management collaboration and referrals when indicated, are taught. Counseling, education and provision of all birth control methods will be discussed. Legal, ethical, religious issues related to family planning will also be included. This course also addresses the management of the care of the woman during the perimenopause and post-menopause including therapies for alleviating the common discomforts that accompany aging. Emphasis is given to the role of the nurse-midwife in the delivery of effective family planning services and women's health care problems.

ENOP 6007
Basic Pharmacology for Nurse Midwifery. Two (2) credits. Co-requisites: ENOP 6005, ENOP 6008, ENOP 6035.

This course is oriented toward the review of the action, indications, contraindications, side effects of the drugs commonly used in the care of women during prenatal, labor, delivery, postpartum, family planning and in the care of the newborn. Medications, standing orders, for the nurse midwife are evaluated and analyzed.

ENOP 6008
Normal Obstetrics Management. Three (3) credits. Co-requisites: ENOP 6005, ENOP 6007, ENOP 6035.

This course contributes to the acquisition of basic clinical knowledge of normal obstetrics and the development of skills for the management and care of the women during preconception, pregnancy, labor, delivery, post-partum, and immediate care of the newborn through class discussions and independent study. The framework of nurse-midwifery management for the primary care of normal women during the maternity care cycle and the care of the newborn is constituted. The functions and responsibility of the midwife as a health team member are discussed and stressed. The student will learn the skills and techniques relevant to give expert support and care during labor, use of analgesia, performance of local and regional anesthesia, performance of episiotomy, delivery of baby and immediate care to the newborn and mother.

ENOP 6025
Fundamental Concepts in Public Health. Four (4) credits. Co-requisites: ENOP 6005, ENOP 6007, ENOP 6008, ENOP 6035.

In this course the Nurse Midwifery Certificate students become acquainted with basic concepts, skills, and methods that underline Public Health practice. It presents the basic disciplines in the field of Public Health using interdisciplinary approach. Through class discussions, workshops and field experiences, alternatives for meeting the needs of women and children are presented. The nurse midwifery role in health promotion, conservation and restoration, as well as disease prevention are discussed, with emphasis in their responsibility as members of the health team.

ENOP 6026
Genetics and Genetic Counseling in Nurse Midwifery. One (1) credit. Pre-requisite: ENOP 6025 or MEDU 6500.

This course, through class discussions, provides an integrated view on genetic disorders of major public health importance. The preventive aspects, diagnostic procedures, services, resources for the population at risk are discussed.

ENOP 6027
Problems and Complications of Obstetrics. Three (3) credits. Pre-requisites: ENOP 6005, ENOP 6007, ENOP 6008, ENOP 6035. Co-requisite: ENOP 6036.

This course is designed to provide the students, through class discussions and independent study, the basic knowledge and critical evaluation of deviations from normal, complications and risk factors affecting the health of women and fetus during preconception, pregnancy, labor, delivery, and post- partum. Building upon course work in introduction to Public Health, reproductive physiology, nurse-midwifery practice and management, normal obstetrics, and pharmacology, the students will expand their knowledge in order to promptly recognize health problems, deviations and risks, to implement prevention strategies, prevention of complications, and management of emergencies. The nurse- midwifery role in complications which require physician consultation and referral is emphasized.

ENOP 6028
Maternal and Infant Nutrition. Two (2) credits.

This course provides the student with learning experiences in the reciprocal relationships between reproduction and nutrition. The influence of nutrition during preconception and prenatal status and final outcome is discussed and evaluated by weight gain. The effects of nutrition on physical, mental growth, and development. interrelations between nutrition, disease, and breast feeding are also discussed. Students will gain experience in the theoretical and practical background, technical information, and practical counseling techniques for the main aspects of nutrition care during pregnancy, lactation, and infant feeding. They will prepare and maintain accurate complete and valid nutrition records, and identify problems through screening and assessment, intervention through education and management, follow up of those aspects related to the maternal nutritional state.

ENOP 6029
Care of the Newborn. Two (2) credits. Pre-requisites: ENOP 6005, ENOP 6007, ENOP 6008, ENOP 6035. Co-requisite: ENOP 6027.

This course emphasizes the theoretical, conceptual, and practical basics fundamental to assessment and management of the normal newborn. Through class discussions and clinical experiences, special attention is given to risk factors affecting growth and development (physical, social, and emotional). Complications of the intra-uterine and neonatal periods are stressed. Emphasis is on the role of the nurse-midwife in the prevention of birth disorders, education, recognition of complications, deviations, and management of the most common disorders of the neonate.

ENOP 6030
Planning and Organization of Maternal and Infant Nurse Midwifery Services. One (1) credit. Pre-requisites: ENOP 6006, ENOP 6026, ENOP 6027, ENOP 6028, ENOP 6029, ENOP 6036. Co-requisite: ENOP 6037.

This course presents the basic principles of health planning for the development and organization of maternal, infant and nurse midwifery services; this course will provide the basic concepts of problem solving, staffing, coordination,

evaluation, and budgeting. The students will carry out assessment of the maternal and infant services at primary level of an specific area, in order to determine needs, priorities, objectives, and recommendations.

ENOP 6035
Nurse Midwifery Practice and Management I. Two (2) credits. Co-requisites: ENOP 6005, ENOP 6007, ENOP 6008, ENOP 6025 (Not a requirement for the master degree student).

This course introduces the student to the nurse-midwifery management process as the framework for providing primary care for essentially healthy women through the life cycle. Techniques of history taking, physical assessment and utilization of common screening tests are emphasized. Principles of health promotion, disease prevention and management techniques and therapies, including complementary therapies for the treatment of common health problems of essentially healthy women are included.

ENOP 6036
Nurse Midwifery Practice and Management II. Two (2) credits. Pre-requisites: ENOP 6005, ENOP 6007, ENOP 6008, ENOP 6035. Co-requisites: ENOP 6006, ENOP 6026, ENOP 6027, ENOP 6028, ENOP 6029.

This course is a continuation of Nurse-Midwifery Practice and Management I. Principles of health promotion, disease prevention and management techniques and therapeutics for the treatment of common health problems of essentially healthy women are included. The student is also introduced to nurse -midwifery professional issues, history of nurse-midwifery and midwifery. The professional responsibilities of certified nurse-midwives are emphasized.

ENOP 6037
Nurse Midwifery Clinical Management and Practice. Five (5) credits. Pre-requisites: ENOP 6006, ENOP 6027, ENOP 6028, ENOP 6036. Co-requisite: ENOP 6030.

This course is given in two trimesters. Supervised clinical experience in all phases of the maternal cycle. The student assumes (under supervision) responsibility for clinical management of the essentially normal mother during antepartum, intrapartum, postpartum, interconceptual period supervision of selected groups of mothers and babies in the home, and family planning clinics. The students are also assigned for the care of high risk cases, in order to learn medical care and management. The student is expected to give the highest quality of nursing and midwifery care to those cases. Collaborative management is expected and fostered. The emphasis of this experience is place in the knowledge, judgement and skills needed for a safe practice of nurse midwifery. Students develop increasing independence in their abilities to provide clinical care to women and their families.

ENOP 6041
Basic Aspects of Research for Nurse-Midwifery I. Two (2) credits. Pre-requisite: BIOE 6525.

The course introduces students of the MPH with Specialty in Obstetrics-Midwife Nursing, the basic knowledge of research, as well as the necessary dexterities to be able to identify the problems related with the health and the services of the mother's health and the infant. The course will promote an experience of individual research or in groups, which will be directed to obtain scientific information that proposes alternative at short and long term to solve the identified problem. In this course will discuss basic aspects related with the identification of maternal and infant health problems, the writing of the report , and the ethical and legal aspects related with the investigation. To reach out the objectives, the professor will use the conference, the group discussion, field visit, independent work, interviews, oral and written presentation. At the end of course, the students will be able to select and work in the identified related problem.

ENOP 6042
Basic Aspects of Investigation for Nurse-Midwifery II. Two (2) credits. Pre-requisites: BIOE 6525, ENOP 6041.

The course introduces students of the MPH with Specialty in Obstetrics-Midwife Nursing, the basic knowledge of research, as well as the necessary dexterities to be able to planning and implement a research related with the health

and the services of the mother's health and the infant. The course will promote an experience of individual research or in groups, which will be directed to obtain scientific information that proposes alternative at short and long term to solve the identified problem. In this course the students will work in the planning and implementation of the research problem. To reach out the objectives, the professor will use the conference, the group discussion, independent work, oral and written presentation of a problem of carried out investigation. At the end of the course, the student will be able to finish the investigation and to offer recommendations.

Grading System: Passed (P), Not Passed (NP)

EPID 6523
Epidemiological Methodology. Four (4) credits. Pre-requisites: BIOE 6525, MEDU 6500.

Designed to present and illustrate the epidemiological principles and methods as an approach to study of phenomena of health and disease. The course covers the following topics: The Scientific Method; The Epidemiological Method; The Concept of Causality; Descriptive Epidemiology and Hypothesis Formulation, Retrospective and Prospective Studies; Experimental Studies; Screening; Epidemiological Aspects of Genetic and Epidemiological Research.

EPID 6525
Immunization Program in Latin America and Puerto Rico. Two (2) credits.

The purpose of this course is to teach the students to analyze the problems, available resources and actual yield, to design actions to extend coverage of the immunization programs. By means of group work in the form of workshops, where the contents of the modules noted below will be discussed. This modules have been prepared by the Pan American health organization, also the system used in Puerto Rico: I- Goals; II- Diseases; III- Vaccines; IV- Cold Chain; V- Program Management and VI- Evaluation (Theoretical and Practical).

EPID 6527
Epidemiologic Surveillance. Two (2) credits. Pre-Requisite: EPID 6523.

This course intends to teach the student how to make use of epidemiologic surveillance system, by specific training in the design, set-up, and evaluation of surveillance system.

EPID 6528
Epidemiology of Mental Diseases. Three (3) credits. Pre-requisites: EPID 6523, MEDU 6500.

The course covers the epidemiology of some illnesses and their socio-cultural aspects. Mayor emphasis is given to the epidemiological factors which are taken into consideration for early detention, identification of high risk groups, treatment and rehabilitation. Priority will be given to the following topics: Epidemiology of the Accidents; Epidemiology of Suicide and the Epidemiology of Drug Dependencies.

EPID 6529
Epidemiology of Chronic Diseases. Three to four (3-4) credits. Pre-requisites: EPID 6523, MEDU 6500.

The course covers the epidemiology of select chronic diseases that constitute the principal causes of death in Puerto Rico and other countries. It analyzes the principal risk factors of the diseases which are then taken into consideration when developing activities for early detection, treatment, and prevention. The principal diseases to be covered are: Cardiovascular Diseases, Hypertension, Diabetes, Cancer, and Liver Cirrhosis.

EPID 6530
Statistical Methods in Epidemiology. Five (5) credits. Pre-requisite: BIOE 6525 (Old codification BIOE 6521).

Designed as part of the concentration in Epidemiology of the M.P.H. Program. Topics included are: Statistical Inference, Sampling Theory, Regression Analysis; Non-Parametric Tests and Life Tables. Other topics are The Principles Methods and Techniques of Statistics as Applied to the Design, Development and Analysis of Epidemiological Studies.

EPID 6535
Epidemiology of Communicable Diseases and Epidemiological Surveillance. Four (4) credits. Pre-requisite: EPID 6523 (MS EPID). Co-requisite: EPID 6523 (MPH EPID).

Study of the behavior of communicable diseases with emphasis to those which are important in Puerto Rico and other countries. The following topics are included: Concepts, Principles, Methods, and Procedures used for the Organization and Operation of an Epidemiological Surveillance System for the Study and Control of Illnesses in General, but with a Special Emphasis on Communicable Diseases.

EPID 6536
Epidemiology and Pathogenesis of Cancer. Three (3) credits. Pre-requisites: BIOE 6525, EPID 6523.

This course is offered as an elective to students in the School of Public Health, and to health professionals interested in the subject matter. This course discussed: the fundamental concepts which give form to an ecological causal framework, and the correlations, tendencies, and strategies of Cancer Epidemiology. Among the topics to be covered are the following: Main Carcinogenesis agents; the important types of cancer (breast, lung, stomach, etc.); the study and formulation of control plans, and evaluation of results; and research methodology. The course is estimated forty eight hours. The participants are expected to be able to criticize and evaluate scientific literature , as a process of updating their education; and to be able to apply acquire knowledge in the formulation, implementation, and evaluation of cancer control programs.

EPID 6539
Epidemiological Aspects of Public Health Problems. Two (2) credits. Pre-requisite: EPID 6523.

This course provides practical epidemiology training in the management of Public Health problems through a detailed examination of origins and rationale of established policies and guidelines that pertain to disease-prevention/ control.

EPID 6545
Introduction to Patobiology. Three (3) credits.

This course is designed to familiarize students with the physical, physiological, and mental responses of man to infectious and noninfectious disease causing agents. The immediate and intermediate effects of the most common diseases in Puerto Rico are studied.

EPID 6547
Metodological Principles in Occupational Epidemiology. Two (2) credits. Pre-requisite: EPID 6523.

Epidemiological methods applied to the study of health problems related to the occupational environment.

EPID 6549
Advanced Research Methods in Epidemiology. Five (5) credits. Pre-requisites: BIOE 6525, BIOE 6545, BIOE 6605, EPID 6523.

This is a course in advanced epidemiological research geared to students of the Master's in Sciences in Epidemiology Program. It focuses on the different epidemiologic research designs; their characteristics, advantages and disadvantages. Data collection methods are also examined in terms of the adequacity of each one for the different epidemiologic research designs discussed. The students will have the opportunity to develop and to apply the statistic reasoning necessary for the quantitative analysis of each of the research designs studied. The students will also have the opportunity to discuss various statistics packages to carry out the statistical analysis for each design. It is expected that the students will be able to integrate and apply the acquired knowledge in:
(1) The elaboration of the different epidemiologic research designs, (2) Selecting the most adequate data collection methods and statistical analysis according to the design, (3) Determining the sample size according to the design, (4) Identifying the statistical packages and their application to Epidemiology.

EPID 6552
Seminar in Epidemiology I. One (1) credit. Pre-requisite: BIOE 6525. Co-requisite: EPID 6523.

The first part of the seminar will emphasizes the historical development of the discipline of Epidemiology. The second section will develop the skills of critical analysis of epidemiological research. The last portion of the seminar will introduce the student to various types of epidemiological research.

EPID 6553
Seminar in Epidemiology II. One (1) credit. Pre-requisites: EPID 6552, BIOE 6535. Co-requisite: EPID 6523.

The course introduces the students to various topics in Epidemiology, such as: The Epidemiology of Chronic Diseases, Clinical Epidemiology, Psychiatric Epidemiology, and The Epidemiology of Preventive Health Behavior.

EPID 6554
Seminar in Epidemiology III. One (1) credit. Pre-requisites: BIOE 6535, EPID 6523, EPID 6553.

The seminar presents the development of the epidemiological approach to health through readings and discussion of classical studies. It covers the development from the greeks to the transition to modern Epidemiology.

EPID 6555
Seminar in Epidemiology IV. One (1) credit. Pre-requisites: BIOE 6535, EPID 6552, EPID 6553, EPID 6554.

The Seminar IV continues with the historical perspective in the development of Epidemiology initiated in Seminar III. It is focused in the development of modern Epidemiology through the discussion of classical studies in the area since the Second World War.

EPID 6556
Seminar in Epidemiology V. One (1) credit. Pre-requisites: EPID 6552, EPID 6553, EPID 6554, EPID 6555.

The Seminar in Epidemiology V consists of discussions and presentation of recent and current research projects in Epidemiology. The research projects to be discussed include the following topics: Sexually Transmitted Diseases, Chronic Illness and Occupational and Automobile Accidents.

EPID 6561
Epidemiological Research I. Four (4) credits. Pre-requisite: EPID 6523. Co-requisite: EPID 6549.

The main objective of this course is to prepare the student with the required knowledge to design an epidemiologic research.

EPID 6562
Epidemiological Research II. Four (4) credits. Pre-requisite: EPID 6561.

The main objective of this course is to prepare the student to apply the required knowledge to conduct an epidemiological research.

EPID 6563
Epidemiological Research III. Two (2) credits. Pre-requisite: EPID 6562.

The main objective of this course is to prepare the student to apply the required knowledge to analyze and interpret epidemiologic research.

EPID 8002
Advanced Methods in Epidemiology II. three (3) credits. Pre-requisites: EPID 6523 or equivalent, BIOE 8005 or equivalent.

This course provides the student enrolled in the Doctoral Program in Public Health the skills to aply epidemiologic principles and methods in the study of health related events. In addition, the student will have the epidemiologic foundations for planning, evaluating health services, and developing public policy and regulatory decisions. The course begins with the application of scientific method in the Publich Health field. This topic includes the phases of conception, planning, design, analysis and communication of results. The need to obtain valid and precise exposure measurements to different agents associated with the disease process is a relevant topic in epidemiologic research. The course will include the different forms and exposure measurements, its errors and effects, and the techniques available to minimize these errors. The tyupes of epidemiologic studies that are used to quantify the magnitude of the association between the exposure and disease occurrence will be presented, emphasizing the advantages and disadvantages of each study design. The epidemiologic method will be applied to the evaluation of health services and public policy, with special emphasis on risk assessment and risk management.

EVAL 6506
Evaluation Research. Three (3) credits.

EVAL 6511
Introductory Proposal Seminar. One (1) credit.

This seminar introduces the student in the Master in Science in Health Systems Evaluation Research Program to the

first two stages of The Scientific Method: formulation of a specific research question and the development of empirical hypothesis. Specifically, in the seminar the student is exposed to different areas or topics related to evaluation research. Students will be provided experiences that help develop skills in the appropriate formulation of research questions and hypothesis in areas related to evaluation research. In addition, the seminar provides the opportunity to discuss different factors that should be taken into consideration while selecting a research topic. Factors related to sample accessibility or availability to clinical records, extent of time required to conduct the study and costs are discussed.

EVAL 6512
Intermediate Proposal Seminar. One (1) credit. Pre-requisite: EVAL 6511.

The course is designed to facilitate that students initiate their thesis proposal. It is conducted as an applied seminar to: 1) familiarize the student with the program requirements for the thesis proposal; and 2) provide help in the selection and elaboration of research topics. In the initial sessions the program's guide for proposal and thesis development will be discussed and the students' topics of interest will be explored. At the following sessions the students will present relevant studies in their area of interest. The research questions and conceptual model that guide these studies will be examined.

EVAL 6513
Advanced Proposal Seminar. One (1) credit. Pre-requisite: EVAL 6512.

This seminar aims to facilitate the student's progress on the thesis proposal. It is based on the work initiated in the Intermediate Proposal Seminar. Based on the literature review during this period the student present his/her research problem, the research question (s), design, and methodology of the thesis project proposed. The purpose of these presentations is to provide the students with the opportunity to learn from diverse experiences and to examine different designs and research methods.

EVAL 6515
Conceptualization and Methodology for Evaluation Research. Four (4) credits.

The basic steps in the research process will be studied and applied in this course. Special attention will be given to the selection, definition, and development of a problem in the area of Evaluation Research. The student will develop a conceptual model and will conduct an exhaustive literature research. Also, the student will establish the methodology, design, and procedure to be used in the study. Finally, the student will analyze data obtained from a small pilot study. The main teaching strategies will be conferences and discussions.

EVAL 6610
Principles of Evaluation. Three (3) credits.

This course introduces the student to the role of evaluation in the Health Care Services Sector and the historical needs that have influenced the development of the discipline. They will be exposed to the history, principles, and scope of the discipline. They will become familiar with the context in which the profession is practiced as well as with the different evaluation modalities that are more frequently applied to Health Services. At the end of the course the students will have become aware of the need to acquire or develop the knowledge, skills, and attitudes provided by the academic program so that they may exercise the profession in different health care services settings.

EVAL 6611
Evaluation Models. Three (3) credits. Pre-requisite: EVAL 6610.

This course presents different theoretical models utilized in Program Evaluation. In particular, the characteristics of diverse models are identified and their applicability to specific situations is analyzed. Students will examine the strategies, steps, and procedures required of the evaluation processes that are derived from the various models. By the end of the course the students will be able to select an Evaluation Model and design a Program Evaluation Plan.

EVAL 6613
Seminar in Strategies for the Analysis and Evaluation of Health Problems, Programs, and Policies. Three (3) credits.

This course presents and analyses different strategies for the analysis and evaluation of the health problems, programs, and policies. It is expected that at the end of the course the student will be able to discriminate and select

the best strategy for the analysis of a specific project in evaluation, planning or development.

EVAL 6614
Evaluation of Health Services. Two (2) credits.

This course presents basic concepts in evaluation research. Emphasis is given to the different research techniques used in monitoring health programs. Some of the topics are: Surveys and Observations for Planning Intervention Strategies, Designs, and Data Analysis to Measure Program Effectiveness.

EVAL 6615
Development of Measurement Instruments. Three (3) credits.

This course aims that students develop skills that allow them to select, adapt, or develop measures appropriate to the situation under study. Diverse data collection techniques, including their advantages and disadvantages, are examined. Specifically, we discuss self reported questionnaire, personal interview, telephone interview, observation, and diary, among others. We also examine relevant elements in the planning and administration of diverse data collection measures.

EVAL 6616
Evaluation Analysis. Three (3) credits.

This course will present different evaluation designs that could be used in the health field. Emphasis will be given to the circumstances under which they are feasible.

EVAL 6617
Advanced Seminar in Measurement Problems. Three (3) credits. Pre-requisites: ADSS 6574, EVAL 6610, EVAL 6611, MEDU 6500.

Critical analysis of evaluative research papers in the area of Health Services. Emphasis will be given to measurement problems when non-parametric measures are used.

EVAL 6618
Advanced Evaluation Seminar. Six (6) credits. Pre-requisites: EVAL 6610, EVAL 6611, EVAL 6612, EVAL 6613, MEDU 6500.

Course designed to guide the student, at an individual level, to develop and carry-out evaluate research.

EVAL 6619
Special Interests. Six (6) credits. Pre-requisites: EVAL 6610, EVAL 6611, EVAL 6612, EVAL 6613, MEDU 6500.

Course designed so that the student has the opportunity to be in contact with the practical aspect of evaluation. It will be designed according the student's special interests. The content will depend on the subject matter that the student wants to develop.

EVAL 6620
Applied Statistics for Evaluation Research Studies. Three (3) credits. Pre-requisites: BIOE 6525, BIOE 6535, BIOE 6555, BIOE 6605.

This course will cover the application of fundamental methods of statistical analysis for evaluation research studies. The course also includes the management of a data bank, and the creation and transformation of variables. In the application of statistical methods to evaluation research studies we examine descriptive and inferential statistics. In particular, we discuss T Test, F Test, ANOVA, Chi-Square, and the use of Odds-Ratios in evaluation research studies. In addition, the use of multivariate and logistic regression in evaluative studies will be discussed. It is expected that at the end of the course the student could successfully integrate theory and practice such that he will be able to perform the appropriate statistical analysis to a data bank in order to complete a particular research study. The course will be offered as seminar.

EVAL 6621
Research Evaluation Seminar I. One (1) credit.

The seminar introduces the student in the Master's Degree Program in Evaluation Research of Health Systems to the first two steps of the Scientific Method, construction of a specific research problem and hypothesis empirically testable. Specifically, the seminar will provide the student experiences that develop skills in the proper construction of research problems and hypothesis in different areas of evaluation research. In addition, in the seminar will present and discuss several factors that should be considered in

the selection of a research topic. For example, factors such as: access to the sample or clinical records, time to carry-out the research and cost.

EVAL 6625
Analysis and Interpretation of Evaluative Studies. Three (3) credits.

This course analyses literature in the field of Evaluation in order to judge critically the methodologies used. In addition, it provides an applied experience in the analysis, interpretation of evaluative studies. The course emphasizes that the students relate to studies conducted in the field of Evaluation to identify alternate methodologies and examine the weaknesses and strengths of these.

EVAL 6626
Evaluation Practice. Two (2) credits.

This course has as its fundamental purpose to provide the students the opportunity to put into practice theoretical concepts and skills acquired during the coursework. This practice facilitates the transition from an academic to an occupational environment. The students will also be able to assume the functions and responsibilities of an evaluator in a work setting. The students will develop a project in accordance with the agency.

EVAL 6628
Principles of Cost-Benefit Analysis. Three (3) credits.

This course will introduce students to the economic evaluation of health programs and interventions. It uses an economic model to analyze health services and identify inputs of production as physical facilities, equipment, human resources, and medications. It also examines changes in health status as the output of a production process using the previous inputs. Since the availability of resources required to fulfill the population needs for health services is limited the efficient use of resources must be emphasized. Cost benefit, cost effectiveness, and cost utility analysis are discussed as methods that allow the evaluation different alternative, programs, projects or interventions. Students are expected to develop the skills and knowledge necessary to choose the most adequate methodology in their analysis of cost and benefits of health services. Case discussions, homework, and lectures are the teaching strategies used in this course.

EVAL 6630
Strategies for Evaluation and Communication. Three (3) credits. Pre-requisites: EVAL 6515, EVAL 6610, EVAL 6611.

This course aims to develop skills in the negotiation and design of an evaluation plan. Strategies for the purpose of communicating evaluation results are also discussed. The essential stages and activities for the elaboration of an evaluation plan for a specific professional context are discussed. Specifically, aspects such as: definition of the program, objectives of the evaluation, methodology and budget are included. Skills for effective communication in the evaluator-client relationship are develop. Different formats and strategies are presented for the communication of evaluation findings. This course will be offered through lectures, work groups and students' presentations.

EVAL 6650
Evaluation Practicum. One (1) credit. Pre-requisites: EVAL 6610, EVAL 6615, EVAL 6620, EVAL 6630.

The main purpose of this course is to provide the student with the opportunity to practice the theoretical concepts and skills developed in previous courses. The practicum will also allow the student's transition from an academic environment to an occupational setting. The student must develop an evaluation project that responds to the needs of the agency.

EVAL 6700
Thesis Project. Three (3) credits. Pre-requisites: EVAL 6513, EVAL 6515.

The main purpose of this course is to facilitate the implementation of an evaluation research project. It has been structured as an applied project aimed at guiding the students individually through the various phases associated with the preparation of a thesis. During this process the student will discuss with his/her advisor the progress and difficulties encountered in the process of data collection, data analyses, interpretation of findings and generating recommendations.

GERO 6005
Introductory Seminar to Gerontology. One (1) credit.

The degree candidates of Gerontology Program will be expose initially to this short seminar. Its content pretends to stimulate the analysis of the student's own perception of aging and old age and to introduce them to the field of Gerontology as an area of knowledge. Various introductory topics essential in the study of the Gerontology field are discussed, such as myths and stereotypes of aging, historic path of aging Gerontology, interdisciplinary team work, terminology and demography.

GERO 6495
Planning the Interdisciplinary Intervention in Gerontology. One (1) credit. Pre-requisites: GERO 6005, GERO 6501. Co-requisite: GERO 6505.

This course provides to the Certificate of Gerontology student, knowledge and skills to develop a health promotion plan to older participants in a community. Is a preparatory course for GERO 6511: Interdisciplinary Intervention in Gerontology. Integrates theory and practice in the discussion and application of: interview process in older people, diagnosis of health needs, planning health promotion programs for older persons and importance of team work in the care of this group. Offers the opportunity to refine interview, planning group deliberation and teamwork skills. It consists of three conceptual seminars with application exercises and a practice activity. At the end, it is expected that the student discuss and justify a health promotion plan designed for the community assigned for the interdisciplinary intervention.

GERO 6500
Introduction to Gerontology. Three (3) credits.

Introduction to the field of Gerontology as an interdisciplinary area and as a new area of knowledge, research, and services. The human life cycle is presented focusing the theme of aging as biological and social process starting at conception and finishing at the latest state, death. The subject presents the study of aging and the aged as an area of increasing importance in the field of Public Health.

GERO 6501
Biological Aspects of Aging. Three (3) credits.

This course provides the student with an appropriate biological framework for the solution of physical, social, and psychological needs/problems of the elderly. It includes a discussion of the biology of aging and the physiological changes in the body tissues and organ systems that occur with aging.

GERO 6503
Psychological Aspects of Aging. Three (3) credits.

This course is designed to provide a multidisciplinary view of the psychological aspects of the aging process. It provides simulated and real experiences to help the participants understand normal changes, environmentally caused impairment, communication, psychopathology, communicological disorders, and the cognitive process in aging. It also covers special issues such as retirement, sexuality, life styles, depression, medication use, and alcoholism. Special attention is given to the death and dying process and its impact on the family. Problems of aging are presented within the context of the Puerto Rican environment.

GERO 6505
Clinical Aspects of Aging. Three (3) credits. Pre-requisite: GERO 6501.

This course has been designed to provide the students the clinical perspective as a framework for the solution of physical, social, and psychological needs and problems of the elderly. It complements the biological aspects of the aging process. Includes discussion of the most common diseases seen in the elderly, the handling and clearance of drugs, nutrition and oral health of the elderly. Environmental factors which affect the elderly and the self care point of view are also included.

GERO 6507
Social Aspects of Aging. Three (3) credits.

This course is composed of two main topics: Sociology and Demographic and Economic Aspects of Aging. The Demographic Aspects section of the course develops the

competencies related to the demographic and economics of aging. It includes the structure and dynamics of the population, the relation between aging population and the economic, international income transfer,dependency and replacement ratios, economic growth inflation, employment, and others. The Sociology section presents the societal cultural ideology of the aged in Puerto Rico and the United States, with influence in institutionalization of stereotypes and prejudices at the macro level of the society and community and the micro level of the primary group. The institutionalized approach will be explored as it affects the social conditions of the aged and the institutional response to aged in the past, present and future. The social aspects will be seen within an interdisciplinary frame of reference.

GERO 6509
Administrative Aspects of Gerontology. Three (3) credits.

This course is composed of three main study areas which are: Administration, Dentistry and Health Education. Administration: this area of the course is intended to give the students an understanding of the basic principles of administration of services to the senior citizens. In this way the professional can function more effectively in his/her work with the senior population knowing how to deal with the organizations and agencies involved in the problem. It contains four basic components: needs assessment, formulation and implementation of public policy design and functioning of the organization, and decision making. Dentistry: the course also covers basic aspects in the planning and implementation of dental services for the elderly. Health Education: the final part of the course deals with the administrative aspects of Health Education to the senior population, including sociocultural factors, preventive measures and health maintenance.

GERO 6510
Aging and Developmental Disabilities. Three (3) credits. Pre-requisites: GERO 6500, GERO 6501, GERO 6507.

The course is oriented toward the discussion and analysis of basic aspects to be considered in the provision of services to aged individuals with developmental disabilities. Manifestations of aging among individuals with developmental disabilities will be discussed, as well as models and principles for the delivery of services within a holistic, bio-social perspective.

GERO 6511
Interdisciplinary Intervention. Three (3) credits. Pre-requisites: GERO 6501, GERO 6503, GERO 6505, GERO 6507. Co-requisite: GERO 6509.

This course is designed to provide the students the opportunity to practice their theoretical background in a community or institution, to render an effective intervention with the elderly within a team approach. It rests on the application of the knowledge students have gained, the skills they master, and the attitudes and values they have clarified.

Grading System changed since 3rd Trimester 2007-2008 to traditional grade (A,B,C,F), before was graded Passed (P), Not Passed (NP).

GERO 6515
Ethical Issues Related to the Aging Process. Three (3) credits. Pre-requisites: GERO 6500, GERO 6501, GERO 6503, GERO 6507.

Elective course designed for health professions graduate students with interest in Gerontology and ethical issues of health care delivery. The principal purpose is that the student develops a theoretical-conceptual framework and moral reasoning skills to identify, assess critically, and manage effectively ethical issues implied in the attention and health care of the older person. The student will have the opportunity to examine fundamental ethical principles and theories, practice the ethical decision making model, and analyze diverse perspectives in the elderly health care issues. At the end of the course, the student will be able to apply bioethical principles and methods to the solution of cases related with health care delivery in the elderly population.

GERO 6516
Productive Aging. Three (3) credits.

This is an elective course addressed to students of the Master in Public Health with Specialty in Gerontology,

the Graduated Certificate in Gerontology, and master students in the different Health Allied Professions. Through conferences and groups discussion students will have the opportunity to acquire general knowledge related with the different positions about productive aging. The focus of the course will be the existent situation in United States. Equally, in the measure that is possible, the existent situation will be presented in Puerto Rico. Through literature research, group discussions, and presentations, the student will be able to argue the concerning matters with the social and economic role of people of advanced age in United States and Puerto Rico.

GERO 6518
Public Health Practice in Gerontology. Two (2) credits.

These practices will enable the students to investigate deeper in areas of interest and needs in the field of Gerontology. Students who come into the course with previous experience in working with the elderly are assisted in selecting placements that will broaden their background in the field. The purpose in the field placement is to give students practical experiences in working with the elderly or in administering programs for older people.

GERO 6525
Fundamentals in Gerontological Research. Three (3) credits. Pre-requisites: BIOE 6525 and a graduate level Gerontology course (GERO 6005 or GERO 6500 or GERO 6501).

This is an elective course, addressed to students of the Master in Public Health with Specialty in Gerontology, master students of the different Allied Professions to the Health, and other interested students that fulfill the established prerequisites. The course is an introduction to research in which students will have the opportunity to acquire general knowledge related with different variants of quantitative and qualitative investigation. Through conferences, group discussions, and practical exercises, existent methodologies of statistical analysis and guidelines for criticism investigation studies will be discussed. Equally it is expected that the student applies the steps to develop a pre-proposal in the Gerontology area.

GERO 6990
Special Topics in Gerontology. One to four (1-4) credit(s).

Special elective course for the analysis or research of issues and problems related to the aging process and the aged from a Public Health perspective. May include seminars, reports, readings, workshops and field work among others. At the end of the course the student will have a profound knowledge of the topic selected and will be able to integrate the acquired concepts and apply them to real life situations. The course will be self-directed.

MANI 6005
Maternal and Child Concepts and Strategies. Five (5) credits.

This is a basic MCH course, designed to analyze the determinant factors and particular problems which may affect the health of the mother and child during its growth and development. For each problem discussed, the etiology, risk manifestations, precipitant factors, and a plan of action for prevention and management are analyzed. The student will develop appropriate criteria to identify needs to be satisfied in order to promote optimum health status of the MCH population. The course deals with the application of the technical tools of health planning needs for the development and organization of MCH programs. The student will carry out an assessment of the maternal and child health of an specific region or community. Priorities will be ranked and recommendations will be issued for the improvement and organization of maternal and child health.

MANI 6055
Legislation in Maternal and Child Health. One (1) credit.

This course offered the student the opportunity to become acquainted with the trends and process by which the MCH programs have developed in the United States and Puerto Rico. The most important and basic MCH legislation (federal/commonwealth) are analyzed. The intervention support and advocacy for promoting, regulating, formulation of new legislation and the establishment of public policy are considered and fully discussed.

MANI 6056
Programs and Services for the Handicapped Child. Two (2) credits.

This course will cover the health and social needs of the handicapped child and its implications for the planning, organizing, and implementing of comprehensive programs to meet those needs. Special attention will be given to the concept of comprehensive care.

MANI 6057
The Health of the School-Aged Child. Two (2) credits.

This course is designed to study the physical, mental, and social development of the child from conception to adolescence. Special emphasis is given to the characteristics, needs, and problems of the school-aged child, with particular consideration to those which may present obstacles to learning processes.

MANI 6525
Human Genetics. Two (2) credits.

This course is designed to provide an integrated view on genetic disorders of mayor Public Health importance. The preventive aspects as well as services and resources needs to meet the needs and demands of the population at risk and affected is discussed in detail. Such topics as Development of Screening Programs, Prenatal Diagnosis, Genetic Effect of Environmental Agents and Genetic Engineering and Legal Implications of Genetics are discussed.

MANI 6535
Family Care in Health Services. Three (3) credits.

In this course the student is introduced to the significance of a full understanding of the socio-economic and cultural variables affecting the family for developing adequate strategies for meeting its health needs. The importance of the family as the basic social unit is stressed. The students develop the necessary skills for the utilization of analytical methods, such as the epidemiological approach, in order to study the family in the community and the health problems that affect the family as a whole. The basic aspects of health care oriented to the family are analyzed, as well as the family's behavior towards health and health care. The students acquire the basic knowledge for a comprehensive intervention in family health.

MANI 6536
Research in Maternal and Child Health. Four (4) credits.

This course has been elaborated to provide the students with the necessary information to design and carry out a research project in different areas of health services available to mothers and children, with the aim of improving the provision of these services. This is a combined effort with the Department of Epidemiology and Biostatistics. The course has been divided in three phases:
a) General principles of research methodology: conceptualization, planning and development of a research design. Department of Biostatistics and MCH program-six sessions.
b) Classroom presentation of health problems of national prominence and local relevance in the field of maternal and child health, and suggested research topics that would improve the quality of maternal and child health programs. Development of proposal-six sessions.
c) Supervised field practice in areas of particular interest related to maternal and child health problems, as they concern the researcher - one hundred eight hours.

MANI 6537
Integral and Comprehensive Care. Eight (8) credits.

This course addresses the most important and basic issues in maternal and child health and its implications for the planning, organization, and delivery of comprehensive health services. Policies, legislation, regulations, and standards which guide and determine the provision of these health services are carefully examined. The course is divided into several units:
Unit I - Is an introductory unit to the course where the following topics are discussed: Health Situation of Mothers and Children in P.R., The Objectives and the Essential Elements of Care of an MCH Program; Standards and Guidelines of Care; The Delivery of Health Services as the Model of Care Being Implemented in P.R.
Unit II - Makes emphasis on the women in our contemporary society and the effects of her expectations on Health Care System.

Unit III - Enters into the study of human life cycle and Public Health: growth and development and its implications for organization of MCH programs and services.

MANI 6541
Population and Family Planning. Three (3) credits.

This course focuses on population factors and their relation to socio-economic and health aspects. The course emphasized the formulation of population policies as an integral part of a country's plans for development. It discusses family planning concepts, philosophy, and methodology. The strategy to facilitate the development and provision of family planning services, the planning, organizational management, and the evaluation aspects are fully discussed.

MANI 6551
Human Sexuality and Health. Zero (0) credits.

The course is designed to provide a comprehensive approach to the study of human sexuality and its relation to individual and community health.

MANI 6570
Seminar on Maternal and Child Health Services in Developing Countries. Two (2) credits.

The course discussed objectives and strategies of the different models of MCH care at primary level. Emphasis is given to the community organization, responsibilities and function of the human resources in health, from the point of view of Public Health. Studies the problems and relationship of factors affecting the health status of at risk population.

MEDU 6500
Core Course in Public Health. Six to eight (6-8) credits.

All candidates for a master's degree in the School of Public Health are required to take this core course. It provides a core content in Demography, Biostatistics, Epidemiology, Social Sciences, Nutrition, Public Health, and Health Education as applied to health and disease. The course is presented in four sub stages: Man Interactive with his Environment, Instruments of Measure and Diagnosis, Health Problems, and Strategies and Techniques of Intervention. The course have four objectives: perceive the human being as a bio-psycho-social individual. Recognize the mayor epidemiological concepts and methods used to diagnose health problems, identify services related to epidemiological vigilance and health education, and the identification of basic biostatistics methods as they related to the health fields.

NUTR 6521
Biochemistry and Nutrition I. Two (2) credits.

The course presents basic concepts of the chemistry and metabolism of macro and micronutrients by means of lectures, presentations and readings. The student is expected to understand basic concepts of biochemistry and its relation to nutrition.

NUTR 6523
Biochemistry and Nutrition II. Two (2) credits. Pre-requisite: NUTR 6521.

The course presents more advanced concepts of the biochemistry and metabolism of macro and micronutrients by means of lectures, presentations and readings. The student is expected to understand more advanced concepts of biochemistry and its relation to nutrition.

NUTR 6528
Seminar in Public Health Nutrition. Two (2) credits.

This course is offered to students participating in the Nutrition Program. It is opened to doctors nutritionists, dentists, and students who have knowledge in Biology, Physiology, and Chemistry. An specific problems related to nutrition in Public Health. Emphasis is given to existing knowledge that will contribute to the solution of such problems. The participation of the nutritionist in the solution of such problems is discussed. The students are expected to get involved in library research, and be ready for the discussion analysis and presentation of a nutritional problem in Public Health. No pre-requisite.

NUTR 6529
Planning Public Health Nutrition Programs. Two (2) credits.

NUTR 6530
Biochemistry and Nutrition. Four (4) credits.

This course is concerned with digestion and absorption, chemistry and metabolism of carbohydrates, lipids, proteins and nucleic acids, inorganic metabolism (including acid-base, water, and electrolyte balance), biological oxidation, hormones, vitamins, enzymes and their properties, chemistry of body fluids, physico-chemical topics and chemical composition of fluids.

NUTR 6531
Human Nutrition. Five (5) credits.

This course provides basic information on nutrition, and emphasis is placed on an integrated approach to the application of the principles of biology and chemistry to the utilization of the various nutrients. The course deals not only with the nutrition of the cell, but nutrition of the individual as a whole, and also of nutrition of man in his society.

NUTR 6533
Nutrition in Public Health. Five (5) credits.

The purpose of this course is to study community problems and develop a problem that will provide solutions for them. This course includes the relation between nutrition and the environmental factors (social, economic, agricultural) as well as other factors that affect the dietary ingestion of different population groups. It includes topics such as planning food and nutrition policies, as well as nutritional surveillance system.

NUTR 6534
Clinical Nutrition and Diet Therapy. Four (4) credits.

This course includes the biochemical, physiological, and nutritional basis for therapeutic treatment of various conditions and diseases in man by dietary means, special emphasis is given to the nutritional aspects of those diseases which constitute public health problems, such as obesity, cardiovascular diseases, cancer, mental diseases, including drug addiction and alcoholism.

NUTR 6535
Research Project. Six (6) credits.

Individual work, under direction, for students at the master's level. Students plan and execute a research project and apply basic techniques of scientific investigation. These include: design, sampling, direct observation, interviews and questionnaires. The students are required to present the thesis in written and oral form.

NUTR 6536
Food Technology. Two (2) credits.

Elements of food technology.

NUTR 6537
International Food Supply. Three (3) credits.

Review of the world wide aspects of agriculture that are related to the need and the supply of essential foods for the world population. Production, marketing, distribution, and economic factors are considered.

NUTR 6538
Evaluation of Nutritional Status. Four to five (4-5) credits.

The course includes the study of the methodology of nutritional surveys. It includes the indirect methods using statistical and demographic data and places special emphasis on the direct method using dietetic, clinical, and biochemical information. At the end of the course, each student presents an oral and a written nutritional survey of a country summarizing data and providing a critical analysis of the methodology used.

NUTR 6539
Nutrition Health Mother and Child. Two (2) credits.

This course has been designed for the in-depth study of modern nutritional concepts, as are related to growth and development. It includes the discussion and analysis of nutrition problems which may be present at the different stages of growth and development, such as: prenatal, infant, pre-school, school and adolescent periods.

NUTR 6540
Laboratory Techniques for Nutritional Investigation. Three (3) credits.

Through lectures, discussions, laboratory work and tutorial instruction, principles and practices of modern experimental animal research techniques are learned. The student may simultaneously participate in a variety of ongoing research projects involving animal or mammalian cell cultures.

NUTR 6550
Human Nutrition in Clinical Medicine. Zero (0) credits. Pre-requisite: Third Year of Medicine.

This course provides the medical student an opportunity to learn the role of nutrition in medical practice. It also equips the student with information on nutrition therapy and case studies in which nutritional factors are an important consideration. Five commonly prescribed modified diets provide a focal point for discussion of specific areas of nutrition: calorie control, hyper alimentation, low fat, low sodium and fiber diet.

NUTR 6551
Nutrition in Growth and Development. Zero (0) credits.

This course will provide the student with learning experiences in general aspects of human growth development. The interrelationship of genetic and environmental factors that determine human growth.

NUTR 6552
Nutrition in Public Health. Zero (0) credits.

This course provides the medical student the opportunity to learn the role of nutrition in the different stages of the life cycle and the methods used to evaluate the nutritional status at the individual and community level. It also helps to integrate this knowledge with other aspects of medical practice.

NUTR 6555
Quality of Life and Nutrition of Persons Fifty Years and Over. Two (2) credits. Pre-requisites: NUTR 6531, MEDU 6500.

This course takes into consideration the epidemiological and nutritional changes occurring in Puerto Rico during the last years which reflect needs mainly by the increasing population over fifty years of age. Nutritional, health and demographic changes and their relationship to basic needs will be addressed. Also will be discussed theories that explain anatomical and physiological modifications that accompany the aging process. The course is complemented with an analysis of nutritional habits and tendencies, nutritional needs specific to the group of interest and a description of the interrelationship between drugs and nutrients that mostly affects the elderly population. The course is offered to students of the Nutrition Program, Graduate School of Public Health. This course is given by means of lectures and group discussions, supported by visual aids. At the end of the course the student will be able to recognize and identify sociodemographic, nutritional, physiological and basic needs changes in population over fifty years old. Also it is expected that the students will be able to apply the concepts discussed in the course in activities and services directed to this population.

NUTR 6560
Planning of Nutrition Program. Two (2) credits. Pre-requisites: BIOE 6525, EPID 6523, MEDU 6500, NUTR 6531. Co-requisites: NUTR 6533, NUTR 6538.

This course presents the evolution of concepts and levels of planning with emphasis on their application to nutritional programs principles and criteria involved in identifying field situations. Priorities of nutritional problems considering political, operative and technical problems will be addressed. The process of establishing objectives that respond to specific needs will be discussed. Administrative and functional aspects of identified projects and program will be addressed in order to reach the establish goals. It will identify the components of the nutritional strategies, to consider the different food and nutrition situations, and the most appropriate criteria to make the choice. The course is offered to students of the Nutrition Program, Graduate School of Public Health. This course is given by means

of lectures and group discussions, supported with visual aids. At the end of the course the student will have the planning knowledge to use the principles and criteria needed to define nutritional situations and problems, to establish food and nutrition policies, plans and projects. The student will be able to apply the concepts and principles to real life situations.

SAAM 6005
Environmental Chemistry. Three (3) credits.

The course reviews the physical and chemical processes that affect the transport and fate of pollutants in the environment. The sources, distribution, and transformations of these contaminants will be discussed, as well as the main chemical reactions involved in these processes. Specific examples from the literature and from current environmental issues in Puerto Rico will be included in the discussions. Additionally, mathematical problems will be used in order to quantitatively analyze these processes. At the end of the course, the students will be able to apply and integrate the concepts learned on environmental chemistry in the search of solutions to environmental and human health problems.

SAAM 6524
Occupational Health Principles. Three (3) credits.

Basic principles of Occupational Health in the community, emphasizing the prevention and control of work accidents and illness. The following topics are included: Adverse Health Effect from Exposure to Excessive Noise, Vibration, Extremes of Temperatures, Radiations, and Chemicals. The epidemiologic aspects of work accidents are covered. Techniques for organizing and developing occupational health programs are discussed. Emphasis is placed on legal requirements under OSHA.

SAAM 6526
Principles Industrial Ergonomics. Three (3) credits. Pre-requisite: SAAM 6524.

The course will focus on the discussion of the ergonomic risks and their impact on employee well-being. The contemporary application of ergonomic as part of any industrial process will be presented. The student will analyze the human bio-mechanics model as it pertains to ergonomics. The anthropometric principles will be discussed. The most common musculoeskeletal disorders related to poor ergonomic practices will be presented. The ergonomic risk factors and optimal workstation characteristics will be analyzed. Special attention will be given to material handling techniques. The evaluation and control techniques to manage ergonomics in the workplace will be discussed during classroom lectures and supplemented with practical exercises. The medical management of musculoeskeletal disorders will be illustrated.

SAAM 6527
Principles of Environmental Sciences. Three (3) credits.

The ecological principles such as natural cycles of various vital elements, energy flow, and energetic resources. The basic fundamental pollution problems will also be studied specially for the air, water, and soil environment: as well as the pollution control methods available to control such pollution problems. The student will also be expose to environmental problems from the work environment, industrial safety and hygiene, laws and regulations and other problems, waste management in residential areas will also be covered. Food production will be studied.

SAAM 6528
Principles of Environmental Health. Three (3) credits.

Environmental health designed for physicians, health educators, nurses, health services administrator, and other members of the public health team. Emphasis is given to the external ecological universe with its biological , physical, and social components and to the adjustment and control of the external factors to promote man's health and well-being. Air, food, housing, waste disposal, insects, rodents, accidents, and the physical forces of heat, light, noise, and ionizing radiation are considered.

SAAM 6529
Seminar on Environmental Health. One (1) credit.

Actual problems related to environmental pollution and control, reading, and reports on recent advances in environmental health.

SAAM 6530
Environmental Planning. Four (4) credits. Pre-requisites: MEDU 6500, SAAM 6527 or SAAM 6528.

Techniques used for planning projects, land use, and resource use compatible with environmental health will be studied. It includes a practical application of the planning theory discussed in the course.

SAAM 6531
Water Environment. Four (4) credits.

The environmental and ecological considerations of water use and its problems. Special consideration to the tropical water systems. Mayor topics include the water cycle, stream and lakes, and coastal waters.

SAAM 6533
Environmental Radiation. Four (4) credits.

The environmental health aspects of nuclear radiation. Evaluation of the significance of the uses of nuclear energy. Medical and industrial uses of radionuclides in relation to environmental processes. Methods of control of radionuclides in the environment. Considerations of biological uptake and movement of the radionuclides in the environment. Rationale of regulatory standards for air, water, milk, and their limitations.

SAAM 6534
Air Pollution. Four (4) credits.

The atmospheric thermodynamics, Gaussian Plume Model, motion of pollutants in the atmosphere, source sampling, removal of pollutants, and other control practices.

SAAM 6535
Environmental Toxicology. Four (4) credits.

The effect of environmental stress on human physiology. The mechanism of product of diseases through toxic materials in air, in food, and in water. Dynamics of toxic substances on individuals populations and communities of organism in an ecological context.

SAAM 6536
Readings in Environmental Health. Two (2) credits.

Supervised readings and discussions of selected problems in various aspects of Environmental Health.

SAAM 6537
Readings in Environmental Health. Three (3) credits.

Supervised readings and discussions of selected problems in various aspects of Environmental Health.

SAAM 6538
Readings in Environmental Health. Four (4) credits.

Supervised readings and discussions of selected problems in various aspects of Environmental Health.

SAAM 6539
Computer System Applied to Environmental Health. Four (4) credits.

Techniques of system analysis and mathematical modeling for formulating and solving problems of environmental interest. An introduction to Fortran programming, linear, and nonlinear programming and other techniques and tools used in system analysis.

SAAM 6540
Solid Wastes Management. Three (3) credits.

It includes topics on solid wastes environmental pollution and its control, reuse of resources, possible solutions to the problems and some aspects of environmental planning.

SAAM 6541
Laws and Environmental Health Protection. Three (3) credits.

An examination of the laws of environmental quality of resources use and development and of Environmental Health, their administration, and underlying policies. Regulatory aspects of pollution control programs, of Public Health nuisances, and other environmental health aspects.

SAAM 6542
Accident Prevention. Four (4) credits.

The epidemiological evaluation of industrial home and traffic accidents. Legislation of safety programs including hazard recognition. Analysis and control.

SAAM 6543
Industrial Hygiene. Four (4) credits.

Basic concepts of Industrial Hygiene. The relation between health, safety, and well being of the employees in relation to the working environment. The industrial and government services dealing with these problems is studied.

SAAM 6544
Radiological Health. Four (4) credits.

Radiation physics, radiochemistry, radiobiology, and radiation detection. Emphasis on methods of protection against radiation hazards on occupational and other environmental aspects. Control and disposal of radioactive wastes, legal aspects, and administration of Radiological Health Programs.

SAAM 6545
Food Hygiene. Four (4) credits.

The sanitation of food production, processing, and distribution. Both the chemical and biological aspects of sanitation are considered. The Public Health supervision of milk and food supplies with special reference to the evaluation of current standards, laboratory methodology, equipment, and technical problems in food processing, inspections, and control policies, enforcement education and motivation.

SAAM 6546
Occupational Medicine. Three (3) credits.

It includes the study of physician responsibilities under OSHA, the prevention of occupational health hazard, and the diagnosis and management of the most common occupational diseases. Emphasis is given to the development of skills in Toxicology and Epidemiology which are applicable to Occupational Health Programs. Medical monitoring techniques are discussed in conjunction with the physical examination program. Basic administrative aspects including the design and equipment of a medical department are discussed. The study of the Health Care System for handling occupational injuries and illnesses in Puerto Rico is covered.

SAAM 6547
Basic Principles in Occupational Safety. Four (4) credits.

This course offers the student the opportunity to develop his knowledge of the occupational safety field. The course includes the study of the laws dealing with health and safety in the United States and Puerto Rico. The origin and development of safety practices will be discussed and the terminology used in the accident prevention and accident investigation field will be analyzed. During the course, the importance of compilation of data in occupational safety and their statistical analysis will be stressed. Visits to working areas will be programmed so that the students can apply concepts learned in the course. Particular emphasis during the visits will be offered to risk determination, corrective procedures, fine prevention, and inspection of work surfaces.

SAAM 6548
Industrial Hygiene Laboratory. Four (4) credits.

This course will offer the student the opportunity to learn the theoretical basis of operation of industrial hygiene instruments, their calibration and use. The emphasis will be upon the importance of calibration, the sampling techniques and the statistical analysis of sampling data. This course is a must for students who desire a concentration of courses in Occupational Health. Only ten (10) students will be accepted per trimester per section in order to optimize the use of available equipment and increment communication.

SAAM 6549
Occupational Health for Nursing Personnel. Four (4) credits.

This course will offer the student nurses, and nurses already working in industries the opportunity to improve knowledge and develop skills in the application of nursing principles in Occupational Health. The basics concepts of Occupational Health are the base to introduce the nurse in this specialized field. Principles of industry hygiene, safety

and accident prevention are covered. The legal aspects and requirements under OSHA with emphasis on nurse's responsibilities are prevented. Emphasis is placed on the application of the nursing process to the Occupational Health Programs specially in the implementation of nursing services. The wide scope of occupational health nurse role covered, like administrative tasks, counseling, and health education.

SAAM 6550
Basic Principles in Occupational Safety II. Four (4) credits.

During this course the student studies the justification for the development of health and safety program. The activities, functions, and budget of such program will be discussed. The guidelines related to the control of the physical environment, accident prevention, fire extinguishing, and traffic safety will be examined and practiced. Visits will be performed to work places with the purpose of determining violations to the safety regulations and to establish corrective procedures.

SAAM 6551
Occupational Medicine. Three (3) credits.

Includes study of physician's responsibilities under OSHA and OSHO, occupational health hazards and diagnosis, and management of most common occupational disease in Puerto Rico. Emphasis in Toxicology and Epidemiology. Biological monitoring of employees, administration of program and Occupational Health Care Delivery Systems in Puerto Rico are covered.

SAAM 6555
Introduction to Hydrology. Four (4) credits.

The course provides an overview of applied Hydrology following case studies in Puerto Rico. It includes topics on Meteorology, Geology, Surface Waters, Floods, Low Flows, Water Quality, Limnology, Ground Water Hydraulics, Aquifers, Water Resources Management, and Water Law.

SAAM 6565
Control of Occupational Health Hazards. Three (3) credits.

Principles and application of different methods and technology for controlling health hazards at work places.

SAAM 6566
Field Studies of the Workplace. Two (2) credits. Pre-requisites: SAAM 6543, SAAM 6547, SAAM 6548, SAAM 6565.

This course consists of various field trips to different workplaces and discussions where students will be able to familiarize with specific industrial processes or activities and their associated health hazards. The student will analyze these workplaces based on the principles of anticipation, recognition, evaluation, and control of occupational hazards. Visits will include different workplaces that represent different occupational health hazards such as noise, chemical, ergonomics, biological, and radiation. Students will present a written report of their findings and analysis.

SAAM 6600
Domestic and Industrial Wastes. Four (4) credits.

The basic physical, chemical, and biological principles used in sewage treatment. The mayor treatment systems are presented and analyzed. Federal and state water pollution control laws are studied. Other mayor topics included are Sewage and Industrial Wastes Sampling and Analysis, Tertiary Treatment, and others. The Water Environment is a prerequisite.

SAAM 6601
Water Pollution Control. Four (4) credits.

Specific water pollution control methods and techniques. Principal topics include: Water Bacteriology; Effects of the Aquatic Community on the Nutrient Cycles; Mathematical Models of Water Pollution and Controls; Stream and Coastal Water Pollution Control, and others, The Water Environment, Domestic and Industrial Waste Treatment and Potable Water are prerequisites.

SAAM 6602
Potable Water Treatment. Four (4) credits.

The Basic Principles of Water Treatment, Reservoir and Water Resources Management, and Potable Water Distribution Systems are included among the top topics. Potable water laws and regulations are studied, both of state and United States level.

SAAM 6603
Water Chemistry. Four (4) credits.

The Effects of Chemical Composition of Stream and Subsurface Water on the Ecology of Water System, The Various Reactions which commonly take place in Water Systems, The Limitations on Uses Imposed by Chemical Substances Dissolved in Water, Equilibrium Reactions of the Most Important Ions and The Chemical Composition of Natural Waters are the mayor topics in this course.

SAAM 6604
Water Pollution Contamination. Four (4) credits.

Sources of air pollution and effects, control measures, the organization of community control programs. Regulatory aspects and standards are discussed.

SAAM 6605
Meteorology in Air Pollution. Four (4) credits.

Effects upon the dispersion of air pollutants due to meteorologic changes. Mathematical models describing the concentration of pollutants as a function of source strength and meteorological changes will be used.

SAAM 6606
Sampling and Analysis in Air Pollution. Three (3) credits.

The theory and application of the analysis of samples, calibration of equipments and site selection, calibration, and use of direct reading instruments.

SAAM 6607
Food Processing. Three (3) credits.

Detailed study of product development including packaging, waste disposal, plant layout, cost estimation and analysis using the case study approach. Classes include guest lectures from industry and public agencies.

SAAM 6608
Food Establishment Sanitation. Three (3) credits.

Principles and practices in the supervision of foods. Emphasis on equipment and techniques for the preparation, preservation , and storage. Special attention is given to the inspection of food vending establishments.

SAAM 6609
Milk and Milk Products Hygiene. Three (3) credits.

Principles and practices in the sanitation supervision of the production, manipulation, pasteurization and transportation of milk and milk products. Includes regulations, inspections and control measures, their application legal and education aspects.

SAAM 6610
Radiation Biology. Four (4) credits.

A general course in Radiation Biology designed to acquaint the student with the effects of radiation on living matter including elementary forms of life and higher organisms as well, dose-effect relationship, target theory, and linear energy transfer temperature, and oxygen effect. Biological effects of radiation on a mammal or human from the physiological and pathological point of view. Special emphasis is placed on dose-effect relationship, effects due to acute and chronic exposures, radiation, sickness and late effects, etc.

SAAM 6611
Radiochemistry. Four (4) credits.

Natural radioactivity, laws of radioactive decay, and cosmic radiation are discussed. Special emphasis is placed on environmental sampling and low level counting techniques. Radio assays of air, water, soil, vegetation and milk samples are included.

SAAM 6612
Radiation Dosimetry. Four (4) credits.

The theory, methods, and techniques applied to measure radiation doses are discussed. Special emphasis is placed on the measurements of absorbed dose. All types of sources producting radiation are included. The course is

designed to familiarize the student with the different kinds of known dosimeters and their applications.

SAAM 6613
Radio Pharmacy. Four (4) credits.

SAAM 6614
Nuclear Reactor Technology and Safety. Four (4) credits.

A course intended to acquaint the student with present reactor development. Fission and chain reactions, elements of reactor design, utilization of nuclear energy for power, and radiation problems are included. The student is acquainted with the fundamental in the controlling of the nuclear chain reaction. Special circuits and safety devices are emphasized. The course includes visits to nuclear reactors.

SAAM 6615
Nuclear Instrumentation. Four (4) credits.

This course is designed to familiarize the student with the principles, methods, and practices of radiation detection. Emphasis is placed on the physics of counters (gas filled detectors, scintillation detectors, solid state detectors) and their applications in detecting Alpha, Beta, Gamma, and neutron radiations.

SAAM 6617
Statistical Methods for Environmental Sampling and Data Analysis. Four (4) credits. Pre-requisites: BIOE 6525, SAAM 6528, SAAM 6531 or SAAM 6534.

The course will discuss statistical sampling designs for environmental pollutions and a wide variety of statistical procedures for analyzing environmental data including methods for handling correlated data for detecting hot spots, for estimating confidence intervals for quantiles, and the methods of time series analysis.

SAAM 6618
Principles of Environmental Geology. Four (4) credits.

The geologic characteristics of soils and (geologic) structures will be studied and analyzed in this course mostly through conferences. Natural (geologic) phenomena, and man action's impacts on the environment as per its effects on geologic processes will also be studied. The students will learn to use, read, and interpret topographic and geological maps. The student will also learn to use aerial photographs as tools in environmental geology.

SAAM 6619
Geographical Information Systems Applied to Environmental Health. Three (3) credits. Pre-requisite: MEDU 6500.

The primary purpose of this course is to provide the students of Public Health a basic working understanding of various geographic information systems (GIS) and their utility to conduct environmental health studies. It will provide an in depth appreciation on how to employ these systems to analyze social, environmental, and health information from an spatial and locational perspective. Upon completion of the course students will be able to prepare maps and employ aerial and satellite images in a variety of environmental health applications. The student will develop basic skills in the utilization of one of the most popular and available GIS software (ATLAS, ARCVIEW, ARCINFO). The course material will be conducted through conferences and computer exercises.

SAAM 6625
Special Topics in Environmental Health. Three (3) credits.

Selected problems in the field of environmental pollution are discussed. Such ambients as air, water, and soil will be considered. Problems associated with housing, solid wastes, insects, rodents, and physical risks will be discussed. Special emphasis will be given to the role of education in the control of these problems.

SAAM 6626
Laboratory Practices for the Analysis of Environmental Samples. Three (3) credits.

The objective of the course is to develop laboratory skills in the Environmental Health students for practices in methods for the analysis of chemical, physical and bacteriological parameters of water, air, foods, and others environmental samples.

SAAM 6627
Principles of Industrial Hygiene. Three (3) credits.

The course will be offered to students of the Graduate School of Public Health who desire to obtain a general knowledge of Industrial Hygiene. The basic concepts of Industrial Hygiene will be established with particular interest in instrumentation. The following topics are covered: Concepts of Toxicology, Permissible Levels of Exposure, Concepts of Industrial Hygiene, and the topic Occupational Safety is introduced. Hospital health and safety is covered in certain detail.

SAAM 6635
Introduction to Environmental Microbiology and Parasitology. Five (5) credits.

Through conferences and class discussions the Environmental Health students will study the relevant aspects of the environmental microbiology and the parasitology. They will apply this knowledge in the control of the environmental contamination and the promotion of a better health.

SAAM 6695
Research Project. Six (6) credits.

Research project dealing with a problem in Environmental Health.

SAAM 6696
Industrial Hygiene Internship. Six (6) credits. Pre-requisites: SAAM 6543, SAAM 6547, SAAM 6548, SAAM 6565.

Students will spend three months (one quarter) in a field placement in industry, business company or a government agency. This practice will consist of one of the following alternatives: (1) active participation in the practice of Industrial Hygiene, (2) implementation of a practical study to solve an Industrial Hygiene problem, or (3) design of an Industrial Hygiene program for the selected site. Students will select the site of the internship with the advice of the faculty of the Industrial Hygiene Program. It is expected that at the end of the internship the student has integrated the knowledge and skills for the anticipation, recognition, evaluation and control of occupational health hazards.

SAAM 8005
Fundamentals of Environmental Health. Three (3) credits.

The course Fundamentals of Environmental Health has been designed for doctoral students, without a major in Environmental Health with emphasis in Puerto Rico. The course will be conducted by mean of general discussion of topics, case studies, and current issues in Environmental Health as well as problem solutions. It is expected the participation of the students in the discussion and it will gear around the water environment, air, soil pollution, and food hygiene from a public point of view.

SAAM 8006
Environmental Physical Hazards. Three (3) credits.

The course is focused on the study of theories and principles of physics which apply to radiation, ionizing and non-ionizing. Those physical environmental risks such as electromagnetic waves will be studied. Emphasis will be given to radio frequency, sound, temperature, ultraviolet radiation, infrared and lasers. The biological effects and the applicable regulations to these risks within the context of Public Health will also be studied.

SAAM 8007
Water Pollution. Three (3) credits.

This course examines the physics and chemistry of water from a Natural Sciences and processes point of view. It analyzes the transport of contaminants in surface water and the hydrogeology of groundwater in order to determine the best solution for the specific pollution problems of an area. Water quality modeling is used in order to gain a better understanding of the reasons behind the actual implementation of the Puerto Rico water quality standards. Priority is given to the study of the contamination of surface waters, drinking water, and wastewater, both from domestic as well as from industrial sources and its effects on Public Health.

SAAM 8008
Meteorology and Atmospheric Contamination. Three (3) credits.

The course will present the mathematical models for the dispersion of atmospheric contaminants in the air as

well as related meteorological phenomena. The chemical reactions in the atmosphere due to the concentration of certain contaminants will be given to the legislation, regulation, and applicable technology to pollution control of the air with the purpose of protecting Public Health.

SAAM 8009
Hazardous Waste Management. Three (3) credits.

The course is focused specifically on the study of toxic chemical substances, which are generated and release into the environment as hazardous waste. The course will start by discussing the definition, origin, classification, and regulation of hazardous wastes. Methods utilized in the remedial process of hazardous waste such as management, treatment, monitoring, and health risk assessment will be later discussed. The students are expected to apply knowledge and skills learned, to determine approach, prevention, and solution to hazardous waste problems.

SAAM 8010
Environmental Instrumental Analysis. Three (3) credits.

The course presents theoretical and practical aspects of sampling and analysis of water, air, and soil contaminants. It consists of the discussion of the methodologies used for the monitoring and analysis of environmental agents, laboratory exercises and field studies. Analytical techniques such as UV and visible spectrophotometry, atomic absorption, GC, GC-MS will be included in the course.

SAAM 8015
Global Environment, Health, and International Law. Three (3) credits.

The course has the primary purpose to develop the philosophic, social, and scientific knowledge base and to facilitate the identification, analysis and solution of the global environmental changes currently threatening the planet earth. The course enables students to analyze social, legal, environmental and health information related to global warming, extraordinary climatic changes, destruction of the ozone layer, acid rain, deforestation, desertification, extinction of species, rise of sea level, contamination of the oceans, nuclear activities and the transportation of dangerous waste materials. The course also provides the students with an insight on the impact of these environmental problems on human health within the Caribbean region, particularly in Puerto Rico. Thus, the structure of the course helps the students to develop the capability to integrate global environmental information as part of the decision making process related to Environmental Health at the local as well as regional and international levels.

SAAM 8016
Environmental Policy and Management. Three (3) credits.

The environmental policy of the United States of America and Puerto Rico will be studied. Environmental policy of the global level will be used as a starting point and its effects on Puerto Rico environmental policy will be determined. A panoramical existing model regarding environmental management will be presented as well as how these adjust to particular situations. The student will design a management model for a situation which will be given. This situation could be a development project design, a government policy, or a new regulation or law affecting the environment.

SAAM 8017
Health Risk Assessment. Three (3) credits.

This course is designed for doctoral students from the School of Public Health. The methodology to estimate the health risk from exposure to chemical substances from different environmental sources such as water, air, soil, and food will be discussed. The course covers the Four Essential Steps of Risk Assessment which are: Hazard Identification, Exposure Assessment, Toxicity Assessment, and Risk Characterization. Concepts and techniques learned in class will be applied to case studies involving exposure to environmental chemical substances. It is expected that students use the process of risk assessment to propose actions in the formulation of public policy for the human health protection.

SAAM 8018
Air Quality Management. Three (3) credits.

This course is designed for doctoral students from the School of Public Health. Three very useful and important components in the formulation of public policy and

legislation regarding environmental air quality: (1) fate and transport of atmospheric pollutants, (2) dispersion modeling of contaminants, and (3) exposure assessment of air contaminants, will be discussed. These three components are presented and integrated from the perspective of management and policy of environmental air quality. The course will be offered through lectures, discussions, written exercises, and case studies. It is expected that students apply the knowledge acquired on appropriate air quality management practices.

SAAM 8020
Current Environmental Health Issues. One (1) credit.

This seminar is designed to provide the students in the Public Health Doctorate Program essential scientific and social knowledge and understanding needed to identify, deliberate, analyze, and develop alternative solutions to current, significant, environmental issues and problems of primary interest at the moment. The course provides the means for the student to analyze Environmental and Public Health information related to ethical, technological, social, economic, and implementation strategies considerations associated with environmental issues. The course also addresses all aspects of the most controversial issues and event that impact on Public Health matters. In the beginning of the course current
environmental problems are presented and discussed, then their relationship to Public Health matters are established, and finally, various solutions and implementation strategies are developed.

SAAM 8025
Advanced Topics in Environmental Health. Three (3) credits.

This course consists of one independent work for doctoral students in a particular topic of their interest which was not covered in detail in the regular coursework. The student will review the current literature in a particular area guided by a faculty member. There will be periodic meetings between the student and the professor in charge of the course to discuss the progress of the work. At the end of the course, the student will prepare a written report about the topic studied.

SAAM 8026
Integrated Management of Municipal Solid Waste. Three (3) credits.

This course is designed for doctoral students of Public Health. It is expected to train students in the use of the different options for the integrated management of the municipal solid wastes, and in the prevention of public health risks due to inappropriate management of the mentioned wastes. The discussed topics include: sustainable management of solid wastes, source reduction, reuse, compost production with the organic wastes, solid waste recycling, incineration, sanitary landfill design and operation, federal and state applicable laws and regulations, methodology for performing a non hazardous solid waste composition study, public health risks, in addition to other topics. The course consists of lectures, group discussions and field visits.

SALP 6001
Microcomputer Applications in Public Health I. Three (3) credits.

This course will focus on the development of skills to use microcomputers and application programs as tools to enhance the performance of the Public Health professional. Coverage will include the use of microcomputers and software applications widely used and specific for the health care field.

SALP 6500
Medical Background. Three (3) credits.

Study of the basic principles of structure and functioning of the human organism and of the human organism historical data, causes of disease, disturbance of the circulatory system. Inflammation, immunity and hypersensitivity, infections, parasites, neoplasms, radiation, hereditary diseases, and the medical terminology related to these topics.

SALP 6501
Medical Terminology. Three (3) credits.

Study of the anatomical and physiological principles of the systems of the human organism and of the principal diseases that affects them. Includes the study of the medical terminology related to these systems.

SALP 6520
Public Health Field Laboratory. Six (6) credits.

The students are divided into multidisciplinary teams in order to carry on a health assessment of a community using relevant information such as: morbidity, specific health problems, political, sociocultural, educational, economical, and environmental factors. Using biostatistics and epidemiological technics the students obtain information that is not available in the community. With this information they design a health program and compare it with the current health programs going on in the community. They identify differences and its rational. Finally, the teams make recommendations.

SALP 6546
Legal Aspects of Public Health. Three (3) credits.

This course presents the basic knowledge about political structure and the organization of the governmental system with emphasis on those organisms that are responsible for the implantation, observance, and interpretation of the constitution, law, and bylaws related to health of the country. It also, includes the importance of the law as a tool in the development and implantation of a health program, be it preventive or for the solution of health problems. The course brings to the attention of the student the world health problems, their legal aspects and how the law can help in their solution.

SALP 6583
Applied Quantitative Methods. Three (3) credits.

SALP 6584
Administrative Aspects of Health Programs. Four (4) credits.

This is a course for students of the Environmental Health Program. It is aimed to the analysis and study of the development and content of administration and organization as a discipline and as a process, with emphasis on the latter, as applied to both the governmental and the private sectors, specially to the health industry in general and to environmental health in particular. Basic theories of the administration process as well as its different functions, methods, and techniques will be studied and applied to Environmental Health. Substantive problems in the health services industry from the economist point of view. The characteristics of the marketing of the health services will be examined to determine the necessary public policy to insure its efficiency. Topics related to the micro and macro economics of health such as the demand and supply for health services, its industrial organization, and its introduction to the efficiency. An introduction to the analytical instruments used in the health industry, such as cost-benefit analysis, programming models, prediction, and public policy models will also be discussed.

SALP 6585
General Considerations of Natural Disasters. Three (3) credits.

This course will provide the students general information and knowledge for the preparedness and management of different types of natural disasters. Topics such as: Effects of Disasters in Health, Procedures, and Organizations of Health Systems during Disasters, Epidemiological Surveillance, Preparedness for Disasters Situations, Assistance from External Organizations, will be discussed. The course has been designed for health professionals enrolled in the Master in Public Health Program and the other master programs offered in the school. The course is designed to provide knowledge and skills in handling different types of natural disasters. The student is expected to be able to design an

SALP 6587
Clinical Management of Sexually Transmitted Diseases. Eighty (80) hours.

The course discuss the clinical management of the most common sexually transmitted diseases in Puerto Rico using lectures, demonstrations, and practical instruction.

SALP 8005
Health Promotion and Prevention Models. Two (2) credits.

The purpose of the course is to analyze the principal theoretical models and approaches, and the methods and practical experiences in the field of Public Health and prevention. Emphasis will be given to the study of health promotion movement in the worldwide level. The course analyzes the principal intervention strategies related to the health promotion at the community, institutional, structural and global levels. The course analyzes the tendencies and challenges in the field of health promotion in Puerto Rico.

SALP 8006
Doctoral Internship in Public Health. Zero (0) credits. Pre-requisites: Approve the fundamental, specialty, seminar, and elective courses, and the comprehensive tests of the Doctoral Program.

Professional experience where the students will demonstrate performance according to programmatic expectations. These experiences will take place in different agencies related to community health. Each specialty will select the field practice sites. The internship will consist of a minimum of 800 hours on a full time basis. The experience will last two trimesters.

SALP 8007
Bioethics and Public Health Practice. One (1) credit.

The present course has the teaching objective of sensitize, motivate, and enable health professionals to identify, analyze, and solve bioethical problems that may occur while conducting Public Health research or practice. In addition, the course is designed to help Public Health professionals learn the conceptual skills and abilities needed for the successful decision making related to bioethical issues present in Public Health. Throughout the course, health professionals will acquire the concept and principles of bioethics, will be able to recognize major bioethical issues, and also will familiarize themselves with the ethics involved in Public Health research and practice. Furthermore, it is intended that the health professional will master and apply the bioethical method in decision making related to Public Health issues and value the bioethical commitment present in Public Health. Bioethical issues and problems relevant to the different concentrations within the Public Health Doctoral Program will be selected and discussed in the present course. The bioethical method of decision making will be applied to these issues.

SALP 8015
Doctoral Dissertation in Public Health. Nine (9) credits. Pre-requisites: Courses of First and Second Year, comprehensive test, internship.

The purpose of this course is to enable the student to develop or acquire such knowledge, skills, and attitudes as required for the development and implementation of a research project proposal that will result in improvements in Public Health practices, in his or her area of specialization. Each student will provide an oral presentation of the project and will actively participate in the conduct of the study, under the supervision of a doctoral dissertation committee. As a minimum, this committee will be constituted by one department faculty member (president), a statistician (if required), a specialist in the subject matter, and two reviewers. The course includes individual and group meetings and discussions with the dissertation committee, independent research and preparation of written materials.

SALP 8025
Leadership Seminar. One (1) credit.

The purpose of the course is to analyze the principal leadership theoretical models and approaches and the application in the field of Public Health. The course analyzes the meaning of leadership in term of personal and professional development; and the social contribution of leadership in fostering the health services in Puerto Rico. The course includes practical experiences; public presentations, negotiation methods, development of proposals, and other strategies.

SALP 8105
Research in Public Health. Three (3) credits. Pre-requisites: BIOE 8005,
EPID 8002.

This course aims to increase the student's skills and research knowledge to enable them to write their research project proposal. The requirements of the proposal are examined. The themes of problem conceptualization, research design, date-gathering techniques and data analysis are emphasized. The student will explore their topic of interest and will conduct a literature review, identification of the research design and methodology appropriate to their research problem. This course is structured as to allow students the opportunity to present their work and obtain feedback.

BIOSOCIAL SCIENCES AND GRADUATE SCHOOL OF PUBLIC HEALTH

FACULTY

ALBIZU-GARCÍA, CARMEN - Department of Health Services Administration; Professor; BA, University of Wisconsin, 1966; MD, University of Puerto Rico - Medical Sciences Campus, 1975.

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GORRÍN-PERALTA, JOSÉ J. - Department of Human Development; Professor; BA, Georgetown University, 1963; MD, University of Puerto Rico - Medical Sciences Campus, 1967; FACOG, Fellow - American College of Obstetricians and Gynecologists. MPH, University of Puerto Rico - Medical Sciences Campus, 1977.

HERNÁNDEZ-RODRÍGUEZ, HEIDI S. – Department of Human Development; Instructor; BSN, Adventist University of Las Antillas, Puerto Rico, 1983; Certificate in Childbirth Educator II, 1992; MPH, University of Puerto Rico - Medical Sciences Campus, 2000; Certificate Lactation Educator (CLE), University of Puerto Rico - Medical Sciences Campus, 1999.

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NEGRÓN-MARTÍNEZ, EDNA - Department of Environmental Health; Associate Professor; BS MT, University of Puerto Rico - Río Piedras Campus, 1969; MS, University of Puerto Rico - Medical Sciences Campus, 1990; EdD, Interamerican University of Puerto Rico, 2001.

NORAT-RAMÍREZ, JOSÉ A. - Department of Environmental Health; Professor; BS, Cornell University, 1975; JD, University of Puerto Rico - Río Piedras Campus, 1978; MS, Cornell University, 1982; PhD, University of Michigan, 1989.

OLIVER-VÁZQUEZ, MARLÉN - Department of Human Development; Professor; BA, University of Puerto Rico - Río Piedras Campus, 1973; MPHE, University of Puerto Rico - Medical Sciences Campus, 1974; Graduate Certificate in Gerontology, University of Puerto Rico - Medical Sciences Campus, 1984; EdD, Interamerican University of Puerto Rico, 1991.

ORTA-ANÉS, LIDA - Department of Environmental Health; Associate Professor; BS, University of Puerto Rico - Río Piedras Campus, 1976; MP, University of Puerto Rico - Río Piedras Campus, 1979; MA, University of Michigan, 1989; PhD, University of Michigan, 1991.

ORTIZ-MARTÍNEZ, ANA P. - Department of Biostatistics and Epidemiology; Assistant Professor; BS, University of Puerto Rico - Mayagüez, 2000; MPH, University of Michigan, 2002; PhD, University of Michigan, 2004.

PAGÁN-DELGADO, MARIBEL - Counsellor; BA Inter American University of Puerto Rico,1992; MA, Rollins College, FL, 1998.

PALACIOS-ALZURU, CRISTINA -Department of Human Development, Assistant Professor;BS,
Universidad Central de Venezuela, 1996; MS, Purdue University, 1998; PhD, Purdue University, 2001.

PARRILLA-RODRÍGUEZ, ANA M. - Department of Human Development; Associate Professor; BS, University of Puerto Rico - Río Piedras Campus, 1981; MD, University of Puerto Rico - Medical Sciences Campus, 1986; MPH, University of Puerto Rico - Medical Sciences Campus, 1994.

PATTATUCCI-ARAGÓN, ÁNGELA - Department of Health Services Administration; Professor; BSN, Truman College, 1983; BS, Northeastern Illinois University, 1987; PhD, Indiana University, 1991; Post-doctorate, National Institute of Health, 1993.

PÉREZ-CARDONA, CYNTHIA - Department of Biostatistics and Epidemiology; Professor; BS, University of The Sacred Heart - Puerto Rico, 1987; MS, Purdue University, 1989; PhD, Purdue University, 1994.

PÉREZ-PERDOMO, ROSA - Department of Biostatistics and Epidemiology; Professor; BS, Quisqueya College of Dominican Republic, 1959; MD, Universidad Autónoma Santo Domingo, 1966; MPH, University of Puerto Rico - Medical Sciences Campus, 1976; PhD, University of North Carolina at Chapel Hill, 1992.

QUIÑONES-SANTIAGO, CARMEN - Department of Environmental Health; Associate Professor; BS, Catholic University of Puerto Rico, 1958; MS, University of Puerto Rico - Medical Sciences Campus, 1967.

RABIONET-SABATER, SILVIA E. - Department of Social Sciences; Associate Professor; BA, Mount Holyoke College, 1979; EdM, Harvard University, 1980; EdD, Harvard University, 2002.

RAMÍREZ-GARCÍA, ROBERTO - Department of Health Services Administration; Professor; BA, University of Puerto Rico - Río Piedras Campus, 1978; MHSA, University of Puerto Rico - Medical Sciences Campus, 1980; PhD, Boston University, 1991.

RAMOS-VALANCIA, GILBERTO - Department of Biostatistics and Epidemiology; Professor; BA, University of Puerto Rico - Río Piedras Campus, 1976; MS, University of Puerto Rico - Medical Sciences Campus, 1982; Dr. P. H., University of Pittsburgh, 1990.

RÍOS-DÁVILA, RAFAEL - Department of Environmental Health; Professor; ; BSEE, University of Puerto Rico - Mayagüez Campus, 1969; MSNE, University of Puerto Rico - Mayagüez Campus, 1971; MBA, University of Puerto Rico - Río Piedras Campus, 1993; PhD, The University of Texas at Austin, 1975.

RÍOS-MOTTA, RUTH - Department of Health Services Administration; Associate Professor; BS, University of Puerto Rico - Río Piedras Campus, 1982; MS, University of Puerto Rico – Medical Sciences Campus, 1988; PhD, John Hopkins University - School of Hygiene and Public Health, 1996.

RIVERA-GÓMEZ, CAMILLE- Department of Human Development, Instructor; BSN, University of Puerto Rico - Medical Sciences Campus, 1998; MPH, University of Puerto Rico - Medical Sciences Campus, 2005; Certificate Lactation Educator (CLE) - University of Puerto Rico - Medical Sciences Campus.

RIVERA-GUTIÉRREZ, RALPH - Department of Health Services Administration; Professor; BA, University of Puerto Rico - Río Piedras Campus, 1977; MSW, Boston University, School of Social Work, 1981; PhD, Brandeis University, The Florence Heller Graduate School for Advanced Studies in Social Welfare, 1991.

RIVERA-RODRÍGUEZ , ÁNGEL - Department of Health Services Administration; Associate Professor; BA, University of Puerto Rico - Río Piedras Campus, 1968; MA, (PhD-ABD), Harvard University, 1974 (Part-time).

RIVERA-SOTO, WINNA - Department of Human Development; Associate Professor; BS, University of Puerto Rico - Río Piedras Campus, 1985; MPH, University of Puerto Rico - Medical Sciences Campus, 1990; PhD, Cornell University, 2000.

RODRÍGUEZ-DÍAZ, CARLOS E. - Department of Social Sciences, Instructor; BS, University of Puerto Rico – Rio Piedras Campus, 2002; MPHE, University of Puerto Rico – Medical Sciences Campus, 2004; PhD (candidate) ,Walden University – College of Health Sciences.

RODRÍGUEZ-FIGUEROA, LINNETTE - Department of Biostatistics and Epidemiology; Assistant Professor; BS, University of Puerto Rico - Río Piedras Campus, 1990; MS, University of Puerto Rico - Medical Sciences Campus, 1993; PhD, University of Michigan, 2008.

RODRÍGUEZ-SÁNCHEZ, MARIO H. - Department of Health Services Administration; Associate Professor; BS, University of Puerto Rico - Mayagüez Campus, 1986; MS, University of Puerto Rico - Medical Sciences Campus, 1989; MPH, University of Puerto Rico - Medical Sciences Campus, 1994; MS, Carlos Albizu University of Puerto Rico,2000; PhD, Carlos Albizu University of Puerto Rico, 2002.

RODRÍGUEZ-SIERRA, CARLOS J. - Department of Environmental Health; Associate Professor; BS, Florida State University, 1985; MS, Indiana University, 1988; PhD, University of Wisconsin, 1975; Post Doctoral, Medical Sciences Campus, 1996.

RUIZ-CORA, EDGARDO - Department of Human Development; Assistant Professor; MPH, University of Pittsburgh, 2006; PhD University of Pittsburgh, 2006; Graduate Certificate, University of Pittsburgh, 2006.

SÁNCHEZ-CRESPO, MARISAIDA - Department of Health Services Administration; Assistant Professor; BA, University of Puerto Rico - Río Piedras Campus, 1993; MS, De Paul University, Illinois, 1998; PhD, De Paul University, Illinois, 2002.

SÁNCHEZ-RODEZ, RAMÓN - Department of Health Services Administration; Associate Professor; MD, University of Puerto Rico - Medical Sciences Campus, 1987; MPH, University of Puerto Rico - Medical Sciences Campus, 1992.

SANTIAGO-VARGAS, MAYRA - Office of Students Affairs; Counselor III; BS, University of Puerto Rico - Mayagüez Campus, 1976; MS, University of Bridgeport, 1976; Graduate Certificate in Gerontology, University of Puerto Rico - Medical Sciences Campus, 1999; PhD (candidate), Walden University.

SANTOS-ORTIZ, MARÍA DEL CARMEN - Department of Social Sciences; Professor; BA, University of Puerto Rico - Río Piedras Campus, 1974; MPHE, University of Puerto Rico - Medical Sciences Campus, 1976; MA, University of Puerto Rico - Río Piedras Campus, 1985; PhD, Temple University, 1991; Graduate Certificate in Geriatrics, University of Puerto Rico - Medical Sciences Campus, 1995-1996.

SEGUINOT-BARBOSA, JOSÉ - Department of Environmental Health; Professor; BS, University of Puerto Rico - Río Piedras Campus, 1974; MA, Universidad Autónoma de México, 1976; JD, University of Puerto Rico - Río Piedras Campus, 1990; PhD, Louisiana State University, Louisiana, 1983.

SUÁREZ-PÉREZ, ERICK L. - Department of Biostatistics and Epidemiology; Professor; BA, Universidad Nacional Autónoma de México, 1976; MA, Universidad Nacional Autónoma de México, 1979; PhD, London School of Hygiene and Tropical Medicine of United Kingdom, 1986.

TORRES-DEGRÓ, ARNALDO - Department of Social Sciences; Assistant Professor; BA, University of Puerto Rico – Río Piedras, 1986; MS, University of Puerto Rico - Medical Sciences Campus, 1988; PhD, Complutense University of Madrid, Spain, 2004.

TORRES-ZENO, ROBERTO E. - Department of Health Services Administration; Professor; BA, University of Puerto Rico - Río Piedras Campus, 1976; MA, University of Puerto Rico - Río Piedras Campus,1979; PhD, University of Michigan, 1989.

VÁZQUEZ-GARCÍA, VIRGINIA - Department of Social Sciences; Professor; BS, University of Puerto Rico - Río Piedras Campus, 1974; MPHE, University of Puerto Rico - Medical Sciences Campus, 1976; PsyD, Caribbean Center for Advanced Studies of Puerto Rico, 1988; Graduate Certificate in Gerontology, University of Puerto Rico - Medical Sciences Campus, 1994.

VÁZQUEZ-TORRES, DHARMA - Department of Health Services Administration; Assistant
Professor; BS, Loyola University,1984; MHSA, University of Puerto Rico - Medical Sciences Campus, 1988 ; PhD(in progress) Walden University.

VÉLEZ-SANTORI, CARMEN N. - Department of Biostatistics and Epidemiology; Professor; BA, University of Puerto Rico - Río Piedras Campus, 1970; MA, University of Puerto Rico - Río Piedras Campus, 1973; MPhil, Columbia University, 1978; PhD, Columbia University, 1981; Post Doctorate, Columbia University.

VÉLÉZ-VEGA, CARMEN M. - Department of Social Sciences; Associate Professor; BSW, Florida State University, 1986; MSW, Florida State University, 1987; PhD, University of Puerto Rico - Río Piedras Campus, 2007.

VENEGAS-RÍOS, HEIDI L. - Department of Biostatistics and Epidemiology; Instructor; BS, University of Puerto Rico – Río Piedras Campus, 1996; MS, University of Puerto Rico - Medical Sciences Campus, 2001: DrPH (candidate), University of North Texas.

VERA-RÍOS, MILDRED - Department of Health Services Administration; Professor; BS, University of Puerto Rico - Río Piedras Campus, 1972; MA, University of Puerto Rico - Río Piedras Campus, 1974; MA, University of Puerto Rico - Río Piedras Campus, 1981; PhD, University of Puerto Rico - Río Piedras Campus, 1989.



School of Health Professions



MISSION AND GOALS

The School of Health Professions addresses the needs of the Puerto Rican community for qualified practitioners in a diversity of specialties within the health care fields. The curricula provide the knowledge and skills and foster the necessary attitudes to carry out these roles and functions within the health care team.

The School provides a wide variety of academic offerings leading to associate degrees, bachelor's degrees, post-bachelor certificates, and master's degrees. Most programs are designed for regular, full-time students, although some offer evening classes for part-time study.

The faculty is strongly committed to teaching, research in the allied health field, and community service. It provides clinical services to the general public and professional consultation to hospitals, laboratories, and other organizations. Continuing education and specialized training are available to practicing health professionals. Through these activities, the School promotes and coordinates interaction between numerous educational and health agencies.

Academic programs are compromised with the continuous curriculum development of their disciplines, research, and service delivery to the community, as well as innovative models of interdisciplinary education. Through its academic programs, the School also emphasizes the development of critical thinking, social conscience, and ethical standards essential for all members of the health care team.

ORGANIZATION AND ADMINISTRATION

The School is under the direction of the Dean, with the support of the Associate Dean for Academic Affairs, and the Assistant Dean for Student Affairs. There are also offices of Administrative Affairs, Research and Development, Information and Educational Resources, Distance Learning, Communication and Development, Center for Advanced Studies in Medical Emergencies, and Division of Continuing Education and Professional Studies. Academic programs are organized in two departments, Department of Undergraduate Programs and Department of Graduate Programs.

LOCATION AND FACILITIES

The School of Health Professions is located within the University of Puerto Rico Medical Sciences Campus. Student classrooms and laboratories, as well as administrative offices and community service centers, are housed in two buildings adjacent to the Campus' main building. Academic programs that require a period of supervised practice coordinate these at hospitals, clinical laboratories, private clinics, schools, community health centers, and other health care facilities throughout the island and some areas of the United States.

ACADEMIC PROGRAMS

ASSOCIATE DEGREE IN DENTAL ASSISTING WITH EXPANDED FUNCTIONS

The program provides training in chairside assisting techniques and expanded functions in basic restorative and preventive dentistry that enable students to successfully perform as dental assistants with expanded functions (DAEF) in the public and private sectors.

Upon completion of the program of studies, students receive an Associate Degree in Dental Assisting with Expanded Functions. This is a two-year program with a total of seventy three (73) semester credit-hours. Students must complete the first year of general education courses at an accredited college or university (30 semester credit-hours). Professional courses are taken at the Medical Sciences Campus during the second year of studies (43 semester credit-hours).

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Carolina.

Applicants to this program must present evidence of completion of courses within the following areas at an accredited college or university. For specific courses within each subject, please contact the program.

Required Courses	Semester Credit-Hours
Spanish	6
English	6
Social Sciences/Humanities	6
Biological Sciences	6
Mathematics	3
Electives	3
Total	30

Students who wish to be considered for admission to this program must also meet the following requirements:

- Obtain a minimum general grade point average of 2.00 in required courses.
- Have a grade point average of at least 2.00 in biological sciences and mathematics.
- Fluency in Spanish and knowledge and comprehension of English.

Graduation Requirements

In order to graduate, students must:

- Obtain a general grade point average of 2.00 or higher.
- Satisfactorily complete all didactic and clinical practice courses, as specified by the program.

Accreditation

The Expanded Functions Dental Assisting Program of the School of Health Professions is currently accredited by the Commission on Dental Accreditation of the American Dental Association, 211 E. Chicago Avenue, Suite 1900 Chicago, Illinois 60011-2678. The Commission on Dental Accreditation phone number is (312) 440-4653, Fax (312) 400-2915.

ASSOCIATE DEGREE IN DENTAL ASSISTING WITH EXPANDED FUNCTIONS

TOTAL SEMESTER CREDIT-HOURS: 43

Professional Courses

AUXD 2017	Microbiology Pathology Therapeutics	3
AUXD 2015	Dental Oral Head and Neck Anatomy	3
AUXD 2025	Dental Radiology	4
PAXD 2017	Chairside Assisting and Basic Clinical Procedures	1
PAXD 2010	Introduction to General and Dental Specialties Procedures	2
PAXD 2016	Dental Instruments	2
PAXD 2015	Dental Materials	2
AUXD 2007	Oral Histology and Embryology	2
AUXD 2225	Practice Management, Ethics, and Jurisprudence	2
AUXD 2005	Anatomy and Physiology	2
PAXD 2029	Expanded Functions in Restorative Laboratory	3
PAXD 2018	Expanded Functions in Preventive Laboratory	2
PAXD 2101	Clinical Practice I	4
AUXD 2020	Psychology	2
PAXD 2030	Expanded Functions in Restorative Dentistry Clinic	3
PAXD 2102	Clinical Practice II	4
PAXD 2024	Expanded Functions in Preventive Dentistry Clinic	2

ASSOCIATE DEGREE IN RADIOLOGIC TECHNOLOGY

The demands placed on radiologics technologist today require that they be a competent specialists with a full understanding of the principles of the diagnostic uses of radiation.

Radiologic technologists are an integral part of the health team. They promote the prevention and cure of diseases through the use and correct application of radiant energy. Upon completion of the requirements for the Associate Degree in Radiologic Technology and

upon licensure by the Puerto Rico Board of Examiners in X-Ray Technology, the student may be employed in hospitals, physicians' offices, community health agencies, or in industrial settings where radiation is used for quality control.

The curriculum is a dynamic one, allowing students to fulfill academic requirements on campus while participating in practical applications of X-Ray theory at affiliate hospitals. This is a three-year program in which students complete 30 semester credits in general education at an accredited college or university during the first year. Professional courses include 65 semester credits taken at the Medical Sciences Campus during the two remaining years.

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Carolina and Bayamón.

Applicants must have completed courses in the following areas with a grade point average of 2.00 or higher. For specific courses within each subject, please contact the program.

Required Courses	Semester Credit-Hours
English	6
Spanish	6
Humanities or Social Sciences	6
Biological Sciences	6
Mathematics	3
Electives	3
Total	30

Students seeking admission to the program must also meet the following requirements:

- Obtain a minimum grade point average of 2.00 in required courses.
- Obtain a minimum grade point average of 2.00 in specific courses (biological sciences and mathematics).
- Attend an orientation session with faculty.
- Fluency in Spanish and knowledge and comprehension of English.

Graduation Requirements

In order to graduate, students should satisfactorily complete all didactic and clinical practice courses, as specified by the program. They must also have an overall grade point average in didactic courses and clinical experiences of at least 2.00.

Accreditation

The Associate Degree in Radiologic Technology of the School of Health Professions is currently accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) 20 N. Wacker Drive, Suite 2850, Chicago, IL - 60606-3182, Tel. (312) 704-5300, (312) 704-5304. Website: **www.jrcert.org**

ASSOCIATE DEGREE IN RADIOLOGIC TECHNOLOGY
TOTAL SEMESTER CREDIT-HOURS: 65

Professional Courses

TERA 1011	Introduction to Radiologic Physics	3
TERA 1015	Introduction to Radiologic Techniques	3
TERA 1035	Radiologic Exposures	4
TERA 1001	Human Anatomy I	3
TERA 1013	Radiographic Techniques and Positioning I	4
TERA 1036	Radiographic Film Processing	4
TERA 1002	Human Anatomy II	3
TERA 1012	Radiologic Physics	3
TERA 1014	Radiographic Techniques and Positioning II	4
ENFE 1035	Applied Nursing	2
TERA 1018	Applied Pathology	3
TERA 1025	Seminar and Pre-Clinical Practicum	3
TERA 2061	Seminar and Clinical Practice I	6
TERA 2000	Human Anatomy III	3
TERA 2016	Radiographic Film Critique	3
TERA 2017	Radiologic Physics Laboratory	2
TERA 2010	Radiographic Techniques and Positioning III	3
TERA 2062	Seminar and Clinical Practice II	9

ASSOCIATE DEGREE IN OPHTHALMIC TECHNOLOGY

As health professionals trained in the theoretical and clinical aspects of ophthalmology, ophthalmic technicians may practice in government agencies, private institutions, or private offices. They work under the supervision of an ophthalmologist and perform tasks such as patient examination, diagnostic testing, patient treatment, and assisting the ophthalmologist during surgical procedures.

The first year of prerequisite work includes general studies and introductory science courses to be completed at an accredited college or university. The second year of studies, offered at the Medical Sciences Campus, prepares the student for the specific professional responsibilities of an ophthalmic technician.

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Río Piedras, Carolina and Bayamón.

Applicants for admission to the professional program must:

- Complete 33 credits of required courses at an accredited institution in the areas stated below. For specific courses within each subject, please contact the program.

Required Courses	Semester Credit-Hours
English	6
Spanish	6
Humanities	6
Social Sciences	6
Biological Sciences	6
Mathematics	3
Total	33

- Minimum grade point average of 2.00.
- A grade point average of at least 2.00 in biological sciences and mathematics.
- Fluency in Spanish and knowledge and comprehension of English.
- Minimum interview score of 12.

Graduation Requirements

- Completion of program courses and clinical practice.
- Minimum grade point average of 2.00.

Accreditation

The Associate Degree in Ophthalmic Technology Program of the School of Health Professions is accredited by the Committees on Accreditation of Ophthalmic Medical Personnel.

CoA-OMP 2025 Woodlane Drive St. Paul
MN 55125-2998
Phone: (651) 731-7237
Fax (651) 731-0410
International: +1,011,651.731.2944
ext. 237
E-mail: **CoA-OMP@jcahpo.org**

ASSOCIATE DEGREE IN OPHTHALMIC TECHNOLOGY

TOTAL SEMESTER CREDIT-HOURS: 39

Professional Courses: 37 credit-hours

TEOF 2005	Professional and Ethical Aspects of Ophthalmology	1
TEOF 2006	Ocular Anatomy and Physiology	4
TEOF 2007	General Concepts in Optics and Refraction	3
TEOF 2008	Ophthalmic Equipment	3
TEOF 2009	Ophthalmic Pharmacology	2
TEOF 2015	Diagnostic Techniques and Procedures	2
TEOF 2017	Ocular Surgery and Aseptic Techniques	3
TEOF 2016	Common Eye Diseases, Trauma, and Emergencies	5
TEOF 2025	Clinical Practice	14
Electives		2

NOTE: Students also participate in seminars on general anatomy and physiology, psychology, microbiology, and CPR.

Electives

Students must choose the two required elective credits from among the following courses:

TEOF 2018	Pediatric Ophthalmology	2
TEOF 2019	Ocular Surgery	2
TEOF 2020	Retina	2
TEOF 2021	Glaucoma	2

BACHELOR OF HEALTH SCIENCES

The Bachelor of Health Sciences is an innovative, interdisciplinary, flexible program that provides a well-rounded education to persons holding associate degrees in health related fields such as radiologic technology, ophthalmic technology, dental assisting, and others. It also provides them the opportunity to complete their studies towards a bachelor's degree. The curriculum aims to develop sensitive health professionals capable of delivering quality health care.

Admission Requirements

In order to be considered for admission, applicants must comply with the following requirements:

- Hold an Associate Degree with at least 36 semester credits in a health sciences field.
- A grade point average of at least 2.00 in health related courses.
- Satisfactorily complete courses in the areas specified below at an accredited college or university. For specific courses, please contact the program:

Required Courses	Semester Credit-Hours
Biological Sciences	6
English	6
Spanish	6
Social Sciences or Humanities	6
Mathematics*	6
Total	30

*These may be taken during the first year the student is enrolled in the program.

- Interview with the program's faculty.
- Fluency in Spanish and knowledge and comprehension of English.

Graduation Requirements

In order to graduate, students must meet the following requirements:

- Complete 58 semester and 3 trimester credits in addition to the 36 credits in professional courses taken as part of an associate degree or undergraduate certificate in the health sciences or health related fields, and 30 credits in general education and 14 credits in electives courses.
- Obtain a minimum overall grade point average of 2.00 and complete area option courses with a minimum grade of C.

BACHELOR OF HEALTH SCIENCES - EDUCATION AREA OPTION (Starting in the academic year 2010, 2011, this option will not be available).

TOTAL CREDIT-HOURS: 60 SEMESTER C.H. + 3 TRIMESTER C.H.

Education area option: 28 semester credit-hours

EDFU 3001	Human Growth and Development I	3
EDFU 3002	Human Growth and Development II	3
EDFU 3007	Social Foundations of Education	3
EDFU 4019	Philosophical Foundations of Education	3
CISA 4105	Educational Technology for Teaching of the Health Sciences Professions	3
CISA 4026	Educational Methodology for Teaching in the Health Sciences	3
CISA 4037	Methods and Instruments of Student Evaluation in Health Sciences	3
CISA 4038	Seminar and Teaching Practicum	4
EDSA 4046	Introduction to Educational Research	3

Interdisciplinary Courses:
18 semester + 3 trimester credit-hours

INTD 4005	Health: A Holistic Approach	5
CISA 4055	Statistical Methods for Health Care Practitioners	3
EDSA 4008	Communication Skills	3tr
Electives in Interdisciplinary Area		10
Electives*		14

*These credits may be convalidated if taken at an accredited institution of higher education.

BACHELOR OF HEALTH SCIENCES - ADMINISTRATION AREA

TOTAL CREDIT-HOURS: 58 SEMESTER C.H. + 3 TRIMESTER C.H.
Administration area: 26 semester credit-hours

CISA 4048	Basic Principles of Personnel Supervision	3
CISA 4031	Principles of Health Services Administration I	3
CISA 4032	Principles of Health Services Administration II	3
CISA 4035	Principles of Personnel Administration in Health Care Organizations	4
CISA 4065	Seminar and Practicum in Management	3
ECON 3005	Introduction to Economics	3
CONT 3005	Introduction to Elements of Accounting I	4
FINA 3006	Business Finance	3

Interdisciplinary Courses:
18 semester + 3 trimester credit-hours

INTD 4005	Health: A Holistic Approach	5
CISA 4055	Statistical Methods for Health Care Practitioners	3
EDSA 4008	Communication Skills	3tr
Electives in Interdisciplinary Area		10
Electives*		14

*These credits may be convalidated if taken at an accredited institution of higher education.

BACHELOR OF HEALTH EDUCATION

An innovative curriculum has been designed to train community health educators. Students enroll in the professional program during their second year in college. For the following three years, they progress through a competency-based curriculum organized in five areas, including Health Education core courses, Health and Human Being, Health Communication, Community and Group Work and Field Experiences.

The community health educator is a group leader with the ability to motivate people to adopt healthier life-styles. As a professional, he/she has the basic skills needed to diagnose and analyze problems and prepare educational programs suitable for individuals and groups. Through education, the health educator encourages the group to solve its health problems through its own efforts, using resources available in the community. He/she works in an interdisciplinary fashion with other members of the health team, exercising leadership by implementing planned programs.

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Carolina and Bayamón.

Candidates for admission must meet the following requirements:

- Approve 30 credits in the following areas; for specific courses within each subject, please contact the program:

Required Courses	Semester Credit-Hours
Biological Sciences	6
English	6
Spanish	6
Social Sciences or Humanities	6
Mathematics*	6
Total	30

*Six credits in mathematics or three in mathematics and three in statistics are accepted.

- A grade point average of at least 2.00 in the required courses.
- A grade point average of at least 2.30 in biological sciences and social sciences or humanities.
- Interview with the faculty.
- Fluency in Spanish and knowledge and comprehension of English.

Graduation Requirements

In order to graduate, students must meet the following requirements:

- Completion of all courses for the degree as stated in the program of study.
- A grade point average of at least 2.00.
- Demonstrate acceptable professional conduct according to the norms and criteria established by the program.

BACHELOR OF HEALTH EDUCATION

TOTAL SEMESTER CREDIT-HOURS: 102

Professional Courses: 90 credit-hours

INTD 4017	Biomedical Core Course	6
INTD 4005	Health: A Holistic Approach	5
EDSA 4011	Conceptual Seminar I	6
EDSA 4021	Communication Skills I	3
EDSA 4022	Communication Skills II	3
EDSA 4031	Laboratory for the Development of Human Potential I	2
EDSA 4032	Laboratory for the Development of Human Potential II	2
EDSA 4001	Field Experience in Health Education I	3
EDSA 4047	Educational Media and Technology	3
CISA 4055	Statistical Methods for Health Care Practitioners	3
EDSA 4012	Conceptual Seminar II	5
EDSA 4013	Conceptual Seminar III	4
EDSA 4023	Communication Skills Workshop	2
EDSA 4024	Communication Skills IV	2
EDSA 4033	Laboratory for the Development of Human Potential III	2
EDSA 4034	Laboratory for the Development of Human Potential IV	2
EDSA 4002	Field Experience in Health Education II	2
EDSA 4003	Field Experience in Health Education III	2
EDSA 4014	Fundamentals of Planning in Health Education	4
EDSA 4065	Teaching Techniques for Community Health Education	3
EDSA 4075	Group Work Strategies	4
EDSA 4067	Priority Health Problems in Puerto Rico	3
EDSA 4004	Field Experience in Health Education IV	7
EPID 4201	Introduction to Epidemiological Methodology	3
EDSA 4046	Introduction to Educational Research	3
EDSA 4058	Fundamentals of Human Sexuality	3
EDSA 4059	Basic Concepts in Nutrition	3
Electives		12

BACHELOR OF SCIENCE IN VETERINARY TECHNOLOGY

The Veterinary Technology Program provides both classroom and clinical training in the areas of small and large animal care, food hygiene, veterinary hospital administration and laboratory animal science. It is a four-year Bachelor of Science degree in which students complete the first two years of education at any accredited university and the last two years at the Medical Sciences Campus. The Program is accredited by the American Veterinary Medical Association.

Veterinary technologists work primarily as professional assistants to veterinarians, biomedical researchers, and other scientists, and as such, are an integral part of the veterinary and public health care team. As the complexity of veterinary medicine increases and as the public demand for state-of-the-art care for animals increases, the veterinary technologist plays a key role in the delivery of quality health care for animals.

Veterinary technologists perform a wide variety of duties, many under the supervision of a veterinarian.

These tasks often include: nursing care of hospitalized patients, administering medications, performing a wide range of technical tasks, assisting in diagnostic and therapeutic procedures, collecting and analyzing clinical specimens, performing radiological and dental procedures, anesthesiology, and surgical assisting, office and hospital management, client counseling, and education. In addition to the above-mentioned tasks, veterinary technologists in biomedical research perform a major role in supervision of research colonies and facilities and assist in the design and implementation of research projects. They also aid in the diagnostic process, collection and analysis of data, and in the use of experimental and descriptive methods in epidemiological investigations in order to help prevent and control zoonotic diseases.

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Carolina and Cayey.

In order to be considered for admission, applicants must meet the following requirements:

- Two years of general courses and basic sciences as stated below. For specific courses within each subject, please contact the program.

Required Courses	Semester Credit-Hours
Spanish	6
English	6
Social Sciences	6
General Chemistry	8
General Biology	6
Organic Chemistry	8
Calculus or precalculus	4
General Physics	8
Statistics	3
Electives	9
Total	64

- Grade point average of at least 2.00 in all required courses.
- Obtain a grade point average of 2.00 in science and mathematics courses.
- Interview with faculty members.
- Fluency in Spanish and knowledge and comprehension of English.

A microbiology course is recommended. Applicants must have completed the required 64 credits or finish the requirements during the summer preceding the beginning of the program.

Graduation Requirements

In order to graduate, students must:

- Obtain a grade point average of at least 2.00.
- Complete the program's 130 credit-hours.
- Complete the degree within 5 years.

Accreditation

The Bachelor of Science in Veterinary Technology of the School of Health Professions is accredited by the American Veterinary Medical Association

1931 N. Meacham Rd. Suite 100
Schaumburg, IL 60173-4360
Tel. 847-925-8070
www.avma.org

BACHELOR OF SCIENCE IN VETERINARY TECHNOLOGY

TOTAL SEMESTER CREDIT-HOURS: 66
Professional Courses

SAAN 4036	Introduction to Animal Health Technology Science	2
SAAN 4026	Comparative Anatomy of Domestic Animals	2
SAAN 4027	Physiology of Domestic Animals	2
SAAN 4085	Introduction and Management of Farm Animals	6
SAAN 4059	Veterinary Microbiology	3
SAAN 4067	Principles of Veterinary Parasitology and Entomology	2
SAAN 4047	Introduction to Pharmacology	3
SAAN 4120	Animal Nursing	4
SAAN 4116	Veterinary Radiology	3

SAAN 4113	Veterinary Clinical Analysis I	3
SAAN 4101	Field Experience I	2
SAAN 4060	Animal Diseases	3
SAAN 4115	Laboratory Animal Management	3
SAAN 4078	Food Sanitation	4
SAAN 4114	Veterinary Clinical Analysis II	4
SAAN 4102	Field Experience II	2
SAAN 4069	Epidemiology and Zoonoses	3
SAAN 4105	Practicum-Animal Health Technology	6
SAAN 4029	Dog and Cat Nutrition	1
SAAN 4130	Veterinary Hospital Management and Computerized Records	4
SAAN 4125	Surgical Assistance	4

BACHELOR OF SCIENCE IN NUCLEAR MEDICINE TECHNOLOGY

Nuclear Medicine Technology is a health field concerned with the use of radioactive material for diagnostic and therapeutic purposes, such as organ imaging, analysis of biological specimens, and therapeutic procedures.

The Bachelor of Science in Nuclear Medicine Technology program educates competent professionals to perform nuclear medicine imaging procedures on patients, perform radioactive analyses of biological specimens, prepare and administer radiopharmaceuticals, and perform quality control procedures on instruments and radiopharmaceuticals. In addition, they prepare radionuclides for therapeutic procedures, and perform radiation safety procedures. The student entering the academic program receives education in performing General Nuclear Medicine, Nuclear Cardiology, Single Photon Emmission Tomography (SPECT), Positron Emmission, Tomography/Computed Tomography (PET/CT) and Bone Densitometry procedures.

The program consists of three years at a college or university majoring in natural sciences and a fourth year of courses in the specialty taken at the Medical Sciences Campus. The fourth professional year includes classroom theory and clinical practice.

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Bayamón and Carolina.

Candidates for admission to the Nuclear Medicine Technology Program must present evidence of successful completion of at least three full academic years of work at an accredited college or university with a minimum grade point average of 2.50 (on a scale of 4.00), or its equivalent, in both science and general courses. This work must comprise not less than 99 credit hours, including the subjects stated below. For specific courses within each field, please contact the program:

Required Courses	Semester Credit-Hours
Spanish	12
English	12
Humanities	6
Social Sciences	6
Mathematics (including Calculus I)	11
Biology	12
General Chemistry	8
Analytical Chemistry	4
Organic Chemistry	8
General Physics	8
Electives	12
Total	99

Students who wish to be considered for admission to the program must also meet the following requirements.

- Obtain a general and specific grade point average in sciences and mathematics of 2.50.
- Be interviewed by faculty.
- Fluency in Spanish and knowledge and comprehension of English.

Graduation Requirements

In order to graduate, students must comply with the following requirements:

- Completion of all 135 credits, with a minimum grade point average of 2.00 or higher on a scale of 4.00.
- Satisfactory completion of all didactic and practical courses in the professional program.

Accreditation

The Nuclear Medicine Technology Program of the School of Health Professions is currently accredited by the Joint Review Committee on Educational Programs in Nuclear Medicine Technology (JRCNMt), 2000W. Danforth Rd., Ste 130 #203, Edmond, OK, 73003; website: **www.JRCNMT.org**. The JRCNMT phone numbers are (405) 285-0546, Fax (405) 285-0579, e-mail: **jrcnmt@coxinet.net**.

BACHELOR OF SCIENCE IN NUCLEAR MEDICINE TECHNOLOGY

TOTAL SEMESTER CREDIT-HOURS: 36

Professional Courses

INTD 4017	Biomedical Core Course	6
TENU 4135	Nuclear Physics	2
TENU 4177	Radiation Protection and Radiobiology	2
ANAT 4016	Topographical and Sectional Anatomy	2
TENU 4145	Statistics in Nuclear Medicine	1
TENU 4185	Radiopharmacy and Radionuclide Chemistry	2
TENU 4205	Instrumentation in Nuclear Medicine and Ultrasound	2
TENU 4265	Nuclear and Ultrasound Imaging	4
TENU 4195	Radioassays	2
TENU 4215	Administration of a Nuclear Medicine Facility	1
TENU 4235	Clinical Practice	10
TENU 4245	Computer Application in Nuclear Medicine	1
TENU 4225	Seminar	1

BACHELOR OF SCIENCE AND POST-BACHELOR CERTIFICATE IN SCIENCE IN MEDICAL TECHNOLOGY

Medical Technology is the study of the application of clinical laboratory analysis to the diagnosis or prevention of disease and to the monitoring of patient therapy. The program provides students with the knowledge and skills necessary to responsibly practice the profession. Students are also expected to develop a true sense of humanism and a professional attitude.

This is a fifteen month professional program beginning in August. Upon completion of the program, students either receive their Bachelor's degree or a Post-Bachelor Certificate in Science in Medical Technology, as appropriate. The nine-month session at the Medical Sciences Campus includes lectures, demonstrations, and laboratory work. Following this, students spend six months in practice in a clinical laboratory setting. At the end of the program, they are eligible to take certifying examinations given by the Commonwealth of Puerto Rico, the American Society of Clinical Pathologists, and the National Certification Agency for Medical Laboratory Personnel. Upon licensure, program graduates are qualified to work in hospital and private clinical laboratories, pharmaceutical and other biomedical industries, or research settings. As a valuable member of the health-care team, the medical technologist must be academically and ethically capable of providing quality services.

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Bayamón and Carolina.

Applicants to the Bachelor's Degree Program must have completed three (3) years of study in an accredited higher learning institution, including the prerequisite 100 credits listed below. Applicants to the Post-Bachelor Certificate Program must present evidence of a bachelor of science degree from an accredited college or university, including the courses required for admission to the Bachelor's Degree Program. For specific courses within each area, please contact the program.

Required Courses	Semester Credit-Hours
Social Sciences	6
Spanish	12
College Physics	8
Humanities	6
English	12
Mathematics*	6
General Chemistry	8
Organic Chemistry	8
Analytical Chemistry	4

Biology (which must include general biology, microbiology or bacteriology, and immunology)	16
Electives	14
Total	100

*In addition to an introductory mathematics course.

Students who wish to be considered for admission to the program must also meet the following requirements:

- Obtain a general and specific grade point average in sciences and mathematics of a least 2.50.
- Have a maximum of 8 credits in prerequisite work pending for the summer session.
- Possess the abilities necessary to meet the responsibilities of the profession.
- Fluency in Spanish and knowledge and comprehension of English.

Graduation Requirements

In order for students to be recommended for the Bachelor of Science in Medical Technology they must:

- Satisfactorily complete (with C or above) all didactic and clinical practice courses (54 credits) within a three year period.
- Obtain a general grade point average of 2.00 or higher in the 154 credits.
- Demonstrate the conduct and attitudes befitting a professional.

In order for students to be recommended for the Post-Bachelor Certificate in Science in Medical Technology, they must satisfactorily complete (with C or above) all didactic and clinical courses in a three year period and:

- Obtain a general grade point average of 2.00 or higher in the 54 professional credits.
- Demonstrate the conduct and attitudes befitting a professional.

Accreditation

The Bachelor of Science and Post-Bachelor Certificate in Science in Medical Technology of the School of Health Professions is accredited by the NAACLS - National Accrediting Agency for Clinical Laboratory Sciences, 8410 W. Bryn Mawr Avenue. Suite 670. Chicago, IL 60631-3415. Phone (773) 714-8880, Fax (773) 714-8886. E-mail: **naaclsinfo@naacls.org**. **www.naacls.org**.

BACHELOR OF SCIENCE AND POST-BACHELOR CERTIFICATE IN SCIENCE IN MEDICAL TECHNOLOGY

TOTAL SEMESTER CREDIT-HOURS: 54

Didactic Courses: 42 semester credit-hours

TMED 4010	Introduction to Clinical Laboratory Science	1
ZOME 6503	Medical Parasitology	3
TMED 4001	Clinical Biochemistry I	4
TMED 4002	Clinical Biochemistry II	3
TMED 4021	Hematology I	3
TMED 4022	Hematology II	3
TMED 4140	Clinical Laboratory Administration	3
MICR 4006	Medical Bacteriology	7
TMED 4095	Urinalysis	3
TMED 4075	Clinical Serology-Immunology	3
TMED 4041	Immunohematology I	2
TMED 4042	Immunohematology II	2
TMED 4135	Principles and Utilization of Instrumentation in Clinical Laboratory Analysis	2
TMED 4150	Modern Concepts in Clinical Laboratory Sciences	3

Clinical Practice Courses: 12 semester credit-hours

TMED 4015	Clinical Practice in Biochemistry	3
TMED 4035	Clinical Practice in Hematology	3
TMED 4115	Clinical Practice in Bacteriology	3
TMED 4085	Clinical Practice in Serology	1
TMED 4106	Clinical Practice in Urinalysis/ Parasitology	1
TMED 4065	Clinical Practice in Immunohematology	1

POST-BACHELOR CERTIFICATE IN DIETETIC INTERNSHIP

General Information

As a member of the health care team, the dietitian is directly responsible for the nutritional care of individuals and groups. This care includes the application of the science and art of human nutrition in helping people select and obtain food for the primary purpose of nourishing their bodies in health or disease throughout the life cycle. Dietitians work in a wide variety of employment settings including health care, business and industry, public health education, research, and private practice.

The Dietetic Internship Program of the School of Health Professions is a post baccalaureate program that prepares professionals in nutrition and dietetics, with emphasis in medical nutrition therapy.[1] It is an eleven month program providing learning opportunities geared to integrating previously acquired knowledge, obtain new knowledge, build resources for personal and professional growth, and develop skills in the best procedures for carrying out nutrition and dietetic services.

Admission Requirements

In order to be considered for admission, applicants must meet the following requirements:

- Hold a bachelor's degree from an accredited college or university, with courses that meet the academic requirements established by the American Dietetic Association (A.D.A.).
- A general grade point average and area of specialization index of 2.50 or higher.
- An interview with the program's Student Selection Committee.
- The applicant must be completely fluent in Spanish and must also have knowledge and comprehension of English.

All applicants to the Dietetic Internship must participate in the computer matching process established by the ADA. At the D & D Digital web site (www.dnddigital.com) applicants should be able to register, pay the fee and submit DI preferences on line. For further information contact the Dietetic Internship Program Director.

Program of Study

- Introductory course (4 weeks).
- Clinical Practice (40 weeks):
  - Medical Nutrition Therapy (20 weeks)
  - Food Service System Management (10 weeks)
  - Community Dietetics (10 weeks)

Graduation Requirements

In order to graduate, students must complete the Dietetic Internship Introductory Course and approve all clinical experiences as specified by the Program.

Licensure and Registration

In order to practice the profession in Puerto Rico, it is necessary to obtain a license and be an active member of the Puerto Rico College of Nutritionists and Dietitians. The license is obtained after approving an examination offered by the Puerto Rico Nutritionists and Dietitians Examination Board. Also, the A.D.A. Registration Examination is given in Puerto Rico for graduates interested in becoming Registered Dietitians.

Accreditation

The Dietetic Internship Program of the School of Health Professions is currently accredited by the Commission on Accreditation for Dietetics Education of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL, 60606. The A.D.A. Department of Accreditation and Education Programs phone numbers are (312) 899-0040 (x - 5400).

POST-BACHELOR CERTIFICATE IN CYTOTECHNOLOGY

The cytotechnologist is the professional qualified to analyze cellular samples under the microscope in order to detect neoplastic cells before the patient shows obvious symptoms of malignant growth. In this way, the

1 This Emphasis goes into effect for students to be admitted on August 2009.

cytotechnologist contributes to the early detection of disease.

The Cytotechnology Program offered by the University of Puerto Rico Medical Sciences Campus is a 12-month program requiring a total of thirty-eight (38) credit hours. Theoretical aspects are emphasized during the first six (6) months and supervised practice during the remaining six (6) months.

The program is designed to prepare health professionals with specific competencies in cytotechnology. The student is provided with adequate experiences for the development of capacities and skills in the management of a cytotechnology laboratory and in handling the necessary instruments and equipment.

Admission Requirements

Applicants to the program must have completed a bachelor of science or bachelor of arts degree from an accredited college or university. Students who wish to be considered for admission must also meet the following requirements:

- Have a general grade point average of at least 2.50.
- Have a grade point average of at least 2.50 in science courses.

Present evidence of completion of the following courses or their equivalents:

Required Courses	Semester Credit-Hours
Mathematics	6
College Physics	8
Chemistry	8
Biology*	20
Total	42

- Interview with faculty members.
- Fluency in Spanish and knowledge and comprehension of English.

*It is highly recommended that applicants complete the following courses: Histology, Human Anatomy, Bacteriology, Physiology, Genetics, Parasitology, and Microbiology.

Graduation Requirements

In order to be recommended for graduation, students must:

- Obtain a minimum grade point average of 2.00 or higher in didactic courses and 3.00 or higher in the supervised practice.
- Satisfactorily complete the six (6) didactic courses and the supervised practice.
- Submit a research project related to the cytotechnology profession and present it (written and orally) to faculty members and fellow students.
- Evaluate and interpret a minimum of sixty (60) cytological samples daily with ninety-five percent (95%) accuracy during the final practicum.

Accreditation

The Post Bachelor Certificate in Cytotechnology of the School of Health Professions is currently accredited by the Commission on Accreditation of Allied Health Education Programs of the American Society of Cytopathology, 400 West 9 the Street Suite 201, Wilmington, DE 19801-1555. The Commission phone number is 302-429-8802.

POST-BACHELOR CERTIFICATE IN CYTOTECHNOLOGY

TOTAL SEMESTER CREDIT-HOURS: 38

Professional Courses

CITO 6505	Introduction to Cytotechnology	1
CITO 6507	General Concepts in Basic Sciences	2
CITO 6509	Female Genital System	12
CITO 6515	Respiratory and Gastrointestinal System	6
CITO 6516	Urinary System and Body Fluids	2
CITO 6517	Mammary Glands and Miscellaneous	2
CITO 6518	Clinical Practicum	13

MASTER OF SCIENCE WITH SPECIALTY IN SPEECH-LANGUAGE PATHOLOGY

The speech-language pathologist has the responsibility of evaluating, diagnosing, and treating persons with speech disorders in areas such as articulation, language, voice, and stuttering. The speech-language pathologist evaluates the speech and language patterns of children and adults, determines whether communication problems exist, and offers the appropriate treatment. Professionals in this program study the normal communication process, disorders which interfere with communication, possible clinical treatment, and preventive management.

Program graduates are qualified to work in government agencies such as the Departments of Health, Education, and Family Services. There are other job opportunities in federal programs, private institutions, universities, and private practice. The program consists of two academic years. It provides two options, one with thesis and another without thesis.

Admission Requirements

In order to be considered for admission, applicants must meet the following requirements:

- Hold a bachelor's degree from an accredited university with a general grade point average of 3.00 or higher.
- Submit the Graduate Studies Admission Test (EXADEP) scores.
- Interview with the program's faculty.
- Fluency in Spanish; must also have knowledge and comprehension of English.
- Completion of 12 credits in the following areas with* (or their equivalents) at an accredited university with a grade point average of 3.00 or higher.

Required Courses	Semester Credit-Hours
Linguistics*	3
Statistics*	3
Human Development and Learning*	3
General Concepts on Child and Adult Handicaps*	3
Physical Sciences	3
Biological Sciences	3
Mathematics	3
Social Sciences/Behavioral Sciences	3
Total	24

Graduation Requirements

In order to graduate, students must:

- Complete the 55 credits as specified by the program.
- Complete a minimum of 400 hours in clinical practice with patients.
- Obtain a minimum grade point average of 3.00 or higher.
- Pass the program's comprehensive examinations.
- Obtain a faculty recommendation.

Accreditation

The Program of Speech-Language Pathology is fully accredited as a training site by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language Hearing Association (ASHA), 2200 Research Boulevard; Rockville, MD. 20850-3289.

MASTER OF SCIENCE WITH SPECIALTY IN SPEECH-LANGUAGE PATHOLOGY

TOTAL SEMESTER CREDIT-HOURS: 55
Courses that apply to both options, with or without thesis: 47 credit-hours

HLAG 6300	Basic Concepts in Linguistics, Psycholinguistics, and Psychoacoustics	3
HLAG 6305	Acoustics for the Speech and Hearing Sciences	3
HLAG 6303	Anatomy of the Speech and Hearing Mechanism	3
PHAL 6305	Speech-Language Pathology: Evaluation and Diagnosis	3
AUDI 6301	Fundamentals of Audiology	3
HLAG 6325	Communication Development of the Normal Child	3
PHAL 6515	Stuttering	3

HLAG 6308	Statistical Principles Applied to Research in Communicative Disorders	2
PHAL 6519	Articulation Problems and Phonological Disorders	3
HLAG 6533	Language Disorders of Children	3
PHAL 6518	Disorders of Voice	2
HLAG 6333	Language Stimulation of the Deaf Child	3
PHAL 6512	Neurogenic Communicative Disorders in Adults	3
PHAL 6310	Clinical Practicum in Speech-Language Pathology	1
AUDI 6520	Communication Rehabilitation of the Hard of Hearing Adult	2
PHAL 6311	Clinical Practicum in Speech-Language Pathology	2
PHAL 6509	Speech and Language Problems in Children with Environmental Deprivation and Children with Mental Retardation	2
HLAG 6316	Professional Practicum	2
HLAG 6317	Clinical Practicum Seminar	1

In addition to the courses stated above, students in each of the options must complete the following 8 credit-hours:

Option with thesis

HLAG 6309	Experimental Design in Speech, Language, and Hearing Sciences	2
HLAG 6600	Thesis	6

Option without thesis

PHAL 6514	Cleft Palate	2
PHAL 6521	Speech and Language Disorders in Children with Autism	1
PHAL 6524	Dyslexia and Dysgraphia in the Child	1
PHAL 6522	Diagnosis and Rehabilitation of Children with Neurological Problems	2
HLAG 6529	Organization and Administration of Service Programs in Communicative Disorders	2

MASTER OF HEALTH INFORMATION ADMINISTRATION

The Master of Health Information Administration Program is housed within the Department of Graduate Programs of the School of Health Professions (SHP) at the Medical Sciences Campus, University of Puerto Rico. The Program prepares Health Information Administrators at the graduate level with entry level professional competencies. The curriculum is offer during evening hours, from 5:00 to 10:00. Some courses are offer at distance using the Blackboard Platform.

The curriculum consists of two academic years and a summer session for 78 trimester credits of graduate level course work. The curriculum is based on a series of structured learning sequences organized in a core body of knowledge, an area in a related subject, a professional component, a sequence of tracks for selected topics, and elective courses. The tracks provide students the opportunity of selecting an area of interest from among administration, research, or education.

Program graduates are eligible to apply for the registration examination sponsored by the American Health Information Management Association (AHIMA) to qualify as a Registered Health Information Administrator (RHIA) and practice the profession as a qualified Health Information Administrator. As a member of the health team, the Health Information Administrator performs tasks regarding the definition, design, management, and evaluation of the health information system. He/she organizes, refines, and presents data in ways that facilitate its processing and utilization.

Admission Requirements

In order to be considered for admission, applicants must meet the following requirements:

- Hold a Bachelor's degree or its equivalent from an accredited university.
- General grade point average of at least 2.50.
- Have approved a three-credit course with no less than "C" in each of the following areas: Human Anatomy, Human Physiology, and Automated Data Processing.
- Submit Graduate Studies Admission Test (EXADEP) or Graduate Record Examination (GRE) scores.

- Interview with the program's faculty.
- Fluency in Spanish and knowledge and comprehension of English.

Graduation Requirements

In order to graduate, students must:

- Obtain a general grade point average of 3.00 or higher.
- Satisfactorily complete (with B or higher) all specialty courses (professional and track).
- Complete all theoretical and clinical practice activities specified by the program.
- Complete graduation requirements within a five-year period.

Accreditation

The Health Information Administration Program of the School of Health Professions is currently accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM), 233 N. Michigan Avenue-Suite 2150, Chicago, Illinois 60601-5800. The CAHIIM phone number is (312) 233-1100.

MASTER OF HEALTH INFORMATION ADMINISTRATION

TOTAL TRIMESTER CREDIT-HOURS: 78

Professional Courses: 63 credit-hours

MEDU 6500	Core Course in Public Health	6
REME 6105	Medical Record Sciences	2
BIOE 6525	Statistical Analysis	5
REME 6106	Medical Record Management	4
REME 6107	Medical Records in Health Information Systems	3
SALP 6500	Medical Background	3
ADSS 6572	Theory of Administration	4
REME 6108	Seminar in Indexes, Registers, and Disease Classification Systems	3
SALP 6501	Medical Terminology	3
REME 6005	Legal Aspects of Medical Records Administration	3
CISO 6600	Research Methods	4
REME 6115	Evaluation of the Quality of Health Care	2
REME 6109	Health Information System	2
REME 6121	Pre-Internship in Medical Records Administration	2
REME 6111	Analysis, Design, and Implementation of Health Information Systems I	2
REME 6125	Concepts in Personnel Administration and Supervision	3
REME 6112	Analysis, Design, and Implementation of Health Information Systems II	2
REME 6021	Health Services Administration and the Medical Records Application	3
REME 6127	Problems in Medical Records Administration Seminar	2
REME 6122	Internship in Health Records Administration and Research Project	5
Track Courses		9
Electives		6

MASTER OF SCIENCE IN CLINICAL LABORATORY SCIENCES

The Clinical Laboratory Sciences program curriculum enhances the knowledge of medical technologists (Clinical Laboratory Scientists) in areas related to molecular diagnosis, administration of laboratory facilities, and clinical sciences. The aim of the program is to train students with expertise in current tools of administration, leadership, and quality in the laboratory setting. In addition, the program emphasizes the research component by requiring a research project with publishable results. The program is designed to fit the needs of working clinical laboratory scientists. Classes meet during evening hours and Saturdays. A graduate of this program will be able to manage clinical laboratories, engage in research, conduct in-service training, and address problems of instrumentation and analytical procedures.

The language of instruction is Spanish, although textbooks are mostly in English.

Applicants are encouraged to contact the program for detailed information.

Admission Requirements

- Qualified applicants must have earned a Baccalaureate degree or Post-Baccalaureate Certificate in Medical Technology from an accredited institution of higher learning and be certified by the Commonwealth of Puerto Rico, or an equivalent professional accrediting agency.
- Applicants must submit the results of graduate entrance examination tests GRE or EXADEP, which must be taken within five calendar years of the application date.
- Two letters of recommendation from former professors and/or from employers.
- A personal interview with the faculty.
- General grade point average of at least 2.75.

Graduation Requirements

In order to graduate, students must:

- Complete the 36 credit-hour program.
- Obtain an overall grade point average of 3.00.
- Complete the research project approved by the faculty.
- Complete graduation requirements within a five-year period.

MASTER OF SCIENCE IN CLINICAL LABORATORY SCIENCES

(With emphasis in Molecular Diagnostics)

TOTAL SEMESTER CREDIT-HOURS: 36

CILC 6008	Advanced Clinical Hematology	2
CILC 6020	Clinical Laboratory Management	2
CILC 6019	Clinical Laboratory Statistics	2
CILC 6046	Genetics and Molecular Biology	2
CILC 6055	Fundamentals of Research Proposal Design	2
CILC 6305	Clinical Laboratory Science Research	3
CILC 6026	Special Topics in Clinical Laboratory Administration	2
CILC 6040	Practice in Administration and Quality Assurance	3
CILC 6035	Quality Assurance I	2
CILC 6036	Quality Assurance II	1
CILC 6205	Laboratory Information Systems and Informatics	2
CILC 6015	Advanced Clinical Immunology Studies I	2
CILC 6016	Advanced Clinical Immunology Studies II	2
CILC 6301	Molecular Diagnostics I	2
CILC 6302	Molecular Diagnostics II	2
CILC ___*	Pharmakogenomics	2
CILC 6400	Seminar	2

*Course to be coded.

MASTER OF SCIENCE IN PHYSICAL THERAPY

The Master of Science in Physical Therapy Program is part of the Department of Graduate Programs of the School of Health Professions. It is the first and only program in Puerto Rico, leading to on entry level Master of Science in Physical Therapy degree. The Physical Therapy Program began in 1951 as the School of Physical Therapy and became part of the School of Health Professions in 1976. The duration of the master's level professional curriculum is six semesters. Admissions to the program will be considered once every year. Students will begin fulltime daytime classes in September of the year of admission.

The program's mission is to graduate versatile physical therapists who will serve the Puerto Rican community. These entry-level physical therapists will provide quality service in patient/client management, education, research, administration, consultation, and health care policy advocacy. In tune with the mission of the School of Health Professions it addresses three dimensions of the educational experience: teaching, research, and service. The program integrates these three components while enabling the graduate to respond proactively to the needs of society in relation to the ever-changing health care delivery system structure. The faculty seeks to provide a learning environment which will allow the graduate to become a competent professional dedicated to a lifelong pursuit of knowledge.

Upon completion of the degree, graduates will be qualified to work as general practitioners in physical therapy and will be able to offer services in: hospitals,

rehabilitation centers, geriatric centers, industries, schools, sports medicine centers, health promotion programs, private practice, community programs, and others. Graduates will serve as clinicians, researchers, administrators, educators and consultants in the above-mentioned scenarios.

Admission Requirements

- Possess a baccalaureate degree or be in the last semester of the study program. Students must have a minimum of 16 credits approved in the required science courses at the time of their application.
- Have passed with C or above the following courses and have a grade point average (GPA) of 2.60 or above in these courses:

Required Courses	Semester Credit-Hours
Human Biology	6 - 8
General Physics	8
General Chemistry	8
Statistics	3
General Psychology	3
Human Development	3
Total	31 to 33

- All science courses should include both lecture and laboratory instruction.
- Graduate Studies Admission Test (EXADEP).
- Overall grade point average of 2.80.
- First Aid training provided by the American Heart Association or by the School of Health Professions and Cardiopulmonary Resuscitation Certification for the Health Care Provider, both to be maintained while enrolled.
- Interview with program faculty. (Only those candidates ranked in the first 33 positions based on their GPA and EXADEP).

Note: Although it is not an admission requirement, computer literacy is highly desirable.

Graduation Requirements

Students must complete 90 semester credits, obtain a minimum grade point average of 2.80, and a minimum of C in each course. Students have a maximum of five years, from the time of registration, to fulfill the requirements stated above. Students who do not satisfy graduation requirements within the expected period of time corresponding to their curriculum six semesters, and students who re-enroll after a period of absence, will be subject to the requirements applicable to the class with which they graduate. In order to receive a degree from the Medical Sciences Campus, students must approve the last 28 credits required for the degree at the campus program.

Accreditation

The Masters of Science in Physical Therapy Program at the Medical Sciences Campus, University of Puerto Rico is accredited by the Commission on Accreditation in Physical Therapy Education (CAPTE), 1111 North Fairfax Street, Alexandria, Virginia 22314; telephone: 703-706-3245; email: accreditation@apta.org; website: http://www.capteonline.org.

MASTER OF SCIENCE IN PHYSICAL THERAPY

TOTAL SEMESTER CREDIT-HOURS: 90

Professional Courses

ANAT 6005	Human Anatomy	4
TEFI 6009	Functional Procedures	1
TEFI 6007	Human Physiology	3
TEFI 6008	Basic Neuroscience	3
INVE 6011	Research I	2
TEFI 6010	Introduction to Professional Socialization	2
TEFI 6001	Kinesiology I	2
TEFI 6003	Tutorial I	2
TEFI 6002	Kinesiology II	2
TEFI 6021	Musculoskeletal Evaluation, Diagnosis, and Intervention in Physical Therapy I	2.5
TEFI 6023	Neurological Evaluation, Diagnosis, and Intervention in Physical Therapy I	2.5
TEFI 6015	Physical Therapist as Educator and Communicator	2
TEFI 6033	Clinical Correlations I	2

INVE 6012	Research II	2
TEFI 6004	Tutorial II	2
TEFI 6041	Clinical Practice I	6
TEFI 5000	Social Aspects of Illness	3
TEFI 6022	Musculoskeletal Evaluation, Diagnosis, and Intervention in Physical Therapy II	2.5
TEFI 6025	Cardiopulmonary Evaluation, Diagnosis, and Intervention in Physical Therapy	2
TEFI 6034	Clinical Correlations II	3
TEFI 6013	Research III	1.5
TEFI 6005	Tutorial III	2
TEFI 6014	Research IV	2
TEFI 6024	Neurological Evaluation, Diagnosis, and Intervention in Physical Therapy II	2
TEFI 6036	Administration and Consultation in Physical Therapy	3
TEFI 6042	Clinical Practice II	5
TEFI 6043	Clinical Practice III	8
TEFI 6044	Clinical Practice IV	16

MASTER OF SCIENCE IN OCCUPATIONAL THERAPY

The Master of Science in Occupational Therapy is the first and the only entry-level professional program in Occupational Therapy in Puerto Rico that prepares occupational therapist at the master level. Graduates with baccalaureate degrees in disciplines other than Occupational Therapy can become occupational therapists through this program. Occupational Therapy is a profession whose focus is on enabling a person or a group of persons to access and participate in occupations (activities) that are meaningful, purposeful, and relevant to their lives, roles, and sense of well-being. Occupational therapists consider occupation to be everything people do to occupy themselves, including taking care and supporting themselves and others, work, education, play, enjoying life (leisure) and social participation with family, friends and colleagues and in the community in general. Occupational therapists assess, utilize, and adapt everyday activities to improve function, enhance performance, promote health, prevent illness, and increase independence in those persons to whom they provide services. Occupational therapists examine not only the physical effects of an injury or disease, but also address the psycho-social, cognitive, community and environmental factors that influence function.

Occupational therapists work in a range of settings including: hospitals, rehabilitation centers, outpatient centers, mental health centers, school system, pediatric clinics, community centers, workplaces, skilled nursing facilities, nursing homes, home health and in private practice. They provide services in all areas in which people engage in their everyday activities.

The academic program is full-time, two years and a half in length. Two years are required to complete the didactic courses. Twenty-four weeks of internship (fieldwork) are required for certification to practice, and are completed in three 8-weeks, full-time periods following the didactic courses of the academic program. Upon completion of all graduation requirements, the student receives a Master in Science in Occupational Therapy.

Satisfactory completion of both the academic program and 24 weeks of internship (fieldwork) are required to be eligible to take a test offered by the Puerto Rico Occupational Therapy Board of Examiners (PROTBE) and to take the Certification Examination offered by the National Board for Certification in Occupational Therapy (NBCOT). Successful completion of the test offered by PROTBE allows graduates to obtain a license to practice the profession in Puerto Rico. Passing the certification examination is the final step in becoming an Occupational Therapist Registered (OTR) and qualifies the OTR for working in the United States and in Puerto Rico. Previous conviction of a felony may affect graduate's eligibility to sit for the certification examination, the licensure test and to attain licensure.

Admission Requirements:

The Accreditation Council for Occupational Education (ACOTE) established that beginning January 1 st 2007, occupational therapy programs will only be accredited at the post baccalaureate degree level. Candidates for admission for the entry-level master in Occupational Therapy must possess a baccalaureate degree in a discipline other than Occupational Therapy from an accredited university. Additionally they must have:

- A specific grade point average of 2.50 in the following pre-requisite courses:

Required Courses	Semester Credits-Hours
Second Year English	6
Sociology or Anthropology	3
Human Growth and Development across the life span	3-6
Human Biology I and II or Human Anatomy and Physiology	6
Basic Statistics	3
Total	21-24

- A general grade point average of 2.80 in the baccalaureate degree.
- A score of 500 or above on the EXADEP (Examen de Admisión a Estudios de Post Grado).
- Basic computer skills are highly recommended.

Graduation Requirements:

In order to graduate, students must meet the following requirements:

- Complete all the requirements of the didactic (67 credits) and the fieldwork component (16 credits) of the curriculum with a minimum GPA of 2.80, within a maximum period of 4.5 years after registration as first year OT student.
- Demonstrate professional behaviors considered acceptable by faculty and fieldwork supervisors and in accordance with regulations of the Medical Sciences Campus, the School of Health Professions and the Occupational Therapy Program.

Accreditation

The Occupational Therapy Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane P.O. Box 31220, Bethesda, MD, 20824-1220. AOTA's phone number is (301) 652-6611 X-2932. AOTA web-site is: **www.aota.org**.

MASTER OF SCIENCE IN OCCUPATIONAL THERAPY

TOTAL SEMESTER CREDIT-HOURS 83

Professional Courses:

TEOC 6005	Human Anatomy	4
TEOC 6001	Foundations of Occupational Therapy I	4
TEOC 6007	Occupation from a Developmental Perspective	4
TEOC 6003	Active Learning I	1
TEOC 6008	Professional Development in Occupational Therapy	4
TEOC 6002	Foundations of Occupational Therapy II	3
TEOC 6101	Occupational Dysfunction I	3
TEOC 6004	Active Learning II	1
TEOC 6009	Dimensions of Human Movement in Occupational Performance	3
TEOC 6401	Evidence Based Practice in Occupational Therapy I	4
TEOC 6006	Basic Neuroscience	4
TEOC 6501	Fieldwork Experience Level I (Part A)	2
TEOC 6102	Occupational Dysfunction II	3
TEOC 6402	Evidence Based Practice in Occupational Therapy II	2
TEOC 6201	Theory and Practice of Occupational Therapy in Psychosocial Dysfunction I	3
TEOC 6301	Theory and Practice of Occupational Therapy in Pediatrics I	3
TEOC 6203	Theory and Practice of Occupational Therapy in Physical Dysfunction I	3
TEOC 6205	Context and Management of Occupational Therapy Service	3
TEOC 6403	Evidence Based Practice in Occupational Therapy III	3
TEOC 6202	Theory and Practice of Occupational Therapy in Psychosocial Dysfunction II	4

TEOC 6302	Theory and Practice of Occupational Therapy in Pediatrics II	4
TEOC 6204	Theory and Practice of Occupational Therapy in Physical Dysfunction II	4
TEOC 6502	Fieldwork Experience Level I (Part B)	2
TEOC 6503	Fieldwork Experience Level II	12

For specific information about the Program please visit the School of Health Professions web-page at: **http://eps.rcm.upr.edu/**.

DOCTORAL PROGRAM IN AUDIOLOGY (AU.D.)

General Information

The audiologist is the autonomous professional who identifies, evaluates and manages hearing loss and balance disorders. In addition the audiologist:

- Provides audiologic habilitation for infants/children and audiologic rehabilitation for adults.
- Selects, prescribes and programs hearing aids and other amplifications systems and assistive communication devises.
- Prevents hearing loss through education to consumers, selection and fitting of hearing protectors and counseling regarding the effects of noise on the auditory system.
- Participates in research in the areas of prevention, identification and treatment of hearing loss, tinnitus and disorders of the balance system.

Employment Setting

Audiologists are qualified to work in private practice and government agencies such as Department of Health, Education and Family Services. Other employment opportunities are available in Federal Programs, Private Institutions and Universities.

Academic Description of the Program

The Doctor in Audiology (Au.D.) is a professional entry-level degree. The Program is a four-year, full-time, post-baccalaureate program which includes academic, research and clinical experiences. The academic, research and clinical experiences are guided toward the acquisition of critical knowledge and skills in four areas: foundation of practice, prevention and identification, evaluation and treatment of hearing, and balance disorders. The curriculum also reflects the scientific knowledge, skills, and the use of technology that characterizes the current scope of practice in Audiology. The Program requires the approval of 132 semester credit hours of post-baccalaureate study, and a practicum experience which is equivalent to a minimum of 12 months of full-time, supervised clinical experience. The student has a maximum of 7 years to complete the degree requirements, after initial registration as a first year student.

Admission Requirements

The Audiology Program will accept applicants by direct admission from accredited universities which meet the following requirements:

1. Possess a Baccalaureate degree or its equivalent from an accredited university.
2. Possess a General and Specific Grade Point Average (GPA) of at least 3.00. The specific grade point average refers to the 24-27 credits which are pre-requisites for admission into the Audiology Program.
3. Official report of score obtained in the "Examen de Admisión a Estudios de Posgrado" (EXADEP) or in the Graduate Record Examination. Both exams must be taken within five calendars years of the application date. This requirement will provide a standard measurement in order to place the student even in terms of the areas measured by the test.
4. Complete twenty four of twenty-seven (24-27) credits on the following areas or their equivalent:

Pre-requisite Courses

General Physics	3
Statistics	3
Human Development throughout lifespan**	3/6
General Biology	3
Pre-Calculus	3
General concepts on individuals with special needs	3
Psychology	3
Social Sciences	3
Total	24/27

**The credits required vary since some of the courses on human development cover lifespan in one 3 credits course, while others cover it in two 3 credits courses.

5. Knowledge and comprehension of written and spoken English and Spanish. This will be evaluated during the faculty interview.
6. Interview with the program's faculty.
7. Required Documents:
   - Two official transcripts
   - Completed Admission form

General Requirements

Students must attend the Audiology Program on a full-time basis.

Curricular sequence: The curricular sequence listed below is the one approved for the students to be admitted on August 2009. The curriculum for the students admitted on August 2007 and August 2008, has the research project as an elective and therefore, the total of required semester credits for graduation is 129.

DOCTOR IN AUDIOLOGY

TOTAL SEMESTER CREDIT-HOURS: 132

First Year: 38 Credit-Hours

HLAG 6303	Anatomy of the Speech and Hearing Mechanism	3
HLAG 6325	Communication Development of the Normal Child	3
HLAG 7111	Research Methods in Communication Sciences and Disorders I	2
AUDI 7115	Acoustics for Hearing and Speech Sciences Laboratory	1
AUDI 7116	Acoustics for Hearing and Speech Sciences	3
AUDI 7117	Principles of Audiology Laboratory	1
AUDI 7118	Principles of Audiology	3
HLAG 6300	Basic Concepts in Linguistics, Psycholinguistics, and Psychoacoustics	3
HLAG 7112	Research Methods in Communication Sciences and Disorders II	2
AUDI 7119	Instrumentation in Audiology	2
AUDI 7120	Speech Disorders	3
AUDI 7125	Pharmacology in Audiology	2
AUDI 7126	Advanced Audiology	3
AUDI 7127	Advanced Audiology Laboratory	1
AUDI 7216	Differential Diagnosis in Pediatric Audiology	3
HLAG 6533	Language Disorders in Children	3

Second Year: 33 Credit-Hours

AUDI 7201	Clinical Practicum I	1
AUDI 7211	Amplification Systems I	3
AUDI 7213	Amplification Systems Laboratory I	1
AUDI 7217	Psychosocial Aspects of Hearing Loss	2
AUDI 7218	Auditory Pathologies	3
AUDI 7305	Audiological Habilitation of the Pediatric Population	3
AUDI 7128	Physiological Assessment of the Auditory System	3
AUDI 7129	Physiological Assessment of the Auditory Systems Laboratory	1
AUDI 7202	Clinical Practicum II	2
AUDI 7500	Clinical Seminar	1
AUDI 7231	Assessment and Intervention of Balance Disorders I	2
AUDI 7226	Research Application in the Clinical Practice of Audiology	2
AUDI 7212	Amplification Systems II	3
AUDI 7214	Amplification Systems Laboratory II	1
AUDI 7227	Occupational and Environmental Hearing Conservation	2

AUDI 7228	Occupational and Environmental Hearing Conservation Laboratory	1
AUDI 7221	Research Project I	2

Third Year: 47 Credit-Hours

AUDI 7203	Clinical Practicum III	3
AUDI 7500	Clinical Seminar	1
AUDI 7315	Auditory Processing Disorders	2
AUDI 7318	Deaf Culture, Linguistics and Manual Communication Code System	3
AUDI 7319	Audiologic Rehabilitation of the Adult	3
AUDI 7232	Assessment and Intervention of Balance Disorders II	2
AUDI 7317	Assessment and Intervention of Balance Disorders II Laboratory	1
AUDI 7222	Research Project II	2
AUDI ____*	Clinical Practicum IV	
AUDI 7500	Clinical Seminar	1
AUDI ____*	Professional Issues in Audiology	3
AUDI ____*	Practice Management in Audiology	3
AUDI 7327	Special Topics in Audiology	3
AUDI 7223	Research Project III	2

Summer Session

AUDI ____*	Clinical Practicum V	15

Fourth Year: 14 Credit-Hours

AUDI ____*	Clinical Practicum V	0
AUDI ____*	Clinical Practicum VI	14

* Courses to be coded.

Graduation Requirements

In order to receive the degree the student must fulfill the following requirements:

- Approved 132 semester credits with a grade point average of 3.00 or higher, in a scale of 0 to 4.00.
- Approval of the comprehensive examination.
- Complete a minimum of a year of full-time clinical practice.
- Approval of the clinical practicum examination.
- Demonstrate appropriate professional behavior.

Licensure:

In order to practice the profession of Audiology in Puerto Rico it is necessary to obtain a license. The license requirements are to hold a Masters or Doctoral degree in Audiology and to approve the exam offered by the Examining Board in Speech-Language Pathology, Audiology and Speech Therapy of the Department of Health of Puerto Rico.

Accreditation

One of the accrediting agencies for the Audiology Profession is the: Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association - 10801 Rockville Pike, Rockville, MD 20852. Telephone # (301) 897-5700. The Audiology Program is currently working on preparing the document that must be submitted in order to apply for the accreditation of the Program.

Course Descriptions

Faculty

JOINT DEGREE PROGRAMS

The Post-Doctoral Master of Science and the Graduate Certificate in Clinical Research represent a joint effort, of the School of Medicine and the School of Health Professions of the Medical Sciences Campus of the University of Puerto Rico, to offer two multidisciplinary didactic training programs to meet the need among minority health professionals for formalized academic training in the principles of clinical research. These programs were developed with the support of the other four academic schools of our campus; Graduate School of Public Health, School of Dentistry, School of Pharmacy and School of Nursing. These academic programs also joined in the partnership with the graduate clinical research program, K - 30, at Mayo Clinic - Rochester, MN, the San Juan Veterans Administration Medical Center and the Puerto Rico Department of Health to increase the depth and breadth of training opportunities and improve the overall quality of the education.

GRADUATE CERTIFICATE IN CLINICAL RESEARCH

The objectives of the Graduate Certificate program are to increase knowledge and skills in clinical research and improve the attitudes toward clinical research through completion of the didactic component. The curriculum consists of one year of didactic courses for a total of 24 semester credit hours. After completion of the program requisites, the graduate will have acquired knowledge in study design, analysis, interpretation and evaluation of clinical research, biostatistics methods appropriate to clinical research and legal, ethical and regulatory issues related to clinical research. The graduates will also develop skills in problem solving, analysis and critical thinking strategies for the design, implementation and management of clinical projects, effective oral and written communication and use of technology for seeking information and data processing purposes. The graduates will exhibit an ethical responsible conduct in clinical research , recognize the importance of collaborative work and the importance of communicating scientific knowledge and findings.

Admission Requirements

The program will competitively evaluate all interested candidates from accredited institutions across the island. Applicants meeting all requirements will be interviewed and recommend the top ranked candidates.

1. Hold a master degree
2. Minimum master general grade point average of 3.00
3. Submission of the official application and all required documents prior to the deadline established by the program
4. Curriculum Vitae
5. Transcript from the institution granting the master degree
6. Two (2) letters of recommendation from individuals familiar with the applicants science - research related activities
7. Personal statement detailing how this program will contribute to the candidate career goals

Graduation Requirements

A Graduate Certificate in Clinical Research degree will be awarded to those students admitted to the certificate program that complete successfully the 24 semester credits of the didactic component and attendance to seminar series.

GRADUATE CERTIFICATE IN CLINICAL RESEARCH

TOTAL SEMESTER CREDIT-HOURS: 24

INCL 6005	Introduction to Clinical Research	1
INCL 6006	Introduction to Health Services Research	1
INCL 6016	Application of Informatic in Research	1
INCL 6025	Bioethics and Regulatory Issues in Clinical Research	2
INCL 6035	Epidemiology in Clinical Research I	2
INCL 6041	Biostatistic in Clinical Research I	2
INCL 6042	Biostatistic in Clinical Research II	2
INCL 6046	Epidemiology in Clinical Research III	2
INCL 6055	Clinical Trials	2
INCL 6065	Scientific Communication	2
INCL 6075	Bioanalytical Methods in Clinical Research	2

Electives recommended by the Program

INCL 6085	New Frontiers in Clinical Research	1
INCL 6056	Clinical Research Protocol Development	2
INCL 6007	Gender Consideration in Clinical Research	1
INCL 6045	Introduction to Bioinformatics and Medical Genomics	1

MASTER OF SCIENCE IN CLINICAL RESEARCH

The post-doctoral master program is designed to meet the need for formal academic training in quantitative, qualitative, and other methodological principles of clinical research, including patient-oriented research, epidemiologic and behavioral studies, outcomes research, and health services research. Graduates of the post-doctoral program will be trained to plan original clinical research with adequate sample size, sampling methods, well-defined diagnostic criteria, and effective control of confounding variables. The post-doctoral master program consists of a two-year competency-based curriculum with two major components: didactic courses and a mentored research project (research component).

The program's mission is to promote the development of multidisciplinary clinical scientific teams working in collaboration toward the attainment of two common goals: improvement in quality of life and decrease health disparities. In the research component the program will target specific health conditions of high priority to the Hispanic population as delineated by Healthy People 2010 and based on the mortality and morbidity trends in Puerto Rico. The research component will focus on HIV, cancer, cardiovascular and respiratory diseases, diabetes, oral health, issues related to aging, mental health/ psychiatric disorders, and drug abuse and addiction.

The graduates are expected to become independently funded and committed clinical researchers that will be able to develop culturally appropriate research aimed at reducing health disparities in Hispanic populations, conduct ethically responsible clinical research, build and lead effective collaborative networks in their areas) of clinical research interest, communicate effectively in writing and orally (unless a handicap precludes one of these forms of communication), be able to work collaboratively, interdependently and effectively with other disciplines on the clinical research team and become a lifelong self-directed learner.

Admission Requirements

The program will competitively evaluate all interested candidates from accredited institutions across the island. Recruitment of post-doctoral candidates will include: Junior Faculty (7 years or less of their first faculty appointment or 7 years or less since the date that they received their doctoral degree) ; fellows, residents, interns and outstanding University of Puerto Rico, Medical Sciences Campus (UPR- MSC) 4th year medical students.

1. Have a doctoral degree or formal doctoral studies in progress in a health field, such as MD, DDS, DMD, DO, Ph.D., ScD., Pharm. D or an entry level degree in a health - related discipline and a doctoral degree.
2. Minimum doctoral general grade point average of 3.00 or the GPA of the most recent degree.
3. Two Formal Commitment Letters from Dean/ Director of Unit and Immediate Supervisor (Department Chair, Division Director, Program Director) for release time to attend this program.
4. Submission of the official application and all required documents prior to the dead line established by the program.
5. Curriculum Vitae.
6. Transcript from the institution granting the doctoral degree.
7. Two letters of recommendation from individuals familiar with the applicants science-research related activities.
8. Personal statement detailing how this program will contribute to the candidate career goals.
9. A one-page research letter in one of the clinically relevant health areas.

Graduation Requirements

A Master of Science in Clinical Research degree will be awarded to those scholars that complete successfully the 24 semester credits of the didactic component and the following clinical research requirements:

- Approval of a research proposal
- Preparation and submission of an abstract for an oral or poster presentation in a national/ international scientific forum/ meeting/congress
- Completion of clinical research project
- Preparation of a manuscript ready for submission to a peer-reviewed scientific journal
- Approval of oral presentation of research findings
- Attendance to seminar series

MASTER OF SCIENCE IN CLINICAL RESEARCH

TOTAL SEMESTER CREDIT- HOURS: 30

INCL 6005	Introduction to Clinical Research	1
INCL 6006	Introduction to Health Services Research	1
INCL 6016	Application of Informatics in Research	1
INCL 6025	Bioethics and Regulatory Issues in Clinical Research	2
INCL 6035	Epidemiology in Clinical Research I	2
INCL 6041	Biostatistic in Clinical Research I	2
INCL 6042	Biostatistic in Clinical Research II	2
INCL 6046	Epidemiology in Clinical Research II	2
INCL 6055	Clinical Trials	2
INCL 6056	Clinical Research Protocol Development	2
INCL 6065	Scientific Communication	2
INCL 6075	Bioanalytical Methods in Clinical Research	2
INCL 6085	New Frontiers in Clinical Research	1
INCL 6095	Clinical Research	6

Electives recommended by the Program

INCL 6007	Gender Considerations in Clinical Research	1
INCL 6045	Introduction to Bioinformatics and Medical Genomics	1

Course Descriptions

SCHOOL OF HEALTH PROFESSIONS

COURSE DESCRIPTIONS

UNDERGRADUATE COURSES

ANAT 4016
Topographical and Sectional Anatomy. Two (2) credits.

This course is designed to provide a supplementary basis in human anatomy focused towards the specific needs of the Nuclear Technology and Ultrasound student. It deals mainly with the topographic study of the human body, based on the analysis of the transverse sections. It emphasizes identification main anatomical structures by configuration and by relative position to their adjacent structures. Four main areas are covered. In priority order they are: thorax, abdomen, pelvis, head and neck. Analytic process will be based on discussions of diagrams and photographs of transverse sections of the human body. The intellectual skills developed in the course are to be applied on subsequent one and in the clinical practice.

AUXD 2005
Anatomy and Physiology. Two (2) credits. Pre-requisites: BIOL I and II.

This course presents basic concepts in Anatomy and Physiology and pretend to provide the dental hygienist with the knowledge of the normal anatomy of the human body and how it functions under normal conditions so that they would recognize signs and symptoms of the different diseases and anatomical abnormalities that patients could suffer. The course is presented by means of lectures and audiovisual aids.

AUXD 2007
Oral Histology and Embryology. Two (2) credits. Pre-requisites: BIOL I and II.

This course will provide the student the basic knowledge of the primary oral tissues. Emphasis is placed on the study of the microscopic anatomy of the tissues of the mouth and the embryonic development of the face and the oral cavity. The course is presented by means of lectures and audiovisual aids.

AUXD 2009
General Elementary Chemistry. Two (2) credits.

This course is designed to present a balanced treatise of the basic modern Chemistry, both theoretic and descriptive. During the course themes of general Organic and Inorganic Chemistry will be exposed to capacitate the student to understand the chemical components with which they work and the interaction they have with the patient's health and nutrition. The course is presented by means of lectures.

AUXD 2015
Dental Oral Head and Neck Anatomy. Three (3) credits.

This course is designed to develop in the student an integrated knowledge of Dental, Oral and Head, and Neck Anatomy. Basic terminology, anatomical and functional aspects of the head and neck as related to Dentistry and to the dental auxiliary work. A base knowledge of the masticatory system, the morphology and occlusion of teeth and their functional interrelationship is also included. The course is presented by means of lectures and audiovisual aids.

AUXD 2017
Microbiology Pathology Therapeutics. Three (3) credits. Co-requisites: AUXD 2005, AUXD 2007.

This course provides the future dental auxiliary with the basic knowledge in Pathology and Microbiology; pathogenic microorganisms and the disease they produce. Emphasis is given to the symptomatology, diagnosis, prevention and treatment of oral diseases. At the end of the course the student will be able to carry out the necessary steps to control contamination and to prevent the spread of disease through the Dental Office and will be able to recognize deviations from the normal and abnormalities of the oral cavity. The course is presented by means of lectures and audiovisual aids.

AUXD 2019
Pharmacology, Dental Emergencies, and Pain Control. Two (2) credits. Co-requisites: AUXD 2005, AUXD 2009.

Presentation of basic Pharmacology and common drugs utilized in Dentistry. Basic concepts in pain control and

dental emergencies are discussed. In addition, the importance of different drugs, their interaction and relation with systemic and oral disease is presented. The course is presented by means of lectures and audiovisual aids.

AUXD 2020
Psychology. Two (2) credits.

Introductory course that offers a historical background of the evaluation of Psychology as the science that studies the human behavior. Emphasis is given to the discussions of basic concepts pertaining to: individuality of the human being, motivation and personality. Special importance is place upon the applicability of such concepts at a personal and professional level as well.

AUXD 2025
Dental Radiology. Four (4) credits.

This course familiarize the student with the principles and procedures needed to expose, process, mount, and interpret intraoral radiographs. Emphasis will be given to the development of accuracy in the technic and professional judgment. The course is presented by means of lectures, demonstrations, and practice in manikins.

AUXD 2029
Oral Hygiene Pre-Clinic/Preventive Dentistry. Four (4) credits.

This course presents terminology and procedures to enable the students to understand the process of caries formation and the initial process of periodontal disease. In addition, it provides laboratory experiences in primary and secondary preventive procedures, general concepts in Nutrition; as well as in the measures for infection control established by OSHA and PROSHA. The course is presented by means of lectures, demonstrations, and practice in manikins.

AUXD 2035
Principles of Four Handed Dentistry for Dental Hygienists. Half (0.50) credit. Co-requisite: AUXD 2029.

This is a laboratory course designed to enable the dental hygienist in current basic concepts of clinical supportive procedures. Emphasis is placed in applying concepts of Four Handed Dentistry in chairside assisting, basic trays preparation, instrument transfer, use of oral evacuation systems, patient and dental hygienist position. It also include practice in patients vital signs recording, use of universal precautions, dental charting, and dental equipment maintenance. Conferences, demonstrations and role playing in the clinical setting are the strategies for the development of the course.

AUXD 2045
Biochemistry and Nutrition. Two (2) credits. Pre-requisites: Biological Sciences 1 & 2, AUXD 2009.

This course provides the student with basic information regarding biochemical aspects of nutrients and the interrelationships of nutrients and oral health. Techniques for the recording and evaluation of nutritional information and counseling of dental patients are amply discussed. The application of nutritional procedures in primary prevention are thoroughly explained.

AUXD 2055
Periodontics. Two (2) credits.

Didactic course intended to provide the Dental Hygiene student with knowledge about normal periodontium, principles of Periodontology and the ethiology and classification of periodontal disease. The emergencies and most common surgical procedures in the treatment of periodontal disease are also discussed. Special emphasis is given to preventive measures within the scope and responsibility of the dental hygienist. The course is presented by lectures and visual aids.

AUXD 2065
Advanced Dental Hygiene. Four (4) credits. Pre-requisites: AUXD 2025, AUXD 2029. Co-requisites: AUXD 2055, AUXD 2191.

The course will provide the student the knowledge and skills for the development of advanced procedures in secondary oral hygiene services. It emphasized patient's treatment needs in different kind of patients to develop in the student self confidence when a professional self judgement is required. Also, it will capacitate the student to work with different patients with special needs and advanced periodontal problems. It will develop clinical specific skills in root planning, soft tissue curettage, suture removal, radiographic interpretation,

periodontal dressing placement, and dry socket treatment. To develop the class it will be used conferences, laboratory work, radiographs, and instruments.

AUXD 2191
Dental Hygiene Clinic I. Ten (10) credits. Pre-requisites: AUXD 2025, AUXD 2029. Co-requisites: AUXD 2055, AUXD 2065.

This course is offered to the student at the Second Semester of the Second Year of Study. It will expose the student to perform basic procedures in patient's evaluation. It provides the experiences for the student to develop skills for the application of basic instrumentation principles in preventive health care procedures. It emphasize the use of the ultrasonic scaler, prophylaxis instruments and dental chartings. Also, facilitate the student to develop an individualize educational strategy for each patient. The students will practice in the Dental Hygiene Clinic and public's hospitals.

AUXD 2192
Dental Hygiene Clinic II. Seven (7) credits. Pre-requisite: AUXD 2191.

The course will provide the student complex and advanced procedures related to secondary oral preventive treatment. They will have the opportunity for the intervention and treatment of severe periodontal patient's condition and, also, have the experience to work with special needs patients. The student will be assigned to work in a private periodontist's office and public's hospitals. During the experience, they will work with special conditions patients like: bedridden patients, mental conditions, and handicapped. The specialized dental procedures are under the supervision of Dental Hygiene Faculty and the dentist.

AUXD 2195
Dental Hygiene Care for Special Needs Patients. One and a half (1.50) credit. Co-requisite: AUXD 2191.

This course provides the dental hygienist student with the basic skills knowledge to effectively manage and treat the special needs patients. It will focus on helping student transfer theoretical knowledge into clinical practice skills. The knowledge of the clinical conditions, drugs used for treatment, and patient behavior will help the student to understand patient individual needs. It will also prepare them to develop skills for the management of these patients in the clinic. Lectures, group discussions, and clinical instruction are the strategies that the professor will utilized in this course.

AUXD 2215
The Role of Dental Hygienist in Gerontology. Two (2) credits.

This course provides the basic knowledge, aptitudes, and dexterities necessary for the management of the Gerontology patient. This knowledge is applied to the psychological changes, biological, sociological, and demographical changes of this population. This knowledge will facilitate the intervention of the dental auxiliary personnel within the oral health team in treating the geriatric patient.

AUXD 2225
Practice Management, Ethics, and Jurisprudence. Two (2) credits.

This course is designed to provide the student with a comprehensive knowledge of the administrative procedures included in Practice Management at the Dental Office. The contents and experiences of the course will emphasize the analysis of basic ethical principles related to the professional and personal behavior of the dental hygienist. Those principles deal with the ethical issues and problems in the relationship of the dental health team, supervisors, and the patients.

AUXD 2235
Community Dental Health. Four (4) credits.

At the end of the course, the students will offer a preventive dental health orientation to different populations such as: children, adolescents, adults, and elderly people in community fields like schools, aging homes, hospitals and rehabilitation homes. The course will emphasize health education concepts, practices, and trends to foster the development of positive attitudes toward oral health. It will develop skills and experiences for the student's effective participation in planning, developing and evaluating oral health activities. It will be developed by lectures, conferences, role playing, and hypothetical cases.

AUXD 2305
Seminar I. One (1) credit.

Puerto Rico's laws, Dentistry profession, and the increasing demands for dental services requires a competent personnel who performs all the dental hygienist functions and be licensed by the State Board of Dental Examiners. Seminar period will concentrate in the review of the concepts, fundamental principles, standards, and skills concerning to the Dental Hygiene Profession. It will emphasize the use of scientific literature that includes critical analysis of research papers and articles related to the Dental Profession. During the Dental Hygiene Clinical Practice the seminar will enrich student's clinical experiences by promoting and encouraging self confidence when taking a wise decision is required. Those skills will be developed by conferences, literature analysis, questions analysis from releases boards exams, and the creation of a bank of questions from the students.

AUXD 2306
Seminar II. One (1) credit. Pre-requisite: AUXD 2305. Co-requisite: AUXD 2192.

This clinical seminar contains material that will assist the student in developing higher levels of analytical thinking and judgment skills, as well as, to continue to improve clinical practice and treatment planning in periodontal patients. Also, it will increase the skills for the appropriate management of different questions presented in the Dental Hygiene Boards. Lectures, small groups discussions, and Dental Hygiene releases exams are utilized in the seminar. In addition, a case study in a CD-Rom, will be given to the student for and independent study utilizing the computer as a learning resource.

BIOE 4015
Statistical Methodology. Two (2) credits.

Statistical theory and its application to biomedical and health data. The topics included are: Scientific Method, Statistical Method, Procedures for the Collection, Classification, Presentation, and Analysis of Data. The analysis includes the topics of rates, ratios, proportions, and some measures of central tendency.

CISA 4009
Human Relations. Three (3) credits.

Basic principles and dynamics of interpersonal relations applied to problems of the Health Related Professions and its personnel. Theories and evaluation on human relations as well as its present development will be discussed. Examples will be presented and applied to daily living.

CISA 4015
Psychological Principles Applied to the Health Sciences. Three (3) credits.

This course offers Health Sciences students the opportunity to examine basic fundaments of Psychology, study areas, research methods and its implications, emphasizing the practical value in their professional fields. Students will develop concepts, skills and attitudes that foster the holistic understanding of the human being, in order to manage effectively their interaction with the persons they serve, as well as with the health team and themselves. The course was designed with the teaching general strategy of Exploration, Conceptualization and Application (ECA) with the principal aim that students be able to apply acquired knowledge in the Health Sciences, specially in their area of preparation.

CISA 4026
Educational Methodology for Teaching in the Health Sciences. Three (3) credits.

A systematic approach to the design, development, and evaluation of post-secondary level educational activities. Emphasis on the different methods conducive to an effective learning in the Health Related Professions.

CISA 4031
Principles of Health Services Administration I. Three (3) credits.

Includes the study and analysis of the basic Principles of Administration and the Administrative Process Applied to Health Sciences field. Emphasis on the principles and administrative techniques applicable to the intermediate management level in health services organizations.

CISA 4032
Principles of Health Services Administration II. Three (3) credits. Pre-requisite: CISA 4031.

Includes the study and analysis of the basic Principles of Administration and the Administrative Process Applied to Health Sciences field. Emphasis on the principles and administrative technique applicable to the intermediate management level in health services organizations.

CISA 4035
Principles of Personnel Administration in Health Care Organizations. Four (4) credits.

Includes the study and analysis of the Principles of Personnel Administration in Health Services Organizations. Emphasis on the study of the Government Personnel System.

CISA 4037
Methods and Instruments of Student Evaluation in Health Sciences. Three (3) credits.

Provides the participants with a series of practical and effective techniques for student assessment. Its principal approach is on the development of elements necessary for measurement of cognoscitive, affective, and psychomotor domain. Emphasis on the design, use of methods, and development of measurement instrument in the Health Related Professions.

CISA 4038
Seminar and Teaching Practicum. Four (4) credits. Pre-requisites: CISA 4026, CISA 4037, EDFU 3001, EDFU 3002, EDFU 3007.

Provides the student-teacher with an opportunity to put into practice their knowledge, skills, and self-attitudes regarding education. Practice will be supervised by a specialist of each area of specialist and an educator. Provides for skills comprehension and development on the decision making process in the Health Related Professions.

CISA 4048
Basic Principles of Personnel Supervision. Three (3) credits.

This course intends to familiarize the student with the modern theories of supervision. It provides the opportunity for the student to initiate the development of skills that contribute to the effective use of the functions of supervision. Practical exercises and experiences will be utilized so that the student can evaluate himself and initiate a plan of personal improvement or development.

CISA 4055
Statistical Methods for Health Care Practitioners. Three (3) credits.

Course of descriptive Statistic with an interdisciplinary approach. It includes the basic concepts of Statistic and its relation with the Scientific Method. It study the recollection, classification, and presentation of the data as well as the analysis of the information through rates, measures of location and variation. Also, it introduces the sampling method. Emphasis is given to the application of Statistics in the health field.

CISA 4065
Seminar and Practicum in Management. Three (3) credits. Pre-requisites: CISA 4032, CISA 4035.

This course emphasizes in the development of concepts, skills and attitudes related to the practice of health services administration. Also through integrated activities with seminar and practice the student is face with administrative situations, problems and administrative strategies that are usual in the health institutions. During the practice the student will work in a project that emphasizes knowledge, skills and attitudes in the analysis and problem solving process. At the same time, the student is exposed to real administrative environment of intermediate administration as part of an interdisciplinary team in a health service organization.

CISA 4105
Educational Technology for Teaching of the Health Sciences Professions. Three (3) credits. Pre-requisites: The student most have evidence of knowledge and basic skills in microcomputers and application programs. The student most have evidence of courses, workshops, and/or skills by means of a test administer by the faculty.

This course will allow the educator in the Health Sciences field to obtain basic knowledge on Educational Technology and develop skills in the operation of educational

equipment and the production of instructional materials. The student will have the opportunity to get acquainted with topics on the concept and components of Educational Technology, the systems approach to instructional design, production of instructional materials, operation of equipment, as well as the application of computers and telecommunications in the teaching of the Health Sciences.

CONT 3005
Introduction to Elements of Accounting I. Four (4) credits.

The objective of the course is to familiarize the student with the role of social, political, and economic developments which have influenced the development of Accounting, as well as with the basic concepts of Accounting, so that he may use accounting data intelligently. The nature of Accounting and its historical development, theory, methods, and uses are considered. Emphasis will be on the meaning, measurements, uses, and limitations of income and other financial information. The needs of management, owners, creditors, government agencies, clients, and employees are considered.

ECON 3005
Introduction to Economics. Three (3) credits. Pre-requisites: CISO 3121, CISO 3122.

Introduction to the theory and application of the fundamental concepts of Economics: historical concepts and perspectives, fundamental problems, methods of analysis, fundamentals of microeconomy and contemporary and future economic problems.

EDFU 3001
Human Growth and Development I. Three (3) credits.

The First Semester will be devoted to an inquiry into the nature of Psychology as background for a better understanding of the educational process. The growth and development of children and adolescent will be examined, as well as the natural and environmental forces which influence the development of a well balanced personality. The Second Semester the student will analyze the psychological principles which underlie the teaching-learning process and the individual and social conditions which act upon it. Analysis of the process of evaluation and the principles underlying the creation of educational testing and grading.

EDFU3002
Human Growth and Development II. Three (3) credits. Pre-requisite: EDFU 3001.

Nature and scope of Psychology as a basis for a better understanding of the educational process an examination of the growth & development of children and adolescents and the natural forces and environmental conditions that contribute to the development of a healthy person, main psychological principles that explain the teaching-learning process and how it is affected by individual and social conditions, a study of the evaluation process with special emphasis on principles.

EDFU 3007
Social Foundations of Education. Three (3) credits. Pre-requisites: CISO 3121, CISO 3122, HUMA 3101, HUMA 3102.

Analysis of the basic social science principles in terms of the educational process. Study and discussion of the social problems that have conditioned the development of Education in Puerto Rico.

EDFU 4015
Foundations of Public Health Education. Three (3) credits.

The role of Education in developing basic concepts of Public Health and the means for preserving, improving and promoting individual and community health. Emphasis on public health problems in Puerto Rico, and the contribution of the school and other agencies to their solution. The prevention of illness; environmental sanitation; nutrition, personal, dental and industrial hygiene; safety and first aid; and mental hygiene.

EDFU 4019
Philosophical Foundations of Education. Three (3) credits. Pre-requisites: CISO 3121, CISO 3122, HUMA 3101, HUMA 3102.

Study of philosophical theory and its relationship to pedagogical practice. Presentation of major problems that have been caused by conflicting educational

philosophies in terms of their historical development and their present impact. The course emphasizes and clarifies the role of the teacher in regard to educational goals, curriculum programs, and evaluation. Basic philosophical problems such as the meaning of truth, happiness, and their educational implications are analyzed. The course endeavors to promote an understanding of the way in which the development of the Scientific Method, the progress of Democracy, changes in social and economic institutions, and the advancement of human knowledge.

EDSA 4001
Field Experience in Health Education I. Three (3) credits.

The field experiences in the Second Year are directed to the observation and discussion of aspects related to Public Health. Visits to study public and private agencies with health programs are included. The above mentioned visits are organized according to the primary, secondary, and tertiary level approach in the organization of health services.

EDSA 4002
Field Experience in Health Education II. Two (2) credits. Pre-requisite: EDSA 4001.

Emphasis is placed in the planning, development, and evaluation of activities designed for the promotion and maintenance of health to approach existing community groups. The active and progressive student's participation as co-leader provides the opportunity for self evaluation of performance, strengths, and weaknesses.

EDSA 4003
Field Experience in Health Education III. Two (2) credits. Pre-requisites: EDSA 4001, EDSA 4002. Co-requisite: EDSA 4013.

This course offers the student the opportunity to design and develop the first educational activity with a community group in a real scenery also he/she could practice skills like coordination among agency personnel and moderator of educational activities, and others.

EDSA 4004
Field Experience in Health Education IV. Seven (7) credits. Pre-requisites: EDSA 4001, EDSA 4002, EDSA 4003. Co-requisite: EDSA 4014.

This course offers the student the opportunity to design, develop , and evaluate an educational program in a real community setting. The student prepares a social, epidemiological, and educational diagnosis related to the health problems in the assigned community. Afterwards, the student designs, implements, and evaluates the educational program.

EDSA 4005
Field Experience. Four (4) credits.

The process of searching for solutions to real problems in real situations. In the course the student finds himself eventually as an active participant in the learning situation. The experiences will be related to the discussion at the conceptual seminar.

EDSA 4006
Field Experience. Six (6) credits.

Emphasis is placed on the progressive participation of the students with the preceptor in simple group work activities in the community.

EDSA 4007
Field Experience. Eleven (11) credits. Pre-requisite: EDSA 4006.

The student develops a complete community project beginning with the need assessment, formulation, implementation, and evaluation of the action plan.

EDSA 4008
Communication Skills. Three (3) credits.

The process of Communication and its components perception, self concept, information processing, language, reasoning, thinking, listening and non verbal communication. The students will develop skills to apply these components of communication to intrapersonal and interpersonal communication.

EDSA 4011
Conceptual Seminar I. Six (6) credits.

In this course, the family as an institution is studied as well as its characteristics, functions, and its importance for health. The physical, mental, and social development of the personality is also analyzed with particular emphasis to the process of socialization. Special emphasis is given to the participation of the family in the preservation of the health of its members and to the interdependence with the community toward the same goal.

EDSA 4012
Conceptual Seminar II. Five (5) credits. Pre-requisite: EDSA 4011. Co-requisite: EDSA 4046.

The subject matter of this course focuses on two constructs: study of the community and the change process. The utility of the study of the community is discussed as well as the methods to be used to do it. Emphasis is given to the importance of the community profile or study as the basis for community action. Students analyze the theoretical base of the change process and of the strategies used by the health educator to change human behavior at the individual, group, and community level.

EDSA 4013
Conceptual Seminar III. Four (4) credits. Pre-requisites: EDSA 4011, EDSA 4012.

This course provides the student with an opportunity to analyze in depth the central element of the health education discipline: the educational process. The mentioned process is studied as the main intervention strategy used by the health educator to change or modify what people know (cognitive aspect), what they feel (affective aspect), and what they do (health practices). The student's participation in specific practical experiences during the study of the course help them integrate theory and practice thus increasing the effectiveness of their learning.

EDSA 4014
Fundamentals of Planning in Health Education. Four (4) credit. Pre-requisite: EDSA 4013. Co-requisite: EDSA 4004.

The basic concept of this course is planning. The process of planning health promotion and health education programs and projects is analyzed. The educational experiences include assigned readings, group discussion, interviews of planning and health education practitioners and learning experiences for the development of thinking. The course rounds up with the preparation of a plan of action and its evaluation design for the development of a health education project in a real community.

EDSA 4015
Conceptual Seminar. Ten and a half (10.50) credits.

This course studies the family, their characteristics, functions, and the personality development of their members. Emphasizes the participation of the family in the preservation of the health of their members and their interdependence with community toward this aim.

EDSA 4016
Conceptual Seminar. Thirteen and a half (13.50) credits.

Discusses the philosophy, objectives and strategies in community work. Emphasis is placed on the importance of the community profile as basic for community action. The theory of how to introduce changes in the community is analyzed with emphasis on the educational process.

EDSA 4017
Conceptual Seminar. Four and a half (4.50) credits. Pre-requisite: EDSA 4016.

The course includes the planning process. The student develops basic skills in program planning and prepares a work plan for his/her community project.

EDSA 4021
Communication Skills I. Three (3) credits.

This course develops a thorough study of the process of communication and then apply the principles and theory that best describe the process across communication levels. It also develops critical analysis skills.

EDSA 4022
Communication Skills II. Three (3) credits. Pre-requisite: EDSA 4021.

This course develops a thorough study of the process of mass communication. Develops critical thinking abilities and skills; it also applies content theories and principles to the solution of health problems.

EDSA 4023
Communication Skills Workshop. Two (2) credits. Pre-requisites: EDSA 4021, EDSA 4022.

This course facilitates the development of knowledge, skills, and attitudes toward communication as a dynamic and transactional process in a community setting. It is based on research theoretical knowledge and principles of communication. It emphasizes on the practical approach of effective communication skills for community health education roles.

EDSA 4024
Communication Skills IV. Two (2) credits. Pre-requisites: EDSA 4021, EDSA 4022, EDSA 4023.

This course focuses on debate and argumentation as communication skills. Paramount emphasis is given to debate as a method for rational decision making, problem solving, and other critical thinking skills. The principles of argumentation studied are derived from psychological theories, motivations techniques and logical thinking. The educational experiences in the course will enable students to consider the evidence available in decision making process to design case (studies) and to debate relevant issues within the puertorrican reality with emphasis in public health problems.

EDSA 4025
Skills Workshop. Seven and a half (7.50) credits.

The content focus on the process of communication and its components-preception, self concept, information processing, language, reasoning, thinking, listening and non verbal communication. Emphasis is placed in development of skills in communication.

EDSA 4026
Skills Workshop. Six (6) credits.

The student has the opportunity to use a variety of instructional materials in order to initiate, develop and refine skills such as public communication, the interview, informative communication and persuasive communication.

EDSA 4027
Skills Workshop. Three (3) credits. Pre-requisite: EDSA 4026.

This course aims to develop in the student basic skills in the use and direction of educational techniques such as panel, dialogue, symposium, workshop, etc.

EDSA 4031
Laboratory for the Development of Human Potential I. Two (2) credits.

The course provides experiences which enable students to explore their inner world: identification, recognition, acceptance, and sharing of their feeling, emotions, and sensitivity, their values, prejudice, and their relation to individual conflicts; ways of relating to authority. Students are also trained to examine how others perceive their behavior in group environment. Students learn to use the group as a mean of positive change.

EDSA 4032
Laboratory for the Development of Human Potential II. Two (2) credits. Pre-requisite: EDSA 4031.

This course examines the basic elements and levels of Communication, the barriers which interfere with an effective communication, and the importance of perception in the phenomena. It aims to facilitate students to identify, analyze, and modify their communication styles. Positive feedback is emphasized as a mean of helping students accept responsibility in the solution of individual and group communication problems. In the introduction the course also examines principles of group process: leadership, behavior, and group effectiveness.

EDSA 4033
Laboratory for the Development of Human Potential III. Two (2) credits. Pre-requisites: EDSA 4031, EDSA 4032.

The course aims to develop a theoretical framework in relation to the process of organization development and enrichment of groups. Emphasis is placed in the integration of the conceptual (knowledge to live situations of group functioning).

EDSA 4034
Laboratory for the Development of Human Potential IV. Two (2) credits. Pre-requisites: EDSA 4031, EDSA 4032, EDSA 4033.

The course provides a conceptual and theoretical framework in relation to effective interventions with groups in order that the group facilitator develops the necessary knowledge, skills, and attitudes for the performance of his future professional role. The student models as group facilitator, evaluates his performance, and the performance of his peers.

EDSA 4035
Human Potential Development Laboratory. Six (6) credits.

This course is designed to develop sensitivity of the student's toward their own behavior and other people's behavior. The student learn how to utilize the group as medium and as object of change.

EDSA 4036
Human Potential Development Laboratory. Six (6) credits. Pre-requisite: EDSA 4035.

Exposes the student to the theoretical and practical framework of how to develop a group and how to facilitate group growth.

EDSA 4037
Human Potential Development Laboratory. Three (3) credits.

The students evaluate the process of group growth, design, prepare and practice many strategies for facilitating the group growth. He/she has the opportunity to practice the role of group facilitator.

EDSA 4045
Introduction to Educational Technology. Three (3) credits.

Emphasis is placed on the basic elements of Educational Technology. The student learn to choose, design and utilize teaching materials and how to operate audiovisual equipment.

EDSA 4046
Introduction to Educational Research. Three (3) credits. Pre-requisite: BIOE 4015.

Studies the Scientific Method, its application and uses in the field of Public Health. Analyzes different designs of educational research. The student is guided in the design, utilization of a questionnaire, analysis, and interpretation of data in a simple assessment.

Note: Course was modified from trimester pattern to semester pattern Jan/23/91. Credits modified from 4.5 (trimester) to 3.00 (semester).

EDSA 4047
Educational Media and Technology. Three (3) credits.

Emphasis is placed on audiovisual media and methods and their application to the field of Health Education. Teaching aids are designed and develop according to existing instructional objectives. The students are guided in developing skills in the use of various audiovisual equipments.

EDSA 4056
Basic Principles of Community Nutrition. Three (3) credits.

An introduction to the problems and practice of community nutrition. This course studies the factors associated with the formation of nutritional habits and how to introduce changes in them to promote and maintain the nutritional health of the individual and the community.

EDSA 4057
Introduction to Human Sexuality. Three (3) credits.

This course studies the basic concepts of human sexuality with emphasis on psychosocial and affective aspects. Emphasis is also given to the methodology used in Sex Education.

EDSA 4058
Fundamentals of Human Sexuality. Three (3) credits.

This course analyzes Human Sexuality from a biological, psychological, and sociocultural perspective. Promotes the development of positive attitudes toward sexuality and analyzes the subject as a comprehensive component of personality.

EDSA 4059
Basic Concepts in Nutrition. Three (3) credits.

Introduction to the principles and practices of Nutrition, adequate feeding, nutritional habits, and food management, discussion of the sociocultural factors that affect the alimentary component, and nutrition problems of the Puerto Rican Community.

EDSA 4065
Teaching Techniques for Community Health Education. Three (3) credits. Pre-requisite: EDSA 4024.

This course was specifically designed for senior students enrolled in the undergraduate Community Health Education Program. It's aim is to provide the knowledge and to develop the needed skills and attitudes to deal with the teaching learning process in Health Education related activities. It enhances the student's capacity for a skillful and professional selection of techniques for health education activities.

EDSA 4066
Topics in Community Health Education. Three (3) credits.

This course explores selected issues in the field of Health Education through readings, group discussions, and field experiences.

EDSA 4067
Priority Health Problems in Puerto Rico. Three (3) credits.

This course evaluates high priority problems in Puerto Rico, such as drug addiction and the Acquired Immuno-Deficiency Syndrome. It analyzes critical issues and places students in their professional roles as community health educators. Students are challenged to reflect, to clarify their values and attitudes, and to make logical and reasoned decisions regarding the health problems analyzed.

EDSA 4075
Group Work Strategies. Four (4) credits. Pre-requisite: EDSA 4034.

Students attending this course are required to integrate the content, skills, and attitudes acquired in foregoing courses and previous laboratories. The depth and spread of the laboratory experiences and of the content offered, underline the highest levels of performance with groups work. It is here where the development of the human potential is integrated from individual perspective of the future professional up to the perspective future as a group facilitator.

EDSA 4076
Group Dynamic. Three (3) credits.

This course provides the student with the opportunity to participate in a sensitivity training. The student learns how his behavior affects others and how he is affected by the behavior of the members of the group.

ENFE 1035
Applied Nursing. Two (2) credits.

The study and application of basic nursing procedures sterile technics, catheterization, principles of enema, administration, and the basic cardiopulmonary resuscitation.

EPID 4201
Introduction to Epidemiological Methodology. Three (3) credits. Pre-requisite: CISA 4055.

The study of Epidemiology which is a fundamental science necessary for the study of health programs. Originally this course was offered on a trimester pattern. On November 22, 1996 was changed to a semester pattern.

FINA 3005
Introduction to Insurance. Three (3) credits.

Problems inherent to the insurance field and its influence on the individual, on the economy and on society. Different techniques that can be used to deal with high risk. The handling of insurable risks through insurance policies, and the relationship of risk and public policy.

FINA 3006
Business Finance. Three (3) credits. Pre-requisites: ECON 3007, CONT 3006.

A study of the process of raising, administering, and distributing the funds of an enterprise. A study of different types of businesses with special emphasis on the modern corporation. Analysis of the stages of promotion, organization, expansion, and liquidation of the corporation.

INTD 2005
Introductory Biomedical Sciences Core Course. Five (5) credits.

Introductory course in the study of the human body, composed of ten units: Cellular Biology, Tissues, The Muscular Skeletal Systems, The Nervous System, The Cardiovascular and Lymphatic System, The Respiratory System, The Urinary System, The Digestive System, The Reproductive System, and The Endocrine System. Provides the student the opportunity to think of the human organism as a global and integrated functional unit.

INTD 4005
Health: A Holistic Approach. Five (5) credits.

Introduces the student to the concepts of Health and Public Health and to his professional role as a member of the interdisciplinary health team. Various fundamental processes utilized to study the health level in a community are examined. Several of Puerto Rico's health problems, are discussed and the main given to health education, legislation and health alternatives for the promotion and maintenance of individual and collective health.

INTD 4006
Cultural Influence and Folk Health Practice of the Puerto Ricans. Three (3) credits.

An interdisciplinary course with a humanistic approach designed to aid the student in his or her understanding of those aspects of man and its culture that influence health attitudes and practices. Particular attention is given to the folk health practices of the Puerto Ricans. Includes analysis and discussion concepts and ideas from the field of the Humanities and the Cultural Sciences as they relate to situations faced by the health professional.

INTD 4008
Trends and Controversies in the Health Professions. Three (3) credits.

Places the student in the Health Related Professions educational setting. Clarifies the Health Sciences concept and studies its evolutionary development up to and including its present status. Analysis of the current controversies in the health field.

INTD 4015
Community and Mental Health. Two (2) credits.

Studies different factors related to Community Mental Health. Analyses strategies for the promotion and maintenance of individual and Community Mental Health.

INTD 4016
Addiction Problems in the Puerto Rican Society. Two (2) credits.

An overview of the addiction problems in the Puerto Rican Society. Emphasis is placed in alcoholism and smoking problems. Discuss the implication of these problems for the individual, the family, and the community. Analyses the factors related to these problems and specific intervention strategies for these cases.

INTD 4017
Biomedical Core Course. Six (6) credits.

In this course the anatomic structures and physiological processes of the human body system are studied. In addition, the course provides clinical correlation by the discussion of pathologies, medical disorders and conditions

which affect the structures and function of the human body. The student will analyze the basic clinical correlations and adapt them to their respective Health Sciences area.

INTD 4018
Gerontology: An Interdisciplinary Approach. Three (3) credits.

This course explores the aging process using an interdisciplinary approach. The biological, social, and psychosocial problems of our senior citizens will be discussed. Emphasis will be given to myths, stereotypes, realities, and health services available to the aged. The interdisciplinary role of the health professional in offering services for the aging will be closely examined.

INTD 4020
Introduction to Computers. Three (3) credits.

Students will acquire basic knowledge and skills in computer literacy. General aspects, terminology, and use of computers will be discussed. Including historical background, hardware, and software. Opportunity will be provided to apply knowledge and skills through the use of microcomputers. Emphasis will be placed on the use and application of a wide range of programs (software) most commonly used in the Health Science field.

INTD 4025
Microcomputers Applied to Health Sciences. Three (3) credits. Pre-requisite : INTD 4020 or its equivalent.

This course provides the student, who has previous experience with microcomputers and interest in increasing knowledge and developing new skills with computers, the opportunity to work with a variety of software packages used in the Health Sciences field. The students will apply theoretical concepts and develop skills that will permit them to operate and use correctly the equipment ("hardware") and the programs ("software"), through the use of a hands-on practical experience approach with the microcomputer.

INTD 4027
Human Values and Ethics in the Training of the Health Professional. Three (3) credits.

Study of the values system and ethical issues on health care, such as the right to life and death, genetic manipulation, discrimination in the quality and quantity of health care. Emphasis on the codes and ethics on professional behavior.

INTD 4065
Introduction to Violence Prevention in Children & Youth. Three (3) credits.

This interdisciplinary course promotes interaction between future health professionals to develop knowledge, skills and attitudes in areas related to violence prevention in children and youth from 0-24 years. In the course, violence is considered as a public health problem in the Hispanic and Puerto Rican Society. The etiology and epidemiology of violence as well as the risk and biopsychosocial protective factors that protect children and youth from violence are analyzed. The roles and responsibilities of health professionals in violence prevention, effective techniques, and projects and community programs that are effective for this matter are examined. Educational methodologies, such as discussion, projects and cooperative learning are used as a mean of facilitating the course.

INTD 5006
Interdisciplinary Health Team Experience. Three (3) credits.

Field experiences with concurrent daily sessions for the development of the team, including analysis of the team concept, team characteristics, group dynamics, communication patterns, others. The conceptual framework of this course evolves around the development of a special project which can be of a clinical, community or organizational nature. Instructional methodology will include group exercises for teamwork skill development, group discussions and development, group discussions and development of a special project.

INTD 5116
Incorporation of Technology in the Designing of Educational Activities. Three (3) credits.

This is a multidisciplinary course created for undergraduate and graduate students. The course exposes students to the basic concepts of teaching-learning and develops skills in the use of technology for the development of educational activities relevant to the discipline of

the student. The course will discuss topics as: planning and implantation of educational activities and the use of computerized programs of word processing and design of presentations, for the creation of articles and poster boards as educational materials.

MEDU 4006
Core Course in Biomedical Sciences. Six (6) credits.

The course has been designed to provide the students with a common conceptual case and to promote the interdisciplinary health team concept. It integrates the systems of human body, with emphasis on normal Anatomy and Physiology. The content is divided in ten (10) units: I. Cellular Biology, II. Musculo-Skeletal System, III. Nervous System, IV. Hematology, V. Cardio-vascular System, VI. Respiratory System, VII. Renal System, VIII. Digestive System, IX. Endocrine System and X. Reproductive System.

MICR 4006
Medical Bacteriology. Seven (7) credits.

Microbiology and Immunology with emphasis on technical procedures used in the isolation and identification of bacteria, viruses, and fungi pathogenic to man. Lecture and laboratory.

PAXD 2010
Introduction to General and Dental Specialties Procedures. Two (2) credits. Co-requisites: PAXD 2015, PAXD 2016, PAXD 2017.

This course consists of lectures designed to develop knowledge of the most common restorative and specialty procedures in the various areas of dental practice and its relationship with the dental auxiliary role. It includes, also, nomenclature, terminology, instrumentation, and the sequence of the procedures.

PAXD 2015
Dental Materials. Two (2) credits. Co-requisites: PAXD 2010, PAXD 2016, PAXD 2017.

This course is designed to provide students information about nomenclature, characteristics, physical and chemical properties of dental materials. The laboratory emphasizes the development of skills in the manipulation and application of materials commonly used in the clinical practice of Dentistry. The materials include: gypsum products, impression materials, cements, metals, amalgams, composite resin, sealant, abrasives, synthetic resin denture materials and waxes.

PAXD 2016
Dental Instruments. Two (2) credits. Co-requisites: PAXD 2010, PAXD 2015, PAXD 2017.

This course consist mostly of conferences and laboratory experiences to enable students in the identification and use of dental instruments. It will also includes hand instruments that require manual effort to operate or rotary instruments , which are placed in some type of handpiece or rotary device. Emphasis will be placed in developing skills, such as assembling and maintaining the sequence of instruments on the preset trays, following four handed dentistry principles and infection control protocol.

PAXD 2017
Chairside Assisting and Basic Clinical Procedures. One (1) credit. Co-requisites: PAXD 2010, PAXD 2015, PAXD 2016.

This course consists of lectures and laboratory experiences to enable the dental assistant in current concepts of Chairside Assisting and Chairside Clinical Supportive Functions, which are part of general Dentistry procedures. Emphasis will be placed in applying current concepts of Chairside Assisting in a modern Dental Office, instruments transfer techniques, and the use of different oral evacuation systems during routine operative and surgical procedures. The use of universal precautions in the prevention of cross contamination will also be included.

PAXD 2018
Expanded Functions in Preventive Laboratory. Two (2) credits. Co-requisites : PAXD 2010, PAXD 2016, AUXD 2017.

This course introduces the student to basic Preventive Dentistry terminology and procedures and enable the student to understand the process of caries formation and initiation of periodontal disease. It also includes evaluation of different measures and procedures available to prevent oral diseases, and their application on a particular patient. The laboratory provides experiences necessary to develop proficiency in this field. Included are the most basic Preventive Dentistry procedures, such as: educational

strategies, mechanical and chemical methods of plaque control, care of removable appliances and prosthesis, fluorides, sealants, desensitizing agent and others.

PAXD 2024
Expanded Functions in Preventive Dentistry Clinic. Two (2) credits. Pre-requisite: PAXD 2018.

A general exposition to programmed progressive experience in the execution of basic preventive procedures, such as: the use of ultrasonic scaler , polishing teeth, fluoride treatment and sealants. It will also includes the development of skills in basic instrumentation and infection control procedures in order to develop proficiency and quality performance in this field.

Course changed from trimester pattern to semester pattern on July 1998.

PAXD 2029
Expanded Functions in Restorative Laboratory. Three (3) credits.

This course introduces the dental assistant to programmed progressive experiences necessary to develop the basic skills in the most common restorative operative procedures in order to develop proficiency in this field. It will also includes live demonstrations and laboratory practice on a manikin. Emphasis is placed in the utilization and correct manipulation of instruments and materials during the different restorative projects.

Course changed from trimester pattern to semester pattern on July 1998.

PAXD 2030
Expanded Functions in Restorative Dentistry Clinic. Three (3) credits. Pre-requisite: PAXD 2029.

A general exposure to programmed progressive experiences in the execution of the most common restorative operative procedures in order to develop skills and proficiency in this field, utilizing four handed Dentistry concepts. It will also includes practical experience performing basic business office procedures.

Course changed from trimester pattern to semester pattern on July 1998.

PAXD 2101
Clinical Practice I. Four (4) credits. Pre-requisites : PAXD 2010, PAXD 2015, PAXD 2016, PAXD 2017, AUXD 2025.

This course provides the dental assistant the practical clinical experiences related to Chairside Assisting in dental and hospital procedures. The student is also provided with the clinical experiences necessary for exposing and processing intraoral radiographs in a variety of patients. Emphasis will be placed on patient management in order to ease performance by better patient-operator relationship. Clinical rotation will be performed in dental clinical sites, such as School of Dentistry, program facilities, Medical Center, and Veterans Hospital.

PAXD 2102
Clinical Practice II. Four (4) credits. Pre-requisite : PAXD 2101.

This course provides the dental assistant the extramural clinical experience related to Chairside Assisting, radiographic, and basic business office procedures. The clinical assignments are designed to expose the student to the realities and pressures of a dental office or hospital dental clinic and how to cope with stress associated with those clinical settings. It will also emphasize the quality and variety of experiences gained in each assignment as well as the quantity of functions performed. Clinical rotations will be performed in private dental offices, and Medical Sciences Campus clinical site.

SAAN 4026
Comparative Anatomy of Domestic Animals. Two (2) credits.

This course will cover the study of microanatomy and macroanatomy of the most important domestic animals. The main model will be the dog. The fundamental anatomical variations will be compared between the canine, porcine, equine, avian, and bovine. Anatomical and medical terms related to animals will be studied. Audiovisual resources, cadavers for dissection, and laboratory experiences will be utilized.

SAAN 4027
Physiology of Domestic Animals. Two (2) credits.

A study of the function of the following systems with reference to their clinical importance: Circulatory, Nervous, Urinary, Skeletal, Respiratory, Muscular, Endocrine, Lymphatic, and Reproductive. The physiological and medical terminology related to animals will be studied. Audiovisual resources, models, and laboratory experiences will be utilized.

SAAN 4029
Dog and Cat Nutrition. One (1) credit. Pre-requisites: SAAN 4027, SAAN 4085.

This course provides basic knowledge in the areas of nutrition of the dog and the cat. Nutritional differences between both species will be discussed. Different types of commercial pet foods will be discussed, including characteristics, and marketing of the product. Prescription diets will also be discussed. This will be accomplished by lectures and practical exercise.

SAAN 4036
Introduction to Animal Health Technology Science. Two (2) credits.

An introductory course for the beginning student as an orientation to the principles of animal health technology. The professional interrelationship between the veterinary doctor and the animal health technologist, as well as career opportunities, duties, laws, and ethics as pertains to the paramedical veterinary personnel in the Veterinary Science field will be studied.

SAAN 4047
Introduction to Pharmacology. Three (3) credits. Pre-requisite: SAAN 4027.

Study of the major classification of drugs, with selected samples of their functions and effects on animal systems. Knowledge of the basic terminology, usage, routes of administration, toxicity and hazards, sources, and storage of drugs.

SAAN 4059
Veterinary Microbiology. Three (3) credits. Pre-requisites: General Biology, General Chemistry, Organic Chemistry.

This course includes basic principles in Microbiology and its applications to Veterinary Medicine. The students will study the different groups of microorganisms by its morphology, staining characteristics, motility, nutritional requirements, and metabolism. It will include basic principles of Mycology, Virology, and Milk Microbiology. This will be accomplished by lectures and laboratory experiences.

SAAN 4060
Animal Diseases. Three (3) credits. Pre-requisites: SAAN 4026, SAAN 4027, SAAN 4059.

This course familiarizes the student with the most common infectious diseases in canines, felines, equines, porcine, bovine, poultry, and laboratory animals. The principal characteristics of the diseases such as etiological agent, clinical signs, control, and prevention methods of the disease will be discussed. This will be accomplished by lectures, clinical cases discussion and group discussions.

SAAN 4067
Principles of Veterinary Parasitology and Entomology. Two (2) credits. Pre-requisites: SAAN 4026, SAAN 4027.

A study of the most important ectoparasites and endoparasites of domestic animals, including identification, life cycle, pathogenecity, laboratory diagnosis, control measures, pathology and economic and public health importance.

SAAN 4069
Epidemiology and Zoonoses. Three (3) credits. Pre-requisites: SAAN 4059, SAAN 4060, SAAN 4067.

In this course the student will study transmissible diseases from animals to men (Zoonoses). These Zoonoses will be discussed in terms of their frequency, ethiological agent, geographical distribution, transmission mode, incidence, clinical signs in the animal and in men, diagnosis and treatment. Special attention will be given to the control and prevention of disease. Additionally, it will include the concept of epidemiological research, where the diagnostic process, data collection and its analysis and the experimental and descriptive methods related to research

are examined. At the end of the course the student will apply his acquired knowledge to accomplish his/her role in animal and public health maintenance. The objectives will be accomplished through lectures, demonstrations, group discussions, audiovisual materials and laboratory exercises.

SAAN 4078
Food Sanitation. Four (4) credits. Pre-requisites: SAAN 4059, SAAN 4060.

At the end of this course the student will be able to discuss basic concepts of food sanitation and identify the most common sources of food contamination. In addition, will identify methods of sanitation and food preservation. Students will understand and interpret laws and regulations related to food production, manufacture, storage, and distribution. He will also recognize symptomatology of food borne disease and will develop practical techniques of food conservation and safety.

SAAN 4085
Introduction and Management of Farm Animals. Six (6) credits.

The study of the common breeds and characteristics of domestic animals, including dogs, cats, swine, sheeps, goats, horses, beef cattle, dairy cattle, and poultry. Fundamental concepts of animal nutrition, feeding, selection, breeding, and consumption patterns as related to economics. This course provides students the opportunity to familiarize with the most important domestic animals and to observe modern facilities for their use in a successful operation.

SAAN 4101
Field Experience I. Two (2) credits. Pre-requisites: SAAN 4026, SAAN 4027, SAAN 4036, SAAN 4085.

This course is the first of a group of three in Field Experience with animals such as beef cattle, dairy cattle, dogs, cats, laboratory animals, exotic animals, pigs, poultry, primates and other pets. The course includes field experience in Clinical Pathology and food products laboratories. The student will assist to three (3) of eight (8) centers designed by the Animal Health Technology Program.

SAAN 4102
Field Experience II. Two (2) credits. Pre-requisite: SAAN 4101.

This course is the second of the block in Field Experiences. This course provides first hand experience with animals such as: beef cattle, dairy cattle, dogs, cats, laboratory animals, exotic animals, pigs, poultry, primates and other pets. The course includes field experience in Clinical Pathology and food products laboratories. The student will be assigned to six (6) practice centers designed by the Animal Health Technology Program, not visited in Field Experience I. This course is followed by the practicum in Animal Health Technology.

SAAN 4105
Practicum-Animal Health Technology. Six (6) credits. Pre-requisite: SAAN 4102.

This is the third course and last section of the block making up Field Experiences. In this course the students will select one of the nine (9) centers for practice visited in previous courses, Field Experience I and Field Experience II. The purpose is to increase and develop their knowledge and skills in one particular area related to Animal Health Technology.

SAAN 4113
Veterinary Clinical Analysis I. Three (3) credits. Pre-requisites: SAAN 4027, SAAN 4059.

This course is designed to prepare the animal health technologist with the basic principles for the establishment, administration, and operation of a Veterinary Clinical Laboratory. The course focuses on the logic behind the many laboratory procedures performed in veterinary practice and how these are performed. Discusses theory, clinical importance, methodologies, quality control, instrumentation, normal values, differences between species and the associated pathologies in the following areas: Urinalysis, Urolithiasis, Clinical Parasitology, Clinical Hematology, Coagulation and miscellaneous laboratory tests. At the end of this course the animal health technologists will practice and understand the laboratory clinical procedures, their relationship with the physiological changes in sick animals, and their variations by species.

SAAN 4114
Veterinary Clinical Analysis II. Four (4) credits. Pre-requisite: SAAN 4113.

This course is designed to prepare the Animal Health Technologist student with the basic principles for the clinical analysis of samples from different animal species. The course focuses the role of the animal health technologist in the laboratory procedures performed in veterinary practice. Also the analysis can help the veterinarian to confirm a clinical diagnostic. In the course we discuss the theory, clinical importance, methodologies, quality control, instrumentation, normal values, differences between species, and associated pathologies in the following areas: Clinical Chemistry, Immunology, Serology, Cytology, and others miscellaneous laboratory tests. At the end of this course the student will practice and comprise the laboratory clinical procedures, their relationship with the physiological changes in sick animals, and their variations by species.

SAAN 4115
Laboratory Animal Management. Three (3) credits. Pre-requisites: SAAN 4047, SAAN 4067, SAAN 4120.

The animals considered in this course are those most frequently encountered in the laboratory situation; the greater proportion of the study being confined to the more common laboratory mammals. The primary objective is to discuss the principles involved in the healthy maintenance of animals in the laboratory or animal house. The student most be aware about the environmental requirements, physiological data, and techniques of husbandry, involved in the care and use of laboratory animals.

SAAN 4116
Veterinary Radiology. Three (3) credits. Pre-requisite: SAAN 4026.

This course familiarizes the student with basic concepts of Radiological Sciences. The discovery of X-Rays, their production, use and management will be discussed. They will learn applied terminology, and how the radiological image becomes visible. The student will learn radiographic techniques and correct positioning. The student will apply these knowledge in real situations provided practical laboratory experiences utilizing different animals.

SAAN 4120
Animal Nursing. Four (4) credits. Pre-requisites: SAAN 4026, SAAN 4027, SAAN 4085. Co-requisites: SAAN 4047, SAAN 4059.

This course will prepare the student for their nursing role in the general care of the hospitalized and the walk inpatient. The student will perform: nursing procedures, such as fluid administration, taking laboratory samples, catheterization, care of wounds, bandages, nutrition, dental hygiene, and client education.

SAAN 4125
Surgical Assistance. Four (4) credits. Pre-requisites: SAAN 4026, SAAN 4047, SAAN 4120.

This course will provide the student with basic concepts related to surgical assistance needed in the surgical room. Basic principles of asepsis, management of the equipment and surgical instruments, suture materials and suture patients are studied and applied. Additionally, the tissue healing process, surgical emergencies, the pre-operatory period, pre-anesthesia, and the different types of surgical anesthesia are discussed. The student will learn the correct use of the anesthesia machine, will study and practice anesthesia monitoring, and the care of a patient during the post-operatory period. The last part of the course will provide hands on laboratory experiences where the student will accomplish his/her role as anesthetist and surgical assistant in several surgeries.

SAAN 4130
Veterinary Hospital Management and Computerized Records. Four (4) credits. Pre-requisite: SAAN 4036.

This course covers managerial processes that are essential to the successful operation of the veterinary hospital. The student should analyze the basic principles underlying the management of business organization including the patient management considering the relation between the patient and the client. The student will be involved in the veterinary hospital design to guarantee functionality. Additionally he/she will design and evaluate different kind of records in the veterinary hospital. The student will recognize the importance of handling records correctly for the adequate management of veterinary practice. This course includes a basic introduction to personal computers programs especially designed for veterinary hospital.

TENU 4135
Nuclear Physics. Two (2) credits.

Study of the elementary aspects of the structure of matter, the modes of radioactive decay, the interaction of radiation and matter, the principles of radiation detection, basic principles of sound waves, and its interaction with matter. The student will be able to apply the basic principles involving Nuclear Physics, radioactivity, radiation detection and sound waves to practical situations in the Nuclear Medicine and to perform calculations involving radiation dose and radioactive decay, and to apply these to Nuclear Medicine problems.

TENU 4145
Statistics in Nuclear Medicine. One (1) credit.

The student should be able to apply statistical methods in the analysis and interpretation of Nuclear Medicine data. Specific procedures related to the radioactive decay process, interpretation of time activity histograms and interpretation of quantitative laboratory data will be emphasized.

TENU 4165
Radiation Protection. One (1) credit.

TENU 4175
Radiation Biology and Radionuclide Therapy. One (1) credit.

TENU 4177
Radiation Protection and Radiobiology. Two (2) credits.

This course introduces the student to the proper handling of radioactive materials. The cellular and tissue effects of ionizing radiation, acute and chronic radiation syndromes will be considered. It presents the therapeutic applications of radionuclides, the techniques for measuring environmental radiation levels, detection of radioactive contamination, techniques of decontamination and radiological protection. Government regulations relating to exposure and material handling are covered.

TENU 4185
Radiopharmacy and Radionuclide Chemistry. Two (2) credits.

The production of radionuclides, design and use of radionuclide, generators, formulations of radiopharmaceuticals, mechanisms of tissue localization of various agents and quality assurance procedures are discussed. The student will be able to apply Radiopharmacy procedures and Radiochemistry principles to specific clinical and research problems in Nuclear Medicine.

TENU 4195
Radioassays. Two (2) credits.

Includes principles of Immunology, principles, techniques, and interpretations of in-vitro clinical procedures, including saturation analysis and competitive protein binding. Laboratory experience using the instrumentation necessary for these procedures is provided. The student will be able to perform specific radioassay and radioimmunoassay procedures.

TENU 4205
Instrumentation in Nuclear Medicine and Ultrasound. Two (2) credits.

The operating principles of Nuclear Medicine and ultrasound instrumentation are presented. The student should be able to use properly, calibrate, standardize, operate, and do basic troubleshooting for clinical imaging instrumentation, such as scintillation cameras, scanners, ultrasound imaging units and laboratory equipment, such as gamma and beta counters and radiation survey meters.

TENU 4215
Administration of a Nuclear Medicine Facility. One (1) credit.

Different aspects of the administration of a Nuclear Medicine laboratory and clinic are discussed. The student should be able to apply basic concepts of administration and management to a Nuclear Medicine Department, including record keeping, quality assurance programs, safety procedures and other licensing requirements of regulatory agencies.

TENU 4225
Seminar. One (1) credit.

A diversity of topics related to Nuclear Medicine Technology are presented with the participation of students and all teaching staff. The student will perform a literature review and prepare a written paper and an oral presentation, on a subject of interest in Nuclear Medicine or Diagnostic Ultrasound Imaging.

TENU 4235
Clinical Practice. Ten (10) credits.

Supervised experience in the hospital is provided, including radionuclide imaging, in vitro procedures and some experience on diagnostic ultrasound imaging. A one-hour weekly discussion period is provided to discuss clinical diagnostic procedures not included in other courses. The student will perform, under supervision, a diversity of diagnostic procedures, including required quality assurance and radiation protection procedures.

TENU 4245
Computer Application in Nuclear Medicine. One (1) credit.

The principles of operation of digital computers are presented, including digital concepts, analog to digital conversion, data acquisition systems, and the basic concepts of the hardware and software used in Nuclear Medicine. The student will be able to apply this concepts in the data acquisition and analysis of clinical studies.

TENU 4265
Nuclear and Ultrasound Imaging. Four (4) credits.

Study the principles of radionuclide and sonographic imaging procedures of human organs, regions, and systems. With the different organs, regions, and systems it includes the methodology and assessment of function in studies, applications, limitations, normal and abnormal patterns, and technical pitfalls.

TEOF 2005
Professional and Ethical Aspects of Ophthalmology. One (1) credit.

The course deals with professional and ethical conduct that the ophthalmic assistant should observe in and out of his work. the laws governing the practice of Ophthalmology in Puerto Rico, the importance of medical records and ophthalmic terminology are also discussed.

TEOF 2006
Ocular Anatomy and Physiology. Four (4) credits.

Presents the system, nomenclature, and definitions of the ocular anatomy and physiology.

TEOF 2007
General Concepts in Optics and Refraction. Three (3) credits.

Orients the students in general concepts about optics and measures utilized to correct errors of refraction.

TEOF 2008
Ophthalmic Equipment. Three (3) credits.

The course deals with the different instruments and equipment utilized in the ophthalmology services, their care and maintenance.

TEOF 2009
Ophthalmic Pharmacology. Two (2) credits.

Describe the effects, indications, and contraindications of the drugs most commonly used in Ophthalmology. Also discusses the functions of the autonomic nervous system.

TEOF 2015
Diagnostic Techniques and Procedures. Two (2) credits.

Discussed the variety of the different diagnostic techniques used by the ophthalmologists.

TEOF 2016
Common Eye Diseases, Trauma, and Emergencies. Five (5) credits.

Describes the clinical features, differential diagnoses, and management of the most eye diseases, traumas and emergencies.

TEOF 2017
Ocular Surgery and Aseptic Techniques. Three (3) credits.

Prepares the students for his functions in the operating room discussed aseptic techniques, types of anesthesia and the most common ocular surgical procedures.

TEOF 2018
Pediatric Ophthalmology. Two (2) credits.

This clinical course deals with most common ocular diseases affecting children.

TEOF 2019
Ocular Surgery. Two (2) credits.

This clinical course deals with all types of ocular surgery and the relationship of the assistant with the ophthalmologist in the operating room.

TEOF 2020
Retina. Two (2) credits.

Clinical course that deals with the diseases of the retina, its diagnosis, and management.

TEOF 2021
Glaucoma. Two (2) credits.

This clinical course deals with the symptoms of a patient with glaucoma and its management.

TEOF 2025
Clinical Practice. Fourteen (14) credits.

Practical course in basic Ophthalmology in the clinics and operating rooms of affiliated institutions.

TERA 1001
Human Anatomy I. Three (3) credits.

To give the student basic knowledge of the various systems, structures, and organs of the body, and their physiology. The course has been designed to give the student the opportunity to relate himself with all the systems of the human organism. Emphasis to macroscopic anatomic of systems, and an introduction to microscopic (hystologic), is given in addition to discussion of general names and terms, cells, tissues, organs, anomalies, etc.

TERA 1002
Human Anatomy II. Three (3) credits.

To enable the student with the necessary knowledge with regard to the osseous and muscular systems. This course provides the student community with variability of learning accurately the osseous and muscular systems, in terms of its morphology, physiology, and embryology, with emphasis in the application of that knowledge to Radiography.

TERA 1003
Human Anatomy III. Three (3) credits.

The course enables the student to quickly comprehend the relationship between body parts and systems, its morphology, physiology, histology, etc. It encompasses a programmed content directed to give the student a concise knowledge of the human system, academically and visually oriented to be used as a basis for certain radiologic examinations; aspects that all practicing radiographer must master.

TERA 1011
Introduction to Radiologic Physics. Three (3) credits.

In this course the student will understand the effects of ionizing radiation in biologic systems. It includes the area of radiation protection, basic interaction of radiation with matter, and the effect of exposure factors on radiation dose, biological effects, etc.

TERA 1012
Radiologic Physics. Three (3) credits. Pre-requisite: TERA 1011.

Students will study ionizing radiation and its applications in Medicine. Special emphasis will be given to the use of X-Rays in clinical diagnosis, considering radiologic protection for the technologist, paramedic personnel and patient. An introduction on Nuclear Medicine, Ultrasound and Computerized Tomography will be offered.

TERA 1013
Radiographic Techniques and Positioning I. Four (4) credits.

The course gives the student a thorough understanding of the theory aspects of Radiology, the discovery of X-Rays and how it is produced. Analyze relationships of factors affecting exposure calculations. The course includes matters such as: radiographic positioning procedures and techniques, radiographic terminology, methods of identification administration, use and contraindications of contrast media. The student will develop the necessary skills needed to applicate radiographic protection.

TERA 1014
Radiographic Techniques and Positioning II. Four (4) credits.

Students will apply acquired skills pertaining to anatomical structures of the human body (thorax, abdomen, and pelvis). Projection of internal structures presenting pathological conditions is an important part of the course. Students will develop and master their skills at the laboratory radiographic units.

TERA 1015
Introduction to Radiologic Techniques. Three (3) credits.

To familiarize the X-Ray student with all ethic principles of the profession. Personnel will recognize the importance and impact of those principles related to other health professions. Also, they will relate themselves with the laws governing the practice of the profession in Puerto Rico, and the U.S. in addition to the professional organization dealing with radiologic technique in the island.

TERA 1018
Applied Pathology. Three (3) credits.

The student will comprehend and be familiar with the terms, describe the different types of pathological conditions, the way they are used in the medical language, and their meaning imposed by various parts of speech. They will also learn about symptoms, signs, morphological variations, and other pathological conditions, and how they are projected radiographically. This course offer the student the opportunity to acquire more knowledge in relation to pathological conditions, physiologic variations in individuals and how they affect their behavior in the environment.

TERA 1023
Radiographic Techniques and Position III. Two and a half to four (2.50 – 4) credits.

To acquaint the student with the specialized and highly technical procedures in Radiography. The course provides special attention to positioning and techniques related to body systems where the patient bears a special preparation.

TERA 1025
Seminar and Pre-Clinical Practicum. Three (3) credits.

The course guides the student toward study and application of the cognitive aspects and concepts of the X-Ray technology applied in the clinical areas with special emphasis to the radiographic units. The student receives training on technological procedures, such as: handling of seriously ill and injured patients, processing procedures at different affiliated radiological laboratories. The clinical training is conducted following a master rotation plan with periodical written evaluation done by a clinical instructor. The student will acquire the knowledge and develop the skills required for the clinical practice.

TERA 1033
Radiologic Exposure. Four (4) credits.

The course provides the student with the basic theoretical concepts concerning Radiation and its history, ranging from the production of X-Rays to the creation of radiographic images. Included in the knowledge base are those variables that affect the radiographic image and how to control and manipulate them in order to obtain images of optimum quality. Patient status will be discussed in regards to the factors to be considered in obtaining quality images. Management of the factors leading to exposure will be studied via examples and experiments, allowing students the opportunity of participating in the laboratory experience.

TERA 1035
Radiologic Exposures. Four (4) credits.

The course provides the student with the basic theoretical concept concerning Radiation and its history, ranging from

the production of X-Rays to the creation of radiographic images. Included in the knowledge base are those variables that affect the optimum quality. Management of the factors leading to exposure will be studied via example and experiments, allowing the students the opportunity of the participation in the laboratory experience.

TERA 1036
Radiographic Film Processing. Four (4) credits.

This course is designed for first year students who are in the Associate Degree in Radiologic Technology. It will provide the students with the knowledge to process radiographic film manual and automatic methods. The course includes subjects such as design and functions of the processing, the visible image formation, and the artifact on radiographic films.

TERA 2000
Human Anatomy III. Three (3) credits.

The course enables the student to comprehend the relationship between body parts and systems, its morphology, physiology, histology, and others. It encompasses a programmed content directed to give the student a concise knowledge of the human system, academically and visually oriented to be used as a basis for certain radiologic examinations; aspects that all practicing radiographer must master.

TERA 2010
Radiographic Techniques and Positioning III. Three (3) credits.

The student will learn and correctly apply the different radiographic positions and technics relating to the human skull, specialized proceedings requiring premedication and the use of contrast media. The course is conducted in two phases: a didactic component with laboratory demonstration and a clinical phase.

TERA 2015
Applied Pathology and Terminology. Three (3) credits.

The student will comprehend and be familiar with the terms describing the different types of pathological conditions, the way they are used in the medical language, and their meaning imposed by various parts of speech. They will also learn about symptoms, signs, morphological variations, and other pathological conditions, and how they are projected radiographically. This course offers the student the opportunity to acquire more knowledge in relation to pathological conditions, physiologic variations in individuals and how they affect their behavior in the environment.

TERA 2016
Radiographic Film Critique. Three (3) credits.

The student will develop radiographic evaluation skills and will recognize the difference between diagnostic and poor quality radiographs. Throughout the course the student uses film evaluation procedures to explain how to improve the diagnostic quality of a radiograph. Also, they perform oral presentations based in pathological aspects of patients attended by them radiographically.

TERA 2017
Radiologic Physics Laboratory. Two (2) credits.

The student will learn concepts base on the calibration of radiographic equipment in addition to measurement of X-Ray exposure and to determine the desirable radiographic quality. The laboratory is conducted in the classroom and in the X-Ray Laboratory. Also students will have the opportunity to use radiological equipment, radiographic units, equipment for measurement of X-Ray radiation.

TERA 2051
Seminar and Clinical Practicum I. Six (6) credits.

This course is conducted in affiliated clinical areas where the student performs the correct procedure to obtain high quality radiographs. The student will apply all knowledge and skills acquired in the prerequisites courses by correctly positioning, centralizing, stabilizing, immobilizing, and collimating patients.

TERA 2054
Seminar and Clinical Practicum IV. Nine (9) credits.

The students will perform all tasks learned in seminars and prior clinical experience, using live patients. The course provides the student community with the opportunity to integrate the cognitive and psychomotor aspects in the performance of X-Ray procedures. It finally prepares the student for the professional execution.

TERA 2061
Seminar and Clinical Practice I. Six (6) credits.

The student will develop the necessary skills needed to applied the knowledge obtain in TERA 1015, in order to attain the competencies giving her/him a certain amount of responsibility in carrying out radiographic examinations. The students have the opportunity to continue passing through an a-job-training, with sick and injured patients at the different affiliated X-Ray labs. The clinical training is conducted following a master rotation plan, that includes periodic written evaluations. Also preceptorial meetings are conducted at clinical areas, by faculty and students.

TERA 2062
Seminar and Clinical Practice II. Nine (9) credits.

The course provides the student with the opportunity to integrate cognitive and psychomotor skills in the performance of X-Ray procedures. The student will perform tasks learned in the seminars and prior clinical experience using live patients. It finally prepares the student for professional practice.

TMED 4001
Clinical Biochemistry I. Four (4) credits

Introduction to the biochemical analysis of blood and other body fluids. The theoretical content includes the following topics: hydrocarbons, enzymes, protein, iron, toxicology, therapeutic drug monitoring, laboratory calculations and others. Emphasis is placed on discussion of the principles and statistical procedures related to quality control, analytic procedures and clinical pathologic correlation, laboratory experiences including basic techniques and procedures necessary to obtain precise and exact test results.

TMED 4002
Clinical Biochemistry II. Three (3) credits.

A general introduction and biochemical analysis of blood and other body fluids. The thematic content includes lipids; hormones; gastrointestinal and renal functions; acid-base, electrolyte and water balance. Emphasis is given to the principles of analytic procedures, statistics, quality control, as well as clinical and pathological correlations. Laboratory experiences with basic procedures and techniques needed to obtain precise and exact results.

TMED 4005
Clinical Biochemistry I. Four (4) credits.

Chemical analysis of blood, gastric contents, cerebrospinal fluid, urine and other body fluids. The procedures includes determinations of lipids, proteins, carbohydrates, minerals, gases, enzymes, hormones.

TMED 4006
Seminar in Medical Technology. One (1) credit.

Discussion of reports in Medical Technology, with the participation of specialists in the field.

TMED 4010
Introduction to Clinical Laboratory Science. One (1) credit.

The introductory course initiates the students in the study of Medical Technology to develop an interest in converting him/her self into a competent health professional and in providing services to the community. Included is an orientation related to professional regulations and agencies concerned, legal-ethical aspects, use of basic equipment in the work area, security regulations, biostatistics in quality assurance, and employment opportunities.

TMED 4015
Clinical Practice in Biochemistry. Three (3) credits.
Pre-requisites: TMED 4001, TMED 4002.

In this course clinical practice experience in clinical biochemistry area at an affiliated institution is provided. The students will practice in a laboratory setting with patient's samples, applying principles of clinical laboratory science to perform, analyze and report analytical procedures. Emphasis will be given to experience with modern automated instrumentation, working within a total quality assurance program and use of a laboratory information system.

TMED 4021
Hematology I. Three (3) credits.

The course will focus on the basic concepts and laboratory techniques related to Clinical Hematology. include will be an in depth discussion and evaluation of the parameters related to complete blood counts (CBC) including the differential blood smear and

observation of normal erythrocyte, leukocyte and platelet morphology. Basic principles and techniques of coagulation and fibrinolysis are also discussed and performed.

TMED 4022
Hematology II. Three (3) credits. Pre-requisites: TMED 4021.

The scope of this course is on the areas of patho-physiology classification of anemias and other erythrocyte disorders, and on the morphologic and pathophysiologic aspects of white blood cells as seen in leukemias, lymphomas and infections. Related diagnostic tests are discussed. Laboratory sessions provide students the opportunity to practice routine procedures in Hematology.

TMED 4035
Clinical Practice in Hematology. Three (3) credits. Pre-requisites: TMED 4021, TMED 4022.

In this course a clinical practice experience in Hematology area at an affiliated institution is provided. The students will practice in a laboratory setting with patient's samples, applying principles of clinical laboratory science to perform, analyze and report analytical procedures. Emphasis will be given to experience with modern automated instrumentation, working within a Total Quality Assurance Program and use of a Laboratory Information System.

TMED 4041
Immunohematology I. Two (2) credits.

This course has been designed to prepare entry-level medical technologist who are responsible, knowledgeable and motivated for lifelong-learning in blood banking. The course will be offered through lectures, group discussions, case studies, and laboratory experiences. Students will develop basic knowledge on blood collection, processing, and storage; fundaments of Immunohematology, (in particular genetics); immunology and antiglobulin testing; and the major blood group systems. Particular emphasis will be placed on the development of students' skills for interpreting results, problem solving and decision-making. Laboratory sessions will provide students the opportunity to practice routine pretransfusion testing procedures. The urgency for recruiting adequate numbers of qualified donors in order to meet patients' transfusion needs will be stressed throughout this course.

TMED 4042
Immunohematology II. Two (2) credits. Pre-requisite: TMED 4041.

Readings on pre-transfusion testing, clinical conditions associated with Immunohematology, possible complications of transfusion and the practical aspects of transfusion medicine, are discussed. Students are introduced to the ethical and legal responsibilities of the blood bank technologist. Particular emphasis is placed on the development of students' skills for interpreting results, problem-solving and decision-making. Laboratory sessions provide students the opportunity to practice routine pre-transfusion testing procedures.

TMED 4065
Clinical Practice in Immunohematology. One (1) credit.

Clinical practice in blood bank techniques at an affiliated institution.

TMED 4075
Clinical Serology-Immunology. Three (3) credits.

Basic mechanisms of immunity in health state and disease are discussed in this course. Deals with the principles involved in the different techniques used to identify the serologic markers needed for the diagnosis and monitoring of infections, immunoproliferative, autoimmune, hypersensibility conditions as well as pregnancy. Emphasizes in the pre-analytic, analytic and post-analytic aspects of the clinical analysis, analysis safety rules, assurance and quality control that leads to precision and accuracy in the Serology Laboratory. Laboratory sessions provide students the opportunity to practice routine procedures in Serology-Immunology.

TMED 4085
Clinical Practice in Serology. One (1) credit. Pre-requisites: TMED 4075.

In this course a clinical practice experience in clinical and serology area at an affiliated institution, is provided. The students will practice in a laboratory setting with patient's samples, applying principles of clinical laboratory science to perform, analyze and report analytical procedures. Emphasis will be given to experience with modern

automated instrumentation, working within a Total Quality Assurance Program and use of a Laboratory Information System.

TMED 4095
Urinalysis. Three (3) credits.

This course is designed to provide Medical Technology students the knowledge and competencies required to perform a complete urinalysis in the clinical laboratory. The course includes urinalysis aspects related to the physical, clinical and microscopic nature of urine testing. It also covers the clinical-pathologic correlation of test results.

TMED 4106
Clinical Practice in Urinalysis/Parasitology. One (1) credit. Pre-requisites: TMED 4095, ZOME 6503.

In this course clinical practice experience in Parasitology/ Urinalysis area at an affiliated institution is provided. The students will practice in a laboratory setting with patient's samples applying principles of clinical laboratory science to perform, analyze and report analytical procedures. Emphasis will be given to experience working within a Total Quality Assurance Program and use of a Laboratory Information System.

TMED 4115
Clinical Practice in Bacteriology. Three (3) credits. Pre-requisites: MICR 4006.

In this course clinical practice experience in the microbiology area at an affiliated institution, is provided. The student will practice in a laboratory setting with patient's samples, applying principles of clinical laboratory science to perform, analyze and report analytical procedures. Emphasis will be given to experience with modern automated instrumentation, working within a Total Quality Assurance Program and use of a Laboratory Information System.

TMED 4135
Principles and Utilization of Instrumentation in Clinical Laboratory Analysis. Two (2) credits.

Laboratory automation has expended rapidly and understanding how an instrument operates represents a challenge for new professionals in the field. This course is designed to provide the student of Medical Technology with general abilities and knowledge needed to operate clinical laboratory equipment that is currently available in the marketplace. It includes general information about basic principles and theory of instrumental analysis as applied to the field of Laboratory Medicine.

TMED 4140
Clinical Laboratory Administration. Three (3) credits.

In this course fundamental principles of administration and supervision in the clinical laboratory are focused. Topics such as governmental laws and regulations, financial operations of laboratories, communication, professionalism, personnel and providers training will be discussed.

TMED 4150
Modern Concepts in Clinical Laboratory Sciences. Three (3) credits.

Themes related to the major clinical areas of Laboratory Sciences will be discussed; modern concepts, new methodologies and instrumentation. Introduction to written and analytical skills used in professional journal writing.

ZOME 6503
Medical Parasitology. Three (3) credits.

Helminths and protozoa of medical importance. Special attention to sample

GRADUATE COURSES

ADSS 6572
Theory of Administration. Four to five (4-5) credits.

Examination, study, and analysis of the content and development of both the public and private sectors of the administrative field, as applicable to the Health Services Administration. The administrative process is also considered as a social process designed to solve problems through the organized used of resources for the accomplishment of organizational objective.

ANAT 6005
Human Anatomy. Four (4) credits.

This is a course in Gross Human Anatomy taught through lectures and laboratories. Major emphasis is given to Musculoskeletal, Nervous, Respiratory, and Cardiovascular Systems. Basic concepts of Histology and Embryology are also covered. Supervised laboratory sessions include cadaver dissection and the use of prosected cadavers. The student is expected to demonstrate knowledge and application of Descriptive Anatomy. Relevant concepts of Radiographic Anatomy are also discussed.

AUDI 6301
Fundamentals of Audiology. Three (3) credits.

Considerations about physical properties of sound, anatomy and physiology of the Auditory System, common disorders of hearing, administration and interpretation of hearing tests.

AUDI 6310
Industrial and Community Audiology. Two (2) credits. Pre-requisites: AUDI 6301, HLAG 6305, HLAG 6701.

The focus of this course is the study of the effects of noise on society, on the human ear and on the quality life. Anatomical, physiological, and psychological effects of noise are discussed. The course address the legal aspects related with noise control on industrial and community settings. Established models for the prevention of hearing loss in diverse acoustic environments and models of hearing conservations programs are studied. The concepts of noise signal and the most important parameters of sound are discussed. Instrumentation and sound measurements methodology commonly used are discussed.

AUDI 6318
Clinical Practicum in Audiology I. One (1) credit.

Practicum in diagnosis and treatment of hearing disorders in children and/or adults. Development of competencies in clinical management techniques under direct supervision.

AUDI 6319
Clinical Practicum in Audiology II. Two (2) credits.

Practicum in diagnosis and treatment of hearing of disorders in children and/or adults. Development of competencies in clinical management techniques under direct supervision.

AUDI 6322
Aural Rehabilitation. Three (3) credits.

Study of fundamental aspects of lip-reading techniques, auditory training and general rehabilitation of hearing impaired children and adults. Investigation and evaluation of methods and materials. Evaluation and management of specific lip-reading skills in children and adults. Practice in therapeutic plans preparation and administration.

AUDI 6327
Amplification Systems in Audiology. Four (4) credits. Pre-requisites: AUDI 6301, HLAG 6305. Co-requisite: AUDI 6502.

This course consist of the study of amplification systems, including concepts in amplification, basic operation of hearing aids, selection, programming, and fitting process of the hearing aid according to the patient's hearing loss and counseling of patients and family members. Each of these concepts will be studied as they apply to the pediatric, adult, and geriatric population. In addition, the general aspects of marketing and demand as they related to the prescription of hearing aids will be discussed. Cochlear implants, amplification systems in the classroom, and assistive devices are also studied.

AUDI 6329
Language Development and Psychological Aspects of the Deaf. Three (3) credits.

Study of the nature of language, fundamentals of language, fundamentals of language acquisition, and stages of natural language development of the deaf. Consideration of the impact of deafness in the preschool and school-age child and in the adult. Emphasis in area of intelligence social-maturity, personality, motor skills, and counseling.

AUDI 6338
Manual Communication. Two (2) credits.

Use of manual communication by the deaf is discussed, along with its historical development and its linguistic dimensions. Background on investigations about sign

language, linguistic considerations and phonological, morphological and syntactic studies. The normal alphabet and a basic sign language vocabulary will be developed.

AUDI 6501
Principles of Differential Audiology. Three (3) credits.

Study of the theory and practicum on advanced hearing tests. Clinical procedures on special tests and identification of site of lesion in the Auditory System.

AUDI 6502
Differential Diagnosis in Pediatric Audiology. Three (3) credits.

Study of test and special procedures for measuring residual hearing in infants and in early childhood; the effects of dysfunctions in the peripheral and central nervous systems on the development of language; use of amplifications with children. Includes observation and practice in clinical techniques.

AUDI 6508
Communicative Disorders of the Visually Impaired Individual. One (1) credit.

Study of language problems in blind, partially blind, and deaf-blind children. The communicative difficulties of visually impaired adult are also covered.

AUDI 6520
Communication Rehabilitation of the Hard of Hearing Adult. Two (2) credits.

Study of principles and techniques of language development, auditory training, lip reading and speech conservation used for the communication management of adults with hearing loss.

AUDI 6535
Specialized Methods in Audiology. Three (3) credits.

Study of current innovations on clinical procedures and audiological investigations.

AUDI 7115
Acoustics for Hearing and Speech Sciences Laboratory. One (1) credit. Co-requisites: AUDI 7116.

In this course the student is provided with laboratory experiences and demonstrations that compliment the theoretical topics discussed in the Acoustic for Hearing and Speech Sciences course. The laboratory experiences are geared toward developing in the student the basic skills to handle and operate the equipment used for the measurement of sinusoidal and complex sounds. Laboratory exercises will also allow the student to perform acoustic measurements of speech, and to experience and measure diverse psychoacoustics phenomena.

AUDI 7116
Acoustics for Hearing and Speech Sciences. Three (3) credits. Co-requisites: AUDI 7115, HLAG 6303.

The fundamental focus and content of this introductory course is the concept of sound as a physical and perceptual phenomenon. The principal topics to be discussed are: behavior of the acoustic wave in the air, description of intensive aspects of sound and decibels (DB) scale; physiology of the peripheral auditory system, acoustics of speech production, psychoacoustics methods and characteristics of human hearing including capacity to detect, discriminate and locate sound signals. Traditional learning strategies, as well as, distance learning strategies will be used in this course. Demonstrations and hands on experience will be provided in the acoustics for hearing and speech sciences laboratory course.

AUDI 7117
Principles of Audiology Laboratory. One (1) credit. Co-requisites: AUDI 7118.

The Principles of Audiology Laboratory course provides basic training in the use of clinical audiology equipment. Laboratory sessions and assignments will provide hands-on experience with the equipment, as well as, with the clinical procedures discussed in the Principles of Audiology course. Laboratory experiences are designed to provide the student with the necessary background preparation for future experiences in clinical practicum.

AUDI 7118
Principles of Audiology. Three (3) credits. Co-requisites: HLAG 6303, AUDI 7116.

This course will provide an overview of the discipline of Audiology designed to introduce students in the Audiology and Speech-Language Pathology programs to the areas of educational, (re)habilitative, and diagnostic audiology. The course presents the theoretical and practical aspects of basic diagnostic audiological testing and how to relate these procedures to the structure and function of the auditory system. Basic audiologic procedures include pure tone audiometry, speech audiometry and middle ear measurements. Discussions of the relevance of each procedure in diagnostic disorders of the auditory mechanism will be conducted. Lectures, readings, group discussions, collaborative learning, and case studies are some of the instructional strategies that will be used in this course.

AUDI 7119
Instrumentation in Audiology. Two (2) credits.

In this course the principles that govern instrumentation in Audiology, including the basic acoustical, psychoacoustical and electronic principles related to the development of audiological equipment used in the clinic and in research, will be discussed. The rational behind the construction of clinical instrumentation, computer applications, auditory prosthesis and assistive technology will be presented. Current legislation and standards that apply to sound measuring and audiological instruments will be discussed. Aspects such as calibration, maintenance and adequate equipment will also be addressed.

AUDI 7120
Speech Disorders. Three (3) credits. Pre-requisites: HLAG 6303, HLAG 6325, AUDI 7116.

This course will offer an overview of the pathology, identification, diagnosis and treatment of speech disorders. Students will develop the skills to identify articulation, fluency and voice disorders to make appropriate referrals. The course includes a discussion of speech disorders characteristics and clinical management with an emphasis on hearing impaired populations.

AUDI 7125
Pharmacology in Audiology. Two (2) credits. Pre-requisites: AUDI 7118, HLAG 6303.

Discussion of pharmacology issues which are specific to the practice of Audiology. The student will identify the drugs that can cause a temporary or permanent damage to the auditory and/or balance systems. Likewise, the student will also become familiar with the most common drugs used for the treatment of pathologies of the auditory and vestibular systems.

AUDI 7126
Advanced Audiology. Three (3) credits. Pre-requisites: AUDI 7118. Co-requisites: AUDI 7127.

In this course the theoretical bases of behavioral and acoustic audiological procedures for the differential diagnosis of auditory disorders will be emphasized. Video otoscopy and cerumen management clinical protocols will be presented. The concept of test battery and cross-check principals will be applied in clinical case studies. Control and prevention of disease transmission in the clinical scenario will be analyzed. Interview techniques as well as clinical report writing, client record management and HIPPA regulations will also be addressed. Demonstrations and hands on experience will be provided in the Laboratory of Advanced Audiology course.

AUDI 7127
Laboratory of Advanced Audiology. One (1) credit. Pre-requisites: AUDI 7115, AUDI 7118. Co-requisites: AUDI 7126.

This is a laboratory that complements the knowledge acquired in the Advanced Audiology course. Clinical protocols in universal precautions will be adapted for use in a clinical setting. Concepts in tests construction and administration, interpretation and adaptation of clinical protocols will be applied through laboratory exercises. The students will practice interview techniques for client history intake, advanced clinical differential diagnostic methodologies and strategies for the establishment of external middle ear function, hearing sensitivity levels and speech recognition ability. Students will develop basic skills in videootoscopy, cerumen management and tinnitus assessment.

Laboratory exercises will include preparation of clinical records, clinical reports and progress notes documentation following HIPPA regulations.

Grading System: Passed (P), Not Passed (NP)

AUDI 7128
Physiological Assessment of the Auditory System. Three (3) credits. Pre-requisites: AUDI 7118, HLAG 6303. Co-requisites: AUDI 7126, AUDI 7129.

This course provides the student with a comprehensive study of the theoretical and applied physiological measures of the auditory system (e.g. electrocochleography, otoacoustics emissions, and auditory evoked potentials; including early, middle and late responses). The student will interpret the results of the physiological measurements and will use that interpretation to establish a diagnosis of the most common diseases and conditions of the auditory system. The course emphasizes student's participation through presentation of case studies and group discussions on the analysis and interpretation of test results. Demonstrations and hands on experiences will be provided in the Laboratory of Physiological Assessment of the Auditory System course.

AUDI 7129
Laboratory of Physiological Assessment of the Auditory System. One (1) credit. Pre-requisites: AUDI 7118, HLAG 6303. Co-requisites: AUDI 7126, AUDI 7128.

This is a laboratory course that compliments the Physiological Assessment of the Auditory System course. Through demonstrations and practice, the student will learn how to perform various physiological measurements of the auditory system, and how to interpret the findings of these measurements. Some of the measurements to be studied are: electrocochleography, otoacoustics emissions, and auditory evoked potentials; including early, middle and late responses.

AUDI 7201
Clinical Practicum I. One (1) credit. Pre-requisites: AUDI 7126.

This is the first of the clinical practicum courses. The student interns will receive individualized instruction, under constant supervision of a licensed clinician. The focus of this practicum experience will be to have the student observe clinical procedures and perform basic audiologic procedures of the basic battery with the preceptor's assistance. A minimum of 50 patient contact hours are required in order to complete the course.

AUDI 7202
Clinical Practicum II. Two (2) credits. Pre-requisites: AUDI 7201.

This is a second course in a sequence of six clinical practicum courses. The objective of the series of courses is to prepare the intern to become an autonomous professional in the field of Audiology. The interns will receive individualized instruction under direct supervision. The focus of this practicum experience will be to have the intern perform basic audiologic assessment procedures in consultation with the clinical preceptor. The intern will also be initiated in physiological procedures, special tests performance, hearing aid prescription and management. A minimum of 100 clinical contact hours are required to complete the course.

AUDI 7203
Clinical Practicum III. Three (3) credits. Pre-requisites: AUDIO 7202.

This is the third course in a sequence of six clinical practicum courses that prepares the intern to become an autonomous professional in the field of Audiology. The focus of this practicum experience is to have the intern conduct basic audiologic assessment independently, and advanced hearing, and balance procedures under direct supervision of the clinical preceptor. The intern will also be performing hearing aid prescriptions, audiologic rehabilitation and counseling under direct supervision of the preceptor. A minimum of 150 clinical practice hours are required to compñete the course.

AUDI 7211
Amplification Systems I. Three (3) credits. Pre-requisites: AUDI 7116, AUDI 7119, AUDI 7126. Co-requisites: AUDI 7213.

This course is the first of a two course sequence in hearing amplification. Its purpose is to introduce the student to the physiology of hearing loss and to the process of fitting hearing aids. some topics include, the importance in the

process of making earmold impressions, earmold and earshell acoustics, types of hearing aids, the components of hearing aids, electroacoustic measurement of hearing aid performance, assessing patient needs and determining hearing aid candidacy, using prescriptive fitting strategies, and basic hearing aid repair and troubleshooting. Lectures, group discussions, collaborative learning, case studies, and distance learning strategies are some of the instructional strategies that will be used in this course.

AUDI 7212
Amplification Systems II. Three (3) credits. Pre-requisites: AUDI 7211. Co-requisites: AUDI 7214.

This course is the second of a two course sequence in amplification systems. The purpose of this course is to expand the acquired knowledge on the first course: Amplification Systems I, on current amplification concepts, principles, and rationals. Topics to be studied include: advanced hearing aid fitting methods, hearing aid compression systems, digital and programmable hearing aid circuitry, and digital and programmable hearing aid fitting. Assistive listening and other sensory devices in addition to implantable technologies will aso be studied.

AUDI 7213
Amplification Systems I Laboratory. One (1) credit. Pre-requisites: AUDI 7116, AUDI 7119, AUDI 7126. Co-requisites: AUDI 7211.

The laboratory experiences in this course are geared toward developing in the student the basic skills in the art of earmold impressions;physical and, acoustic, modifications of earmolds and basic hearing aid components. The laboratory will provide the student the opportunity of performing evaluation procedures for selection of hearing aids. Laboratory sessions and assignments will provide hands-on experience with the equipment, as well as, with the clinical procedures discussed in the Amplification Systems I course.

AUDI 7214
Amplification Systems Laboratory II. One (1) credit. Pre-requisites: AUDI 7211, AUDI 7213, Co-requisites: AUDI 7212.

In this laboratory, the students will apply the knowledge acquired in the Amplification Systems II course. Laboratory expereinces include selection, programming, and fitting of amplification systems, including assistive listening devices.

AUDI 7216
Differential Diagnosis in Pediatric Audiology. Three (3) credits.

This course will focus on the audiological diagnosis and management of the pediatric patient from birth to adolescence. Physiological, as well as, the anatomical development of the hearing system from it's embryology to its maturation will be discussed. The more prevalent hearing pathologies and syndromes in the pediatric population will be presented. The different stages of auditory behavior from reflexive responses to deliberate sound tracking will be depicted. Age appropriateness and adequacy of physiologic and behavioral assessment strategies, as well as, test interpretation will be addressed.

AUDI 7217
Psychosocial Aspects of Hearing Loss. Two (2) credits.

A study of the psychological, emotional and social impact of hearing loss on individuals and their families throughout the life-span. Hearing impaired individuals' participation in educational, occupational and recreational scenarios will be analyzed. Students will apply basic counseling skills for the audiologic rehabilitation of individuals with hearing loss and their families. Psychosocial issues of the deaf community and its' culture will be explored.

AUDI 7218
Auditory Pathologies. Three (3) credits. Pre-requisites: HLAG 6303, AUDI 7126.

This course provides the student with a comprehensive study of the etiology, symptoms, treatment and rehabilitation principles in ear disorders, including audiological interpretations, and medical implications of an auditory pathology. The student will learn to relate the audiometric findings and symptoms to the most prevalent ear diseases. Lectures, student's presentations, literature searches and group discussions of case studies are some of the instructional strategies that will be used in this course.

AUDI 7221
Research Project I. Two (2) credits. Pre-requisites: HLAG 7112.

This course is the first of a three course sequence in which the student will develop a research project. The student will identify a research question, perform literature review and write the introduction and method section of the research project under faculty supervision.

AUDI 7222
Research Project II. Two (2) credits. Pre-requisites: AUDI 7221

This is the second of a three course sequence in which the student will develop a research project. The student, under the guidance of a faculty mentor, will begin the data collection phase for their research project. Weekly progress meetings are required as agreed by mentor and student.

AUDI 7223
Research Project III. Two (2) credits. Pre-requisites: AUDI 7222.

This course is the third of a three-course sequence in which the student will develop a research project. In this course, the student under the guidance of a faculty mentor, will complete the data collection phase that was initiated during the Research Project II course. In addition, the student will analyze the data and finish writing the research manuscript. Weekly meetings between the mentor and the student in order to monitor progress are required. The student will present the final project in a peer-reviewed publication format, as well as, in an oral presentation to the academic community.

AUDI 7226
Research Application in the Clinical Practice of Audiology. Two (2) credits. Pre-requisites: HLAG 7112.

In this course the student will develop skills to make clinical intervention decisions guided by research derived evidence. The student will become proficient in literature search, critical appraisal of scientific literature, analysis of scientific findings and outcome measurements in order to identify the best evidence to support decisiions taken on specific audiological clinical cases. The role of the professor a facilitator is to promote self-learning. Ethical and legal issues about research will be discussed in this course. Lectures, group discussions, collaborative learning, and case studies are the main instructional strategies used in this course. Distance learning education platform will be used for some lectures.

AUDI 7227
Occupational and Envrionmental Hearing Conservatioin. Two (2) credits. Pre-requisites: AUDI 7116, AUDI 7119, AUDI 7126. Co-requisites: AUDi 7228

The focus of this course is the study of the effects of noise in the human being, in society and in the quality of life. Anatomical, physiological and psychological effects of noise will be discussed. The course will present industrial and community sound control regulations, as well as, the review of established programs for the conservation of normal hearing and the prevention of hearing loss in different acoustic envrionments. Sound measurement methods, including the instrumentation used, will also be discussed. Lectures, group discussiions, collaborative learing, case studies are some of the instructional strategies that will be used in this course. Some lectures will be aimed by distance learning modality.

AUDI 7228
Occupational and Environmental Hearing Conservation Laboratory. ONe (1) credits. Pre-requisites: AUDI 7116, AUDI 7119, AUDI 7126. Co-requisites: AUDI 7227.

This is the laboratory of the Occupational and Environmental Hearing Conservation course, which will provide the student with the opportunity to perform sound measuarement in the field with the use of sound level meters and dosimeters. The student will also be required to develop a hearing conservation program that will emphasize hearing evaluation, hearing protection options and their fitting. Laboratory sessions anda assignments will provide handson experience with the equipment, as well as, with the clinical procedures discussed in the Occupational and Environmental Hearing Conservation course.

AUDI 7231
Assessment and Intervention of Balance Disorders I. Two (2) credits. Pre-requisite: AUDI 7126.

This course will focus on the audiologist role in the basic provision of assessment and diagnostic services of balance disorders. A description of the distribution of balance disorders among the general population will be provided. The anatomy and physiology of the balance system will be described, as well as, the more common pathologies associated to this system. Most frequently used assessment strategies such as extensive case history, subjective tests and nystagmography will be discussed. Old Codification: AUDI 7205 (Changed since August 2009).

AUDI 7232
Assessment and Intervention of Balance Disorders II. Two (2) credits. Pre-requisites: AUDI 7231. Co-requisites: AUDI 7317.

This course is the second part of a two-sequence course in balance disorders. In this course the student will focus on the role of the audiologist in the provision of advanced balance diagnostic services. Treatment for balance disorders will also be included in this course. Advanced balance assessment tests such as vestibulo-ocular reflex, bestibular evoked myogenic potential, rotary chair, and posturography will be discussed, among others.

AUDI 7305
Audiologic Habilitation of the Pediatric Population. Three (3) credits. Pre-requisites: AUDI 7216, HLAG 6533

In this course the different techniques used to habilitate the pediatric hearing impaired population will be discussed. The historical development of oral and manual philosophies will be presented and the student will be exposed to the educational models used to teach the deaf child, as well as, with partial hearing loss. Implications of acoustic phonetics in amplification and intervention plan development will be discussed. The assistive technology used to support academic and social activities will be presented and psychosocial aspects of hearing loss associated to counseling of family and teachers will be addressed.

AUDI 7315
Auditory Processing Disorders. Two (2) credits. Pre-requisites: AUDI 7128

This course will focus on the neurological bases of normal and abnormal auditory processing. Diagnostic and intervention approaches to manage auditory processing will be discussed. Behavior and physiological assessment tools used with patients with auditory processing will be presented. Students will justify assessment and intervention decisions using case studies.

AUDI 7317
Assessment and Intervention of Balance Disorders II Laboratory. One (1) credit. Pre-requisites: AUDI 7231 (Old Codification AUDI 7205), Co-requisites: AUDI 7232

In this laboratory the students will apply the knowledge acquired int he Assessment and Intervention of Balance Disorders II course. Laboratory experiences will include the administration of balance tests such as the ocular, positional, positioning, caloric, and vestibular-evoked myogenic potentital (VEMP) test batteries, among others. In addition, the students will practice treatments such as that for bening paroxysmal positioning vertigo.

AUDI 7318
Deaf Culture, Linguistics and Manual Communiation Code Systems. Three (3) credits. Pre-requisites: HLAG 6300

Through this course students will acquire the basic concepts for the development of expresive and receptive dexterities of communication throough visual, gesture and manual modalities. The historic asp|ects of the develpment of the Puerto Rican sign language will be discussed. The concepts of culture and community, applied to the deaf population, as fundamental aspects of the socio-linguistics of deafness, will be studied. Instructional strategies will include, lectures, readings, group discussions, role playing, and invited deaf guests that will provide the students opportunities to become familiarized with the deaf culture, as well as provide practice sign language sessinos.

AUDI 7319
Audiologic Rehabilitation of the Adult. Three (3) credits. Pre-requisites: AUDI 7126, AUDI 7212, AUDI 7217

In this course methods and treatment techniques for the audiologic rehabilitation of hearing impaired adults will be studied. Assessment protocols for determining

audiologic rehabilitation needs in adults will be compared. Audiologic rehabilitation intervention areas will include: counseling, amplification, acclimatization to amplification, self-evaluation outcome measures, communication strategies, tinnitus management, self-help groups and auditory/visual communication training. Students will develop treatment plans for adult audiologic rehabilitation. Outcome measures for treatment efficacy and efficiency will be addressed.

AUDI 7327
Special Topics in Audiology. Three (3) credits. Pre-requisites: AUDI 7128, AUDI 7226, AUDI 7232, AUDI 7212.

In this course the student will do an in depth literature review of current areas of research in the field of Audiology. The topics to be discussed will be determined by the professor in collaboration with the students and announced at the beginning of the course. The student will be responsible for reviewing the literature and for preparing a manuscript and an oral presentation on the assigned topics.

AUDI 7500
Clinical Seminar. One (1) credit.

Students will participate in weekly presentations and class discussions of clinical case studies encountered in their clinical practicum courses. Students will conduct literature reviews on an assigned current professional topic. Topics will be selected bvy the program faculty basaed on professional trends. Guest lectures will be invited to address these topics in class sessions. Students will take this course on three acadeic sessioins throughout the curriculum.

Grading System: Passed (P), No Passed (NP) since November 2009.

BIOE 6501
Introduction to Statistical Methodology. Four (4) credits.

BIOE 6525
Statistical Analysis. Five (5) credits.

Statistical analysis for the application of the Scientific Method to the health field. Descriptive analysis of qualitative and quantitative variables, principles of regression and correlation analysis, time series, basic theory of probability distribution and simple significance tests.

CILC 6005
Advanced Clinical Biochemistry. Two (2) credits.

The Advanced Clinical Biochemistry course is intended to review, recall, actualize and apply principles and techniques related to the basic areas of the Clinical Chemistry, integrating them with the technological advances and clinical diagnostics. Special attention will be given to the basic principles, metabolism, clinical correlation, as well as methods and laboratory techniques of the following topics: amino acids, proteins and other nitrogenous compounds, enzymology, basic concepts of the molecular genetics, lipids and lipoproteins, carbohydrates, acid-base regulation, arterial gases, electrolytes and the integration of the clinical pathophysiological correlation. The themes will be presented utilizing the following educational strategies: conferences, group discussion sessions, independent study, oral presentations, case studies and others.

CILC 6006
Advanced Clinical Microbiology. Two (2) credits.

In this course the most important clinical, industrial, and environmental microorganisms are discussed. Emphasis is given to sample collection, identification methods, culture media, and diagnostic tests of microorganisms. The topics are presented through lectures, oral, and written presentation, group discussions and laboratories.

CILC 6007
Advanced Immunohematology. Two (2) credits.

This course has been designed to provide medical technologists the opportunity to review basic knowledge in Clinical Immunohematology and to acquire information regarding modern trends in blood banking. Conferences will be offered on blood group systems, donation and component preparation, routine serological testing, special tests and procedures, clinical considerations in transfusion practice, possible complications of transfusion, practical aspects of transfusion therapy and administrative issues. Group discussions will focus on technological innovations in donor blood testing and component preparation, current controversies surrounding transfusion safety, alternative

treatment strategies to human blood transfusion, transfusion therapy in selected patient populations and the medicolegal/ethical considerations of transfusion practice.

CILC 6008
Advanced Clinical Hematology. Two (2) credits.

The course provides medical technologists the opportunity to review basic concepts in Clinical Hematology and to acquire in depth knowledge of recent and emerging advances in the field. Emphasis will be placed on modern methods employed in laboratory diagnosis of leukemia/lymphoma, and selected blood coagulation disorders. Correlations of hematologic data will also be emphasized. Student presentations will center on modern theoretical concepts, technological innovations, and illustrative cases of clinical application. Laboratory exercises and/or demonstrations will be conducted.

CILC 6009
Advanced Clinical Immunology. Two (2) credits.

The course exposes the student to the most recent advanced concepts and principles of Advanced Immunology. These are required for the management of clinical laboratory procedures based on antigen antibody interaction and its application in the diagnosis of states of health and/or disease. The course content includes a description of the Immune System, the immune response and its regulation; serodiagnostic techniques such as agglutination, precipitation, labeled reagents; and its application in the diagnosis and follow up of different immunopathological processes. The topics will be presented utilizing the following educational strategies; conferences, group discussions, independent studies, oral presentations and discussions of case studies and demonstrations.

CILC 6015
Advanced Clinical Immunology Studies I. Two (2) credits. Pre-requisite: CILC 6009.

This course is designed to provide graduate students in Clinical Laboratory Science with knowledge of the immune responses against viral infections, the mechanisms of viral induced Immunopathology, and the diagnosis of several viral infections. Conferences will be offered on these principles followed by an independent study period where students analyze journal articles related to the previous conference. The presentation is focused on recent literature related to pathogenic mechanisms, and diagnosis of specific viral infections.

CILC 6016
Advanced Clinical Immunology Studies II. Two (2) credits. Pre-requisite: CILC 6015.

This course will expose the Clinical Laboratory Sciences students to a general introduction in the Cancer Biology, the characteristics of the Cancer cells and their tumor products. The thematic content includes the following topics: origin, biochemistry, laboratory identification and quantification, and the clinical application of blood soluble and tissue tumor markers. A general overview of its value as clinical tools, tumor specificity and sensitivity, frequency of determination and cost effectiveness will also be discussed in this course. The themes will be presented utilizing the following instructional strategies: lectures, individual oral and written presentations, class discussion and other.

CILC 6017
Advanced Clinical Biochemistry Studies I. Two (2) credits.

This course has been designed to provide medical technologists the pharmacokinetic and pharmacodynamic principles to understand and interpret analysis of drugs in the Clinical Laboratory. Conferences will be offered on these principles and will also focus on the importance of clinical parameters that are essential for correct sampling in order to obtain significant data for clinical diagnosis, surveillance and treatment. Group discussions will follow each of the student's presentations of clinical cases taken from current literature. The focus of the presentation will be on a drug or group of drugs where clinical therapeutic monitoring is essential to determine the level of drug that can make the difference between a patient and victim.

CILC 6018
Advanced Clinical Biochemistry Studies II. Two (2) credits. Pre-requisite: CILC 6005.

During this course the students will broaden their knowledge regarding the normal and abnormal functioning of some of the mayor body systems. Moreover, it will emphasize the integration and correlation of clinical manifestations of a selected group of pathological conditions with their laboratory results and how these analytes might

be related to other possible pathologies. Variables affecting laboratory results will also be considered. The pathological conditions selected for this course will be associate to the endocrine, reproductive, renal, cardiovascular and hepatic systems; and other disorders such as neoplasia and lipid disorders. All students will be actively involved in class discussion, oral presentations, case studies, analysis of scientific literature and others.

CILC 6019
Clinical Laboratory Statistics. Two (2) credits.

This course is designed to provide the graduate student of Clinical Laboratory Sciences with the knowledge, skills, and required attitudes for the application of statistical methods and procedures in the performance of the profession. This will lay a foundation in the description, analysis, and comparison of situation in the Clinical Laboratory daily work. These competences are essential to develop a professional capable of judging the validity and reliability of data and techniques which support the research in their area of expertise. The thematic content includes: basic principles of statistical analysis, gathering, classification and report of data and sampling methodology. Emphasis is given to descriptive analysis of qualitative and quantitative variables, principles of probability, test of inferential analysis such as: regression and correlation; besides the non-parametrical statistics. The course will be offered by combined methodology of conference sessions, group discussions, problem solving exercises, case studies and analysis of research papers.

CILC 6020
Clinical Laboratory Management. Two (2) credits.

This course is designed to provide medical technologists with an overview of their role as effective, and efficient laboratory managers. Emphasis is given to the administrative functions, basic skills for supervision and personnel administration. Students acquire the necessary knowledge to handle basic laboratory finances such as budget preparation, wage and salary administration and cost accounting among others. The principles of total quality management are discussed. The course enables the students to perform critical analysis of journal articles, oral presentations, case studies and group discussions.

CILC 6025
Microcomputer Applications in Clinical Laboratory. Two (2) credits.

This course has been designed to provide the medical technologist with an overview of computers and information system role within the clinical laboratory management. Students will acquire the necessary knowledge to handle basic computers functions. Emphasis will be given to the microcomputer applications as an important tool for this professional and the performance of its administrative tasks. The course focuses on practicing the application of internet as a research instrument and microcomputers application programs. Students will be actively involved in discussions, oral presentations, clinical research and workshops of the application programs.

CILC 6026
Special Topics in Clinical Laboratory Administration. Two (2) credits. Pre-requisite: CILC 6020.

This course is designed to provide in depth coverage of special topics in administration which had been discuss previously in other courses of the program. It also includes, relevant and current aspects of administration of clinical laboratories. The topics discussed are established by the faculty and others are suggested by the students considering their needs and experience. Due to the variability in content, this course could include any of the following instructional strategies: conferences, workshops, seminars, independent studies, and oral and written presentations.

CILC 6035
Quality Assurance I. Two (2) credits.

This course provides the graduate student of Clinical Laboratory Science with necessary knowledge for the application of quality management in the analytical process. Emphasis is given to the planning of a quality program, application and interpretation of statistics for the identification of variables that interfere with the quality of the result as required by the accrediting agencies. It considers the importance of quality in the pre-analytical, analytical, and post-analytical processes; also enables the graduate student to apply the quality monitoring and corrective measures to guarantee the excellence in the procedures. The topics are presented using the following educational strategies; lectures, discussions, oral presentations.

CILC 6036
Quality Assurance II. Two (2) credit. Pre-requisite: CILC 6035.

This course provides the graduate students the knowledge required to perform a quality assurance program in the Clinical Laboratory in order to offer optimal services to the client. Tools needed to evaluate all the process involved in a clinical analysis which include specimen collection, handling and analysis of the sample, and the communication between laboratory personnel, the patient and the doctor are discussed. It emphasizes in the actions and steps to follow when a situation that affect a test result is detected. The topics are presented through the following instructional strategies: lectures, discussions, presentations, and case studies.

Course changed from 1 to 2 credits since January 2010.

CILC 6040
Practice in Administration and Quality Assurance. Three (3) credits. Pre-requisites: CILC 6020, CILC 6035, CILC 6036.

This course offers the student the opportunity to apply the knowledge and skills acquired through the administration and quality assurance courses. Will perform an administrative evaluation of the areas in which the laboratory needs to improve. Of those deficient areas, the student will choose one of them to develop an action plan of corrective measurements and these will be implemented in coordination with the Laboratory Director. The instructional strategies used are practice, seminars, discussion, and oral presentations.

CILC 6046
Genetics and Molecular Biology. Two (2) credits.

The course is divided in two major areas. The first area in this course is molecular biology focused in the basic structure, properties and functions of nucleic acids and proteins. Topics discussed are DNA and RNA structure, replication, repair and recombination, DNA trancription, and RNA processing and translation. The second area is a survey of genetics. Within this area the following topics are presented: genetic terminology, patterns of inheritance and its variations in family and population level, genetic pedigree and its importance, and chromosome abnormalities and their relationship with disease. The clinical aspects of genetics, syndromes and prenatal diagnosis are presented. Topics will be presented through lectures, literature discussion and students´presentations.

CILC 6055
Fundamentals of Research Proposal Design. Two (2) credits.

This course is designed to develop basic research skills in the Clinical Laboratory Science student in order to complete a feasible proposal for a research project in their major area of interest. Basic tools for scientific writing and presentations are also included. The instructional strategies will include: lectures, seminars, class discussions, literature review, written and oral presentation of the proposal, among others.

CILC 6115
Clinical Biochemistry Practicum. Three (3) credits. Pre-requisites: CILC 6005, CILC 6009.

The practicum in Clinical Biochemistry will give the Clinical Laboratory Science students in the Biochemistry concentration the opportunity to apply and integrate knowledge as well as to develop laboratory and research skills in their area of studies. The objective of this practicum is to provide an educational environment that stimulates excellence in scientific critical thinking and training while exposing the health professional to some of the major techniques relevant to the Biochemistry field. The students will participate in two (2) specialized rotations performing sophisticated analysis utilizing highly recognized instrumentation and technology while being supervised by experts in the different techniques. The following instructional strategies will be utilized: short lectures, demonstrations, practice of specialized techniques, laboratory reports, discussions, journal clubs, literature review and others.

CILC 6119
Clinical Immunology Practicum. Three (3) credits. Pre-requisites: CILC 6005, CILC 6009.

The practicum in Clinical Immunology will give the Clinical Laboratory Science students in the Immunology concentration the opportunity to apply and integrate knowledge as well as to develop laboratory and

research skills in their area of studies. The objective of this practicum is to provide an educational environment that stimulates excellence in scientific critical thinking and training while exposing the health professional to some of the major techniques relevant to the Immunology field. The students will participate in two (2) specialized rotations in which they will perform sophisticated analysis utilizing highly recognized instrumentation and technology while being supervised by experts in the different techniques. The following instructional strategies will be utilized: short lectures, demonstrations, practice of specialized laboratory techniques, laboratory reports, discussions, literature review, journal clubs, and others.

CILC 6205
Laboratory Information Systems and Informatics. Two (2) credits.

This course is designed to provide students with a tehoretical and practical knowledge of informatics in the laboratory. The course focuses in three areas; applications of informatics, databases and appropriate use of technology. The knowledge and skills acquired during thhis course will allow th elaboratory professionals to maximize production, research and management in the laboratory. Laboratory sessions are included to complement the theory learned during the lectures.

CILC 6301
Molecular Diagnostics I. Two (2) credits. Pre-requisites: CILC 6046.

Through lectures, group discussions, laboratory experiences and the interpretation of scientific papers, the course will present the basic principles of molecular diagnostics used in clinical and research laboratories. The student is exposed to advances in molecular diagnostics in industry and in research procedures. Topics to be discussed are: purification and quantification of DNA and RNA, gel electrophoresis, visible spectrophotometry of nucleic acids, restriction enzyme analysis of DNA, DNA amplification and optimization of Polymerase Chain Reaction (PCR) and real time PCR. The course will also present the topics of microarrays, quality control, assurance, and assay validations for molecular diagnostics and General Laboratory Practices (GLP´s) for the molecular diagnostics. Applications of these techniques in the molecular diagnosis of prevalent diseases will be discussed.

CILC 6302
Molecular Diagnostics II. Two (2) credits. Pre-requisites: CILC 6301.

The course includes the theoretical aspects of peptide synthesis and purification, quality control and industrial and research applications. Hands on practices include the purification of proteins, HPLC chromathography, gas and ion exchange chromathography, and spectrometry. The course will also present the clinical applications of proteomics. The nature of protein biomarkers and the techniques for their discovery will also be discussed. Topics will be presented through lectures, open discussions and laboratory practices.

CILC 6305
Clinical Laboratory Science Research. Three (3) credits. Pre-requisite: CILC 6055.

This course is designed so that the Clinical Laboratory Sciences student can apply basic research skills in order to perform and complete their approved research proposal. The student will be able to apply and integrate the scientific skills required for the execution of his/her research project as well as the writing skills required for manuscript preparation and submission for publication.

CILC 6400
Seminar. Two (2) credits

This course provides for knowledge construction through the interaction among students, professors and researchers on critical discussion of relevant topics and new tendencies presented in recent literature and scientific research in topics related to molecular diagnostics and laboratory management, among others. Students will prepare written questions about methodology, interpretation of findings, and other relevant aspects regarding the research papers and topics presented in order to foster analysis and critical discussion. Students will also choose a topic in order to prepare a literature review and an oral presentation. The course includes guest speakers whom will present state of the art techniques and research topics, and also via students´presentations of articles previously approved by the professor.

Grading System: Passed (P), Not Passed (NP).

CISO 6600
Research Methods. Four (4) credits.

Basic principles about the selection, planning, and performance of research projects. Emphasis is given to the survey methodology; the basic principles of the design of forms and questionnaires is discussed, interviewing and processing statistical data is also discussed. The students meet four hours a week.

CITO 6505
Introduction to Cytotechnology. One (1) credit.

This is an introductory course which presents the history and evolution of the Cytotechnology field. We emphasize the importance of the cytotechnologist function as a professional member of the health care team and the purposes of Cytotechnology will be emphasized. Professional aspects such as: the code of ethics and competencies will be discussed allowing students to initiate a professional behavior. The course includes technical aspects such as: the use of equipment and processing of cytological samples, laboratory safety procedures and laboratory handling. The instructional strategies include, among others: lecture, discussion, independent study and laboratory demonstrations.

Course changed from trimester pattern to semester pattern on July 1998.

CITO 6507
General Concepts in Basic Sciences. Two (2) credits.

This course will review general topics in basic sciences. Students will begin the course by examining basic components of the cell and cellular functions. This will be followed by discussion of cellular activity and immunologic responses. Students will be able to understand the different pathological processes that affect the cell, and the mechanism of cell response to injury. They will be trained in the evaluation of cellular samples. The instructional strategies include, among others: lecture, discussion, independent study and laboratory demonstrations.

Course changed from trimester pattern to semester pattern on July 1998.

CITO 6509
Female Genital System. Twelve (12) credits.

This course provides students the opportunity to participate in a series of educational activities that will develop knowledge and skills in anatomy, histology and cytology of the female genital system. They will distinguish between benign pathologic processes and neoplastic processes. The instructional strategies include, among others: lecture, discussion, independent study and laboratory practice.

Course changed from trimester pattern to semester pattern on July of 1998.

CITO 6515
Respiratory and Gastrointestinal System. Six (6) credits.

This course offers the students the opportunity of acquiring basic knowledge of the respiratory and gastrointestinal systems, by studying their anatomy, histology and cytology. It provides students the opportunity to participate in a series of educational experiences that will enable them to develop specific skills necessary prior to professional training. the study of respiratory system includes cytology of epithelial cells, non-epithelial cells, and non-cellular material. The study of the gastrointestinal system explores all of its organs. The students will be trained in specimen preparation procedures and in the implementation of new techniques in the field of Cytotechnology. The instructional strategies include, among others: lecture, discussion, independent study and laboratory practice.

Course changed from trimester pattern to semester pattern on July 1998.

CITO 6516
Urinary System and Body Fluids. Two (2) credits.

At the end of this course the students will have a broader concept of the female and male urinary systems and body cavity fluids. They will develop laboratory skills related to cytology of the urinary system and will examine its anatomy, histology, and cytology. Normal cytology, as well as benign and neoplastic conditions will be discussed. The anatomy, histology, and cytology of body cavities, as well as, the body fluids under benign processes and pathological conditions will also be studied.

The instructional strategies include, among others: lecture, discussion, independent study and laboratory practice.

Course changed from trimester pattern to semester pattern on July 1998.

CITO 6517
Mammary Glands and Miscellaneous. Two (2) credits.

This course will provide students the opportunity to broaden the concept of the breast and other parts of the human body. Students will study the anatomy, histology, cytology and hormonal effects of the breast, including normal cytology, non-neoplastic and neoplastic conditions. The course covers the study of anatomy, histology and cytology of other body components not included in previous courses, such as, bloodflow, the cerebrospinal system, synovial fluids, eyes and skin. It concludes with the fine needle aspiration method as a diagnostic process. Laboratory practice provided during the course using clinical history, sampling and processing techniques for the study of cancerous cells. The instructional strategies include, among others: lecture, discussion, independent study and laboratory practice.

Course changed from trimester pattern to semester pattern on August of 1998.

CITO 6518
Clinical Practicum. Thirteen (13) credits. Pre-requisites: CITO 6505, CITO 6507, CITO 6509, CITO 6515, CITO 6516, CITO 6517.

This course will provide clinical experiences designed to enable students in the processing, evaluation and interpretation of cytological specimens, and in the management of laboratory activities as similar as possible to the ones that they will encounter as health professionals. Students will demonstrate ability to review and evaluate histologic tissue sections, Cytology and pertinent clinical data in order to establish correlation for the purpose of quality control and quality assurance. They will comply with laboratory safety measures and regulations. Throughout the clinical experiences the students will be able to assist the clinician, in the FNA procedures and in the evaluation of the samples. At the end of the clinical practicum the student is required to present a final research project.

Course changed from trimester pattern to semester pattern on July 1998.

HLAG 6300
Basic Concepts in Linguistics, Psycholinguistics, and Psychoacoustics. Three (3) credits.

Topics in basic Spanish grammar, semantics, morphosyntax, phonology and pragmatics. Discussion on language used and auditory perception. Phonetic transcription in English and Spanish.

HLAG 6302
Speech, Language, and Hearing Disorders. Three (3) credits.

Identification, definitions, classifications, and descriptions of Communicative Disorders. Study of etiology and incidence. Information on basic terminology of the profession, and its current status in Puerto Rico and the United States.

HLAG 6303
Anatomy of the Speech and Hearing Mechanism. Three (3) credits.

Study of the various structures and systems involved in speech and hearing and their function under normal and pathology conditions.

HLAG 6304
Auditory Disorders. Three (3) credits.

Considerations about the etiology, symptoms, and rehabilitation principles in ear disorders, including audiological interpretations; and communicative, psychological, and medical implications of a hearing loss.

HLAG 6305
Acoustics for the Speech and Hearing Sciences. Three (3) credits.

The course examines sound as a physical as well as a perceptual phenomenon. Aspects of acoustics of particular relevance in the theory and practice of both Audiology and Speech Pathology determine the fundamental approach and content of the course. The following topics will be discussed in detail: behavior of the sound wave

in air, intensity descriptors of the sound wave and the decibel (DB) scale, signal theory and spectral-temporal description of wave forms, psychoacoustical methods and models, characteristics of human hearing (including detection, discrimination, and localization of sound). The course will be presented at an introductory level and specialized knowledge of physics and mathematics is not required. An integral part of course presentation will be laboratory demonstrations illustrating relevant acoustic phenomena in class.

HLAG 6308
Statistical Principles Applied to Research in Communicative Disorders. Two (2) credits.

Research problems and hypothesis formulation. Methods for data collection and analysis with special reference to experimental techniques. Tests of significance correlation, and analysis of variance.

HLAG 6309
Experimental Design in Speech, Language, and Hearing Sciences. Two (2) credits.

Review of issues and orientation about types of experimental designs and investigation methods used in research on Speech-Language Pathology and Audiology.

HLAG 6316
Professional Practicum. Two (2) credits.

Practicum in diagnosis and management of speech and language disorders in children and/or adults. Development of competencies in clinical management techniques under direct supervision.

HLAG 6317
Clinical Practicum Seminar. One (1) credit.

Weekly meeting for the discussion of clinical cases and/or topics related to the profession.

HLAG 6325
Communication Development of the Normal Child. Three (3) credits.

The process of natural communicative development of the Spanish-speaking preschool child in terms of sequence, content, form and use. Procedures and techniques for language measurement of this child are also covered.

HLAG 6333
Language Stimulation of the Deaf Child. Three (3) credits.

Evaluation and management of language in children with hearing impairments. Considerations of theories and problems encountered in stimulating communication skills in deaf children. Techniques of auditory training for speech development are also included.

HLAG 6529
Organization and Administration of Service Programs in Communicative Disorders. Two (2) credits.

Topics on general management (planning, organization, direction, and control) and system design are discussed. Also, standards of services in speech, language and hearing in clinics, schools and other settings are presented and discussed.

HLAG 6533
Language Disorders of Children. Three (3) credits.

Study of theories and recent findings of investigation about etiology, symptoms, diagnosis, and treatment of children with language disorders.

HLAG 6600
Thesis. Six (6) credits.

Orientation and guide in Thesis research and writing.

HLAG 6700
Current Topics. One (1) credit.

Discussion of topics of current interest. Topics are established by periods according to new developments.

HLAG 6701
Current Topics. Two (2) credits.

Discussion of topics of current interest. Topics are established by periods according to new developments.

HLAG 6702
Current Topics. Three (3) credits.

Discussion of topics of current interest. Topics are established by periods according to new developments.

HLAG 6703
Current Topics. Four (4) credits.

Discussion of topics of current interest. Topics are established by periods according to new developments.

HLAG 7111
Research Methods in Communication Sciences and Disorders I. Two (2) credits.

This course is the first of a two-course sequence. The emphasis of these courses is to develop in the student the necessary skills to use different research methods and procedures, as well as, being able to critically analyze selected research documents. In this first course the student is exposed to several aspects of research activity in communication sciences and disorders, including the need for scientific research, the nature of scientific research, the different types of research, the several research designs, and the ethical guidelines and issues in research.

HLAG 7112
Research Methods in Communication Sciences and Disorders II. Two (2) credits. Pre-requisites: HLAG 7111.

This course is the second of a two-course sequence. The emphasis of these courses is to develop in the student the necessary skills to use different research methods and procedures, as well as, being able to critical analyze selected research documents. In this second course the student is exposed to several aspects of research activity in communication sciences and disorders, including statistical and computer procedures for analyzing data, considerations in interpreting research results, and report writing. Multicultural and multilingual issues in the field of research are also discussed. As a requirement for this course the student will write a research proposal in groups of (2) students.

INVE 6011
Research I. Two (2) credits.

This course is an introduction to the research process. Includes the philosophical and theoretical assumptions underlying empirical science as well as those directly related to measurement theory and designs based on the experimental paradigm. Emphasis is given on practical implications as they apply to professional practice, critical review of literature, and to basic principles of Descriptive and Inferential Statistics. The student is expected to develop skills in search, evaluation, and selection of useful and reliable information sources.

INVE 6012
Research II. Two (2) credits. Pre-requisite: INVE 6011.

This is an introductory course to qualitative research. The course includes the philosophical and theoretical assumptions of post-empiricist epistemology, as well as their practical applications to professional practice and to critical review of literature. The student is expected to further develop skills in search, evaluation, and selection of useful and reliable information sources already introduced in INVE 6011 - Research I. A potential researchable problem following a specific area of interest in Physical Therapy is expected to be proposed and framed within the continuum of experimental-qualitative research designs.

MEDU 6500
Core Course in Public Health. Six to eight (6-8) credits.

All candidates for a Master's Degree in the School of Public Health are required to take this core course. It provides a core content in Demography, Biostatistics, Epidemiology, Social Sciences, Nutrition, Public Health, and Health Education as applied to health and disease. The course is presented in four substages: Man Interactive with his Environment, Instruments of Measure and Diagnosis, Health Problems, and Strategies and Techniques of Intervention. The course have four objectives: Perceive the Human Being as a Bio-psycho-social Individual. Recognize the Mayor Epidemiological Concepts and Methods used to Diagnose Health Problems, Identify Services Related to Epidemiological Vigilance and Health Education, and the Identification of Basic Biostatistics Methods as they Related to the Health Fields.

PHAL 6305
Speech-Language Pathology: Evaluation and Diagnosis. Three (3) credits.

The course will include the study of clinical procedures used in communication evaluations of patients with speech and language disorders. Basic information about instruments used in clinical data collection, interview techniques, test administration and referrals are presented.

PHAL 6310
Clinical Practicum in Speech-Language Pathology. One (1) credit.

Practicum in diagnosis and treatment of speech and language disorders in children and or adults. Development of competencies in clinical management techniques under direct supervision.

PHAL 6311
Clinical Practicum in Speech-Language Pathology. Two (2) credits.

Practicum in diagnosis and management of speech and language disorders in children and or adults. Development of competencies in clinical management techniques under direct supervisor.

PHAL 6509
Speech and Language Problems in Children with Environmental Deprivation and Children with Mental Retardation. Two (2) credits.

Discussion about communicative difficulties of children who come from areas of environmental deprivation. Difference vs approaches are covered; also clinical modifications required of the speech-language pathologist in order to provide evaluation and therapy to these children. Study of language and speech patterns of children with various degree of mental retardation. Clinical techniques developed for speech and language stimulation of this population are also covered.

PHAL 6512
Neurogenic Communicative Disorders in Adults. Three (3) credits.

Study of the nature and causes of communication problems due to neurological danger in adults. Included are discussions on Aphasia, Apraxia of Speech, the Dysalthrias, Language of Confusion and Generalized Intellectual Impairment pertaining to evaluation, diagnosis and treatment.

PHAL 6514
Cleft Palate. Two (2) credits.

The course will include study of the types and degree of palatal and facial malformations related to congenital and acquired clefts, and management techniques of related communicative disorders.

PHAL 6515
Stuttering. Three (3) credits.

The course will provide for the study of the characteristic of Stuttering, normal dysfluencies and incidence and comparison of etiology theories. Consideration of evaluation and treatment techniques for fluency problems will be presented.

PHAL 6518
Disorders of Voice. Two (2) credits.

The course will include the study of the vocal mechanism and voice disorders. Evaluation and treatment techniques for the correction of voice disorders in children and adults are considered, also, esophageal speech for the laryngectomized.

PHAL 6519
Articulation Problems and Phonological Disorders. Three (3) credits. Pre-requisites: AUDI 6301, HLAG 6300, HLAG 6303. Co-requisite: HLAG 6305.

Anatomic, physiology, acoustic, and perceptual aspects of the articulatory mechanism will be studied. The course includes the description of the adults normal Phonological System (in both, English and Spanish languages). Emphasis will be given to research concerning normal, delayed and, deviated phonological development in both languages. The most relevant theories about phonological development will be discussed; and these theories will be applied to evaluation, diagnostic, and treatment processes of articulation problems and phonological disorders. Formal and informal aspects of evaluation, diagnosis, and treatment in the areas are also discussed.

PHAL 6521
Speech and Language Disorders in Children with Autism. One (1) credit.

The course will provide for discussions about the characteristics of Infantile Autism and Schizophrenia in children, including the communication abilities of both groups. Current approaches for evaluating and treatment speech difficulties in this children are also covered.

PHAL 6522
Diagnosis and Rehabilitation of Children with Neurological Problems. Two (2) credits.

The course will provide for the study of the etiology, incidence, diagnosis, and habilitation of speech and language disorders secondary to brain damage in children. Materials and methods for evaluation and treatment of these difficulties are discussed.

PHAL 6524
Dyslexia and Dysgraphia in the Child. One (1) credit.

The course will provide for the different etiologies and symptoms of visual-language impairment. Also diagnosis and management of patients with disorders of reading and writing.

PHAL 6525
Fundamentals of Dysphagia for Evaluation Therapeutic Intervention. Three (3) credits. Pre-requisite: HLAG 6303 or equivalent.

This is an introductory course on adult Dysphagia. It is intended for graduate students of Speech-Language Pathology. Conferences will address the normal and deviate patterns of feeding and swallowing. Demonstration sessions will be utilized to illustrate evaluation and diagnostic techniques. The course will present the role of other professionals in the management of Dysphagia and will emphasize the importance of interdisciplinary work in it's management.

PHAL 6542
Introduction to Assistive Technology in the area of Augmentatives and Alternative Communication. Three (3) credits. Pre-requisites: HLAG 6533, PHAL 6512, PHAL 6522.

This course has been designed to lead the speech language pathologists towards the development of skills and knowledge required to integrate Assistive Technology into their professional practice as a tool for Augmentative and Alternative Communication (AAC). Several topics regarding Assistive Technology will be covered, among others: the chronological development of the AAC field, role of AAC in the life of persons with and without communications disorders, requirements for an effective communication system, design and development of communication systems, the evaluation process for an appropriate selection of an assistive device, the selection techniques, symbols and structures to satisfy current needs of persons with communicological disorders. The instructional strategies to be used are conferences, demonstrations, group presentations and laboratory experiences.

REME 6001
Medical Records Sciences I. Six (6) credits.

REME 6002
Direct Practice Experience I. Three (3) credits.

REME 6003
Medical Records Sciences II. Six (6) credits.

REME 6004
Direct Practice Experience II. Five (5) credits.

REME 6005
Legal Aspects of Medical Records Administration. Three (3) credits.

Survey of local, state, and federal regulations as they pertain to field of Health Sciences, in particular those directly related to Medical Record Administration; the Medical Record as a legal document, legislation relating to death and autopsy. Emphasis on the legal aspects of Health Record Administration.

REME 6006
Problems in Medical Records Administration. Two (2) credits.

REME 6007
Medical Records Science III. Six (6) credits.

REME 6015
Automatic Data Processing I. Three (3) credits.

REME 6021
Health Services Administration and the Medical Records Application. Three (3) credits.

Study and analysis of management principles as they apply to the Medical Record Administration field; office management and organization of the Medical Record Department.

REME 6022
Health Services Administration II. Four (4) credits.

REME 6105
Medical Record Sciences. Two (2) credits.

Introductory course for the Medical Record field of studies. Study of the Medical Record as a historical document, its relationship with the history of Medicine and accrediting agencies. Laboratory experience in the field and in the classroom is provided.

REME 6106
Medical Record Management. Four (4) credits.

The following components of a Management Medical Record System are studied: identification, filing, retention, and retrieval of information. Ancillary services are also studied as well as non-hospitals health institutions. Emphasis is placed on the peculiarities of the services and on the Medical Record Management System. Laboratory experience in the field and in the classroom is provided.

REME 6107
Medical Records in Health Information Systems. Three (3) credits. Pre-requisite: REME 6105.

The Medical Record is studied as an essential and dynamic instrument of the Health Information System. Assessment of the development, content, and structure of the Medical Record is included. Laboratory experience in the classroom and in the field is provided.

REME 6108
Seminar in Indexes, Registers, and Disease Classification Systems. Three (3) credits. Pre-requisites: REME 6105, REME 6106.

Study of Registration, Index, and Classification Systems. Emphasis is given to the relevance of these systems when compiling, filing, and the utilization of Health Information. Laboratory experience in the classroom and in the field is provided.

REME 6109

Analysis and study of the Health Information System and its application to management in the Medical Record field. Trends toward the use of computerized systems and its application to the Health Care Services is included.

REME 6111
Analysis, Design, and Implementation of Health Information Systems I. Two (2) credits. Pre-requisite:

Analysis and study of the Health Information System and its application to management in the Medical Record field. Trends toward the use of computerized systems and its application to the Health Care Services is included.

REME 6112
Analysis, Design, and Implementation of Health Information Systems II. Two (2) credits. Pre-requisite: REME 6109.

Analysis and study of the Health Information System and its application to management in the Medical Record field. Trends toward the use of computerized systems and its application to the Health Care Services is included.

REME 6115
Evaluation of the Quality of Health Care. Two (2) credits. Pre-requisites: REME 6005, REME 6108, REME 6109.

Study of Health Care Evaluation Programs; such as: Quality Assurance, Peer Review, Utilization Review and Medical Audit, among others. Emphasis is given to the legal implications of the management of the Health Care Information and the application of the evaluation outcomes. Laboratory experience in the classroom and in the field is provided.

REME 6117
Problems in Medical Record Administration Seminar. Two (2) credits.

REME 6121
Pre-Internship in Medical Records Administration. Two (2) credits. Pre-requisites: REME 6108, SALP 6501.

Supervised clinical experience at affiliated hospitals and other health institutions. Theory applied to practical situations regarding: skills which concern the Health Information Systems; responsibilities of the Medical Record Administrator; confidentiality of the Medical Record and contribution of other professionals of the Health Care Personne l.

REME 6122
Internship in Health Records Administration and Research Project. Five (5) credits. Pre-requisites: REME 6021, REME 6112, REME 6121.

Course with which the academic and professional training, offered to the new professional in Medical Record Administration, reaches its highest point. The internship embodices a four days a week (71/2 hours per day, per trimester) immersion in a Medical Record Department of an accredited health care institution. The student will be subject to the direct supervision of a registered Medical Record Administrator and under the direction of the professor in charge of the course. A proposal for the project is required. It must have the approval of the program's faculty before implementing it. The outcomes of the project, attuned to the selected track, is to be submitted.

REME 6125
Concepts in Personnel Administration and Supervision. Three (3) credits.

Study of recent trends in personnel administration and supervision in their role as man-power resource. It aims at developing a more effective relationship between the employee and his/her job. The study of relevant local and national legislation is also included.

REME 6127
Problems in Medical Records Administration Seminar. Two (2) credits. Pre-requisites: REME 6021, REME 6112, REME 6121 and 9 crs. in trayectory courses.

Analysis of administrative problems observed, or encountered by students in their supervised, directed experiences in affiliated hospitals. Study of additional cases and situations brought up by the instructors to broaden and increase student experiences. This seminar is taken concurrently with the internship in Medical Record Administration.

SALP 6500
Medical Background. Three (3) credits.

Study of the basic principles of structure and functioning of the human organism and of the human organism historical data, causes of disease, disturbance of the circulatory system. Inflammation, immunity and hypersensitivity, infections, parasites, neoplasms, radiation, hereditary diseases, and the medical terminology related to these topics.

SALP 6501
Medical Terminology. Three (3) credits.

Study of the anatomical and physiological principles of the systems of the human organism and of the principal diseases that affects them. Includes the study of the medical terminology related to these systems.

TEFI 5000
Social Aspects of Illness. Three (3) credits. Pre-Requisites: CISO 3121, CISO 3122, PSIC 3005

The course elaborates, in a general way, a theoretical framework which comprises, from the mechanical to the complex, the world view utilized in the human sciences to account for the ill-human being. It provides for the discussion of the processes by which the ill subject is constituted through the everyday practices of medicine/ health professions. Given its importance to the field of physical therapy, the course will analize the communication processes in the interaction physiotherapist-patient, paying particular attention to the notion of body movement as product and producer of signification as well as to the position occupied by the physical therapist in the resignification process of the ill body. The course is opened to graduate students from other programs.

TEFI 6001
Kinesiology I. Two (2) credits. Pre-requisite: ANAT 6005. Co-requisites: INVE 6011, TEFI 6007.

Basic course in the study of human motion, which includes kinematics and kinetics required for the understanding of normal and abnormal movement. Anatomical, biomechanical, and physiological principles are defined and applied in the description and analysis of static and dynamics posture. Students will identify and analyze the forces acting on body segments and their effects during normal functional activities. The composition and biomechanical behavior of the principal tissues of the musculoskeletal system are described and compared. The course also provides the foundation for understanding physical therapy evaluations and therapeutic applications. Movement analysis of the elbow, forearm, wrist and hand is presented applying the concepts and principles discussed in the course. Supervised laboratory experiences are included.

TEFI 6002
Kinesiology II. Two (2) credits. Pre-requisite: TEFI 6001. Co-requisite: INVE 6012.

This course is a continuation of TEFI 6001 Kinesiology I. It deals with the study of human motions, which includes kinematics and kinetics required for understanding of normal and abnormal movement. The student will apply anatomical, biomechanical, and physiological principles in the description and analysis of motion of the shoulder, joints of the lower extremity, spine, trunk, and gait. Supervised laboratory experiences are included.

TEFI 6003
Tutorial I. Two (2) credits. Pre-requisite: ANAT 6005. Co-requisites: INVE 6011, TEFI 6001, TEFI 6007, TEFI 6008, TEFI 6009, TEFI 6010.

This course addresses a variety of health problems likely to be encountered in Physical Therapy practice. A case-based approach is used focusing on small group discussion of such issues. Cases are designed to parallel the content of concurrent and previous courses. Students are expected to gain knowledge and reasoning skills for problem solving in relevant contexts. The role of the professor as facilitator is to promote learning rather than to disseminate information.

Grading System: Passed (P), Not Passed (NP).

TEFI 6004
Tutorial II. Two (2) credits. Pre-requisites: INVE 6011, TEFI 6001, TEFI 6003, TEFI 6007, TEFI 6008, TEFI 6009, TEFI 6010. Co-requisites: INVE 6012, TEFI 6002, TEFI 6015, TEFI 6021, TEFI 6023, TEFI 6033.

This is the second of three tutorial courses in which a problem based approach is used. The course focuses on small group discussions of cases of a variety of health problems and professional issues likely to be encountered in Physical Therapy practice. Cases are designed to integrate the content of concurrent and previous courses. The level of complexity increases as compared to those presented in TEFI 6003 - Tutorial I. Students will assess the relevance, validity, and reliability of the information used to address the learning issues. The student is expected to develop the critical thinking skills necessary to make decisions independently. The role of the professor as facilitator is to promote learning rather than to disseminate information.

Grading System: Passed (P), Not Passed (NP).

TEFI 6005
Tutorial III. Two (2) credits. Pre-requisite: TEFI 6041. Co-requisites: TEFI 5000, TEFI 6013, TEFI 6022, TEFI 6025, TEFI 6034.

This is the last of three tutorial courses in which a problem-based approach is used. The course focuses on small group discussions of cases of a variety of health problems and professional issues likely to be encountered in Physical Therapy practice. Cases are designed to integrate the content of concurrent and previous courses. The level of complexity increases as compared to those presented in Tutorial II (TEFI 6004). Students will assess the relevance, validity, and reliability of the information used to address the learning issues. The student is expected to develop the critical thinking skills necessary to make decisions independently. The role of the professor as facilitator is to promote learning rather than to disseminate information.

Grading System: Passed (P), Not Passed (NP).

TEFI 6007
Human Physiology. Three (3) credits. Pre-requisite: ANAT 6005.

Through lectures, group discussion, and supervised laboratory practice this course will study the cellular, histological and system physiology with emphasis in the musculoskeletal, cardiovascular, and the pulmonary function. It addresses the physiological principles required for understanding the changes in the human body systems' function across the lifespan, in pathological states, and in response to Physical Therapy intervention with emphasis in the physiological effects of exercise. The student is expected to understand the basic physiological responses of the human body.

TEFI 6008
Basic Neuroscience. Three (3) credits. Pre-requisite: ANAT 6005. Co-requisite: TEFI 6007.

Through lectures, discussion, and supervised laboratory experience this course provides basic knowledge of structure, organization, and function of the central nervous system in relation to disease and behavior. It addresses the areas of sensory processing, motor control, nervous control of visceral functions, plasticity, and cognitive function, among others. It is expected that the Physical Therapy students and/or students of the Health Sciences acquire a framework for understanding the nervous system as a basis to more advanced and detailed study in the area of Applied Neuroscience.

TEFI 6009
Functional Procedures. One (1) credit. Pre-requisite: ANAT 6005. Co-requisite: INVE 6011, TEFI 6001.

This is an introductory course in the handling of patients/clients with functional limitations who require from maximal assistance to contact guarding during the performance of basic mobility activities. Safety measures and the use of proper body mechanics are addressed. Supervised laboratory experiences are included in all the units of the course. Students will demonstrate basic skills in handling patients/clients requiring guarding and/or assistance in activities of basic mobility.

TEFI 6010
Introduction to Professional Socialization. Two (2) credits.

This course addresses the role of the physical therapist as a member of the health care team, as well as the Physical Therapy practice expectations and domains. Discussion of issues that impact the delivery of Physical Therapy services is also included. The student is expected to reflect on the scope of Physical Therapy and the impact that, becoming a physical therapist, has in his/her social responsibilities.

TEFI 6013
Research III. One and a half (1.50) credits. Pre-requisite: INVE 6012.

This course consists of the development of a group proposal to be pursued as research project. Each group of students will be assigned to an advisor. Feasibility of project completion based upon the curriculum time frame and availability of resources must be demonstrated. Weekly progress meetings are required. Extensive reading, research, and writing is expected.

TEFI 6014
Research IV. Two (2) credits. Pre-requisite: TEFI 6013.

This course consists of the completion of a group research project based upon the research proposal approved in TEFI 6013 - Research III. Each group will continue working on data collection and analysis, interpretation of results, and drawing of conclusions. Progress meetings, as agreed by advisor and students, are required. Extensive reading, research, and writing are expected. The final written project must be approved by the advisor and two faculty members appointed as readers. It must be orally presented and submitted in the format required for publication in peer-reviewed journals.

Grading System: Passed (P), Fail (F).

TEFI 6015
Physical Therapist as Educator and Communicator. Two (2) credits. Pre-requisite: TEFI 6010.

Through lectures and group discussions this course provides an introduction to the education and communication processes in Physical Therapy. The student will utilize and apply basic concepts needed for planning the teaching situation as a tool in Physical Therapy practice. Basic concepts on communication processes during face to

face interaction as well as written clinical documentation are included. The student is expected to develop basic skills in the analysis of communication processes as well as in the proposition of alternative strategies.

TEFI 6021
Musculoskeletal Evaluation, Diagnosis, and Intervention in Physical Therapy I. Two and a half (2.50) credits. Pre-requisites: INVE 6011, TEFI 6001, TEFI 6003, TEFI 6007, TEFI 6008, TEFI 6009. Co-requisite: TEFI 6002.

The course addresses the Physical Therapy management of patients/clients with disorders of the musculoskeletal system with a regional approach. It includes age-related musculoskeletal disorders. Through supervised laboratory experiences the students addresses the examination, evaluation, diagnosis, prognosis, intervention in Physical Therapy, and discharge planning with emphasis on prevention and alleviation of impairments and functional limitations. The students are expected to demonstrate adequate management of cases, starting with simple situations, processing to complex ones.

TEFI 6022
Musculoskeletal Evaluation, Diagnosis, and Intervention in Physical Therapy II. Two and a half (2.50) credits. Pre-requisite: TEFI 6041. Co-requisite: TEFI 6025, TEFI 6034.

This course is a continuation of TEFI 6021 Musculoskeletal Evaluation, Diagnosis, and Intervention in Physical Therapy I. It addresses the Physical Therapy management of patient/client with disorders of the musculoskeletal system with a regional approach. It includes gait analysis, work hardening, and ergonomics as well as age related musculoskeletal disorders and the Physical Therapy care in the promotion, prevention, acute care and rehabilitation. Through supervised laboratory experiences the student addresses the examination, evaluation, diagnosis, prognosis, intervention in Physical Therapy, and discharge planning with emphasis on prevention and alleviation of impairments and functional limitations. The student is expected to demonstrate adequate management of clinical cases.

TEFI 6023
Neurological Evaluation, Diagnosis, and Intervention in Physical Therapy I. Two and a half (2.50) credits. Pre-requisites: INVE 6011, TEFI 6001, TEFI 6003, TEFI 6007, TEFI 6008, TEFI 6009. Co-requisite: TEFI 6002.

This course addresses the management of patient/client with neuromuscular disorders. It focuses on the examination, evaluation, diagnosis, prognosis, intervention in Physical Therapy, discharge planning and patient education with emphasis on prevention and alleviation of impairment and functional limitations. It is case-based, starting with simple situations progressing to complex ones, including the management of peripheral nerve injury, spinal cord injury and other disorders of the central nervous system age related conditions. Supervised laboratory practice are included. The student is expected to demonstrate adequate management of clinical cases.

TEFI 6024
Neurological Evaluation, Diagnosis, and Intervention in Physical Therapy II. Two (2) credits. Pre-requisite: TEFI 6041.

This course is a continuation of TEFI 6023 Neurological Evaluation, Diagnosis, and Intervention in Physical Therapy I. This course addresses the Physical Therapy management of patients/clients with neuromuscular disorders. It focuses on the examination, evaluation, diagnosis, prognosis, intervention in Physical Therapy, and discharge planning with emphasis on prevention and alleviation of impairments and functional limitations. The course is case-based; starting with simple situations progressing to complex ones, including the management of non-progressive and progressive disorders of the central nervous system, including age related conditions. The student is expected to demonstrate adequate management of clinical cases. Supervised laboratory experiences are included.

TEFI 6025
Cardiopulmonary Evaluation, Diagnosis, and Intervention in Physical Therapy. Two (2) credits. Pre-requisite: TEFI 6041. Co-requisite: TEFI 6022.

This course addresses the Physical Therapy management of patients/clients with primary acute, chronic dysfunction and secondary dysfunction of the cardiopulmonary system. The course includes age-related cardiopulmonary disorders and addresses the examination, evaluation, diagnosis, prognosis, intervention in Physical Therapy, discharge planning and patient/client education with emphasis on prevention and alleviation of impairments and functional limitations. The course is case-based,

starting with simple, progressing to complex ones. The student is expected to demonstrate adequate management of clinical cases. Supervised laboratory experiences are included.

TEFI 6033
Clinical Correlations I. Two (2) credits. Pre-requisite: TEFI 6007. Co-requisite: TEFI 6004.

This course provides an introduction to the pathophysiological mechanisms associated with disease and trauma caused by inflammation, infection, and immune deficiency across the lifespan. The etiology, epidemiology, diagnosis and differential diagnosis, clinical manifestations, and medical and surgical management are discussed. It addresses the diseases of the circulatory, respiratory, hematologic, endocrine, digestive, genitourinary, and integumentary systems most frequently encountered in the practice of Physical Therapy. Students are expected to apply knowledge of Pathophysiology in clinical correlations associated with the Physical Therapy practice. Lectures are the primary instructional strategy.

TEFI 6034
Clinical Correlations II. Three (3) credits. Pre-requisite: TEFI 6033.

This course proceeds the course TEFI 6033 Clinical Correlations I. The course addresses the pathophysiological mechanisms associated with disease and trauma including etiology, epidemiology, diagnosis and differential diagnosis, clinical manifestations across the lifespan, and medical and surgical management. It continues the discussion of diseases which affect the integumentary system and addresses the diseases of the musculoskeletal system as well as otorhinolaryngologic and ophthalmologic conditions most frequently encountered in the practice of Physical Therapy. Lecture is the primary instructional strategy.

TEFI 6036
Administration and Consultation in Physical Therapy. Three (3) credits. Pre-requisites: INVE 6012, TEFI 6010, TEFI 6015.

This course provides conceptual and technical background in the area of administration and consulting which will enable Physical Therapy students to understand the changing role of the physical therapist in the future health care delivery system. Topics to be discussed include among others, Strategic and Operational Planning, The Health Care Delivery System, Budgeting and Reimbursement, Supervision and Tasks Delegation, Marketing, Managerial Roles and Functions, Conceptual, Technical, and Interpersonal Skills, Entrepreneurship, Interpretation of Legal and Ethical Issues Related to Management of Physical Therapy Services. Instructional strategies include the integration of tutorial and problem based learning oriented activities, group dynamics with integrated activities, discussion and presentations, review of literature, and problem solving activities featuring case analysis laboratories.

TEFI 6041
Clinical Practice I. Six (6) credits. Pre-requisites: INVE 6012, TEFI 6002, TEFI 6004, TEFI 6015, TEFI 6021, TEFI 6023, TEFI 6033.

This is the first of four full-time clinical experiences which focuses in content discussed in the pre-requisites courses. This practice emphasizes basic skills in examination, evaluation, diagnosis, intervention, case management, and communication. The student is expected to actively participate in the planning of his/her clinical experience. The student begins to think, feel, and act as a physical therapist. It is a six-week supervised clinical experience offered in a clinical site. This course may require traveling and housing outside of the immediate San Juan Metropolitan Area.

Grading System: Passed (P), Not Passed (NP).

TEFI 6042
Clinical Practice II. Five (5) credits. Pre-requisites: TEFI 5000, TEFI 6005, TEFI 6022, TEFI 6025, TEFI 6034, TEFI 6041.

This is the second full time supervised clinical practice, composed of five weeks of guided experience with special focus in case studies that could be of short or long duration. This practice will emphasize specific skills in examination, evaluation, diagnosis, intervention, case management, and communication within a variety of settings. These include but are not limited to acute care, ambulatory care, skilled nursing facilities/nursing home, ergonomics, home health care, rehabilitation, school program and wellness programs. The student is expected to actively participate in the planning of

his/her clinical experience. This course is offered in facilities that may be located outside the immediate San Juan Metropolitan Area.

Grading System: Passed (P), Not Passed (NP).

TEFI 6043
Clinical Practice III. Eight (8) credits. Pre-requisites: TEFI 5000, TEFI 6005, TEFI 6022, TEFI 6025, TEFI 6041. Co-requisites: TEFI 6024, TEFI 6036.

This is the third full time supervised clinical practice, composed of eight weeks clinical experience. The student is expected to function safely and independently with confirmation from the instructor. He or she is responsible for total patient/client Physical Therapy care. The student is also expected to actively participate in the planning of his/her clinical experience. This course is offered in a site that may be located anywhere in Puerto Rico or outside the island. This course may require traveling and housing arrangements.

Grading System: Passed (P), Not Passed (NP).
Course changed from 6 to 8 credits since August 2009.

TEFI 6044
Clinical Practice IV. Sixteen (16) credits. Pre-requisites: TEFI 6024, TEFI 6036, TEFI 6042, TEFI 6043.

This is the fourth full-time supervised clinical practice, composed of sixteen weeks of a clinical experience offered in a site that may be located anywhere in Puerto Rico or outside the island. The student will function safely and independently as an entry-level practitioner in patient care, administration, consultation, education, and research. The student is expected to actively participate in the planning of his/her clinical experience. This course may require traveling and housing arrangements.

Grading System: Passed (P), Not Passed (NP).
Course changed from 8 to 16 credits since August 2009.

TEOC 6001
Foundations of Occupational Therapy I. Four (4) credits. Co-requisites: TEOC 6007, TEOC 6008.
This course introduces the student to the Occupational Therapy profession. The scope of Occupational Therapy practice and the historical and philosophical development of the profession are discussed. It includes theories, models of practice and frames of reference that underlay the practice of Occupational Therapy and how these guide clinical practice and provide a framework for understanding the client. Emphasis is placed on the role of engagement in occupations and purposeful activity in promoting health, in the prevention of disease and in the growth and fulfillment of human needs. Principles of clinical reasoning skills and evidence-based practice as they apply to Occupational Therapy are addressed. Fieldwork Experiences (Level I) are provided.

TEOC 6002
Foundations of Occupational Therapy II. Three (3) credits. Pre-requisite: TEOC 6001.

This course is designed to provide the student with the knowledge, skills and attitudes required to develop a variety of professional skills related to the analysis of areas of occupation. In addition, it emphasizes the use of evaluation and intervention procedures for both individual and groups within the framework of the Occupational Therapy process. The evaluation process is studied from the perspective of how it contributes to the understanding of the client's occupational profiles. The analysis of performance in areas of occupation such as: basic and instrumental activities of daily living, education, work, play, leisure and social participation will also be studied throughout the course. The students will enhance their clinical reasoning abilities and integrate evidence-based principles throughout the experiences provided in the course.

TEOC 6003
Active Learning I. One (1) credit.

This is the first part of a two-course sequence that uses Problem Based Learning (PBL) and other active learning methodologies through laboratory experiences. Students will develop the clinical reasoning skills necessary to begin thinking as an occupational therapist when facing situations that might affect occupational performance in individuals and group populations. The case or issues to

be analyzed are related and integrated into concurrent courses and provide opportunities to use a holistic approach for understanding and making decisions about each case. Students will be able to practice self-directed learning, and will also develop group interaction skills.

Grading System: Passed (P), Not Passed (NP).

TEOC 6004
Active Learning II. One (1) credit. Pre-requisite: TEOC 6003.

This is the second of a two-course sequence. It is an active learning laboratory that uses Problem Based Learning and other methodologies to develop in the students the clinical reasoning skills necessary to begin thinking as an occupational therapist, when facing situations that might affect occupational performance in individuals, groups and populations. The cases to be analyzed are more complex that those covered in the first active learning laboratory. The course requires integration of the concurrent and previous courses, specially those addressing dysfunction in occupational performance and evidence based practice. It provides opportunities to use a holistic approach for understanding and making decisions about each case. Students will continue refining skills in self-directed learning, small group learning, and group interaction.

Grading System: Passed (P), Not Passed (NP).

TEOC 6005
Human Anatomy. Four (4) credits.

This is a course in Gross Human Anatomy taught through lectures and laboratories. Major emphasis is given to musculoskeletal, nervous, respiratory, and cardiovascular systems. Basic concepts of Histology and Embryology are also covered. Supervised laboratory sessions include the use of prosected cadavers. The student is expected to demonstrate knowledge and application of Descriptive Anatomy. Relevant concepts of Radiographic Anatomy are also discussed.

TEOC 6006
Basic Neuroscience. Four (4) credits. Pre-requisite: TEOC 6005.

Through lectures and discussions, this course provides basic knowledge of the structure, organization and function of the central nervous system in relation to disease and behavior. It addresses the areas of sensory processing, motor control, nervous control of visceral functions, plasticity and cognitive function, among others. It is expected that the Occupational Therapy student acquire a framework for understanding the nervous system as a basis to more advanced and detailed study in the area of Applied Neuroscience.

TEOC 6007
Occupation from a Developmental Perspective. Four (4) credits. Co-requisites: TEOC 6001, TEOC 6008.

This course provides the student an overview of the multidimensional occupational nature of the human being from a developmental perspective, including social and cultural aspects. Life span from conception to death is analyzed considering the occupational areas, performance skills, performance patterns, context and activities demands. Each developmental stage is analyzed emphasizing theories and relevant frames of references as well as roles, life tasks, life styles, issues and occupational risks. Laboratories and Level I Fieldwork Experiences will be provided.

TEOC 6008
Professional Development in Occupational Therapy. Four (4) credits. Co-requisites: TEOC 6001, TEOC 6007.

This course emphasizes growth of the student as a professional and as a person. It provides student's learning experiences that will facilitate the acquisition of a repertoire of roles, professional behaviors and skills needed to be an effective occupational therapist. A variety of topics are presented in the course such as: personal awareness as occupational beings, value of professional behaviors, interpersonal and communication skills, collaboration process with other health professionals. The importance of leadership skills for performing the roles of: direct care provider, consultant, advocate of the profession and the consumer, and researcher will also be analyzed. Emphasis is given to the study of professional ethics, standards of practice and core values and attitudes of the Occupational Therapy profession. Ethical reasoning will be used to analyze problems and generate solutions to ethical dilemmas.

TEOC 6009
Dimensions of Human Movement in Occupational Performance. Three (3) credits. Pre-requisite: TEOC 6005. Co-requisite: TEOC 6006.

This course focuses on the importance of human movement for performing everyday activities and tasks from a biomechanical/physical, cognitive and psychosocial dimensions considering a variety of contexts that influence occupational performance. Principles of biomechanics, joint structure, muscle physiology and function are analyzed and applied to understand the normal body movement necessary for performing functional tasks. Through laboratory experiences students will perform evaluation procedures of proper body mechanics, posture, muscle strength, endurance, and joint range motion. Clinical reasoning skills will be used to analyze various cases that present movement dysfunction. The analysis and evaluation of movements are made in the context of an activity by observing performance in natural environments, considering factors that facilitate or hinder occupational performance.

TEOC 6101
Occupational Dysfunction I. Three (3) credits. Pre-requisites: TEOC 6001, TEOC 6007.

This is the first of a two course sequence, designed to develop in the students the knowledge, skills and attitudes related to a variety of biopsychosocial conditions and social situations that result in occupational areas and occupational performance dysfunction. The analysis of the impact of these disorders and conditions in the occupational performance areas, performance skills and patterns, client factors, context and lifestyle is emphasized throughout the courses. Sociocultural variables and their effects of these disorders and conditions on the individual, the family and the society are included in the framework of this analysis. This course presents a variety of health related concepts and some diagnostic classification systems with the emphasis on mental health disorders in adults, children and adolescents.

TEOC 6102
Occupational Dysfunction II. Three (3) credits.
Pre-requisites: TEOC 6006, TEOC 6009, TEOC 6101.
Co-requisites: TEOC 6203, TEOC 6301.

This is the second part of a two-course sequence, designed to develop in the students the knowledge, skills and attitudes necessary to understand a variety of developmental and physical disabilities in adults, children and adolescents that affect occupations and occupational performance. The analysis of the impact of these conditions on the individual abilities to engage in occupation in order to participate in the appropriate context or contexts is emphasized throughout the course. The effect of these conditions on the individual, the family and the society are included in the framework of this analysis. Laboratory experiences are provided.

TEOC 6201
Theory and Practice of Occupational Therapy in Psychosocial Dysfunction I. Three (3) credits. Pre-requisites: TEOC 6101, TEOC 6501.

This is the first part of a two-course sequence designed to discuss the theory and application of the OT process to a variety of human situations and conditions that result in psychosocial and cognitive dysfunction which affect occupational performance. It will enable the students to understand the distinctiveness of the mental health field. Clinical reasoning skills and evidence-based practice will be used to guide decisions related to the selection of an appropriate model of practice or frame of reference and to perform the Occupational Therapy process. Practical experiences will be provided using different assessment instruments, treatment methods and techniques. The documentation process and reimbursement sources in this practice area are also discussed. The course will integrate ethics and contextual factors of health and human service delivery systems.

TEOC 6202
Theory and Practice of Occupational Therapy in Psychosocial Dysfunction II. Four (4) credits. Pre-requisite: TEOC 6201. Co-requisite: TEOC 6502.

This is the second of two courses designed to discuss the theory and application of the Occupational Therapy process to a variety of human situations and conditions that result primarily in psychosocial or cognitive dysfunction and affect occupational performance. It will enable the students to further understand the distinctiveness of the mental health field. Models of practice or frames of reference are presented in this course, emphasizing their value as clinical

reasoning guides for the assessment and intervention in the psychosocial area. The application of the Occupational Therapy process to various age groups and psychosocial problems is included. Psychosocial interventions within communities and populations as well as specialized roles within this practice area are also analyzed. Students are also exposed to a variety of laboratory experiences. Documentation skills and ethical reasoning are integrated throughout the course.

TEOC 6203
Theory and Practice of Occupational Therapy in Physical Dysfunction I. Three (3) credits. Pre-requisites: TEOC 6006, TEOC 6009, TEOC 6501. Co-requisite: TEOC 6102.

This is the first part of a two-course sequence designed to develop in the students the knowledge, skills and attitudes necessary to practice Occupational Therapy with adult populations having occupational dysfunction as a result of physical disabilities. Students will apply the conceptual basis of Occupational Therapy practice to this area. The main focus of this course is in the evaluation of occupational performance. Clinical reasoning skills, evidence-based practice will guide decisions related to the selection of an appropriate model of practice/frame of reference, to perform occupation-based evaluations. Through laboratory experiences students will administer a variety of assessment instruments to determine client's strengths and limitations in occupational performance using appropriate procedures and formats.

TEOC 6204
Theory and Practice of Occupational Therapy in Physical Dysfunction II. Four (4) credits. Pre-requisite: TEOC 6203. Co-requisite: TEOC 6502.

This is the second of two courses designed to develop in the students the knowledge, skills and attitudes necessary to practice Occupational Therapy with adults having occupational dysfunction as a result of physical disabilities. Clinical reasoning skills and evidence based practiced will be used to guide decisions related to the selection of a model of practice or frame of reference, to design an occupation-based plan. Furthermore, it includes the selection of the appropriate intervention methods to remediate, maintain, modify and prevent dysfunction resulting from specific physical disabilities. Topics related to documentation, reimbursement sources, ethics as well as trends and issues in this practice area also discussed. The course includes laboratory experiences and visits to fieldwork scenarios.

TEOC 6205
Context and Management of Occupational Therapy Service. Three (3) credits. Co-requisite: TEOC 6501.

Course designed for the critical analysis of the impact of health and human service delivery systems and models for the Occupational Therapy practice. The legal and political basis of these systems as well as the factors that influence service delivery are also presented. The guide to Occupational Therapy practice will be used as a conceptual framework for the course. The laws and regulations for Occupational Therapy practice in Puerto Rico are also discussed. The management of Occupational Therapy services is presented from the perspective of the context of service delivery. The development of skills and strategies for applying management functions is emphasized. The importance of leadership skills and the role of professionals as change agents is also highlighted. The utilization of field experiences and case analyses will allow students to apply the learned concepts, skills, and to evaluate Occupational Therapy services.

Old Codification: TEOC 5005.

TEOC 6301
Theory and Practice of Occupational Therapy in Pediatrics I. Three (3) credits. Pre-requisites: TEOC 6002, TEOC 6006, TEOC 6007, TEOC 6501.

This is the first part of a two-course sequence designed to discuss the theory and application of the Occupational Therapy process to pediatric populations. It will enable the students to acquire the knowledge, skills and attitudes necessary to perform the roles expected from an entry level occupational therapists. Clinical reasoning skills and evidence-based practice will guide decisions related to the selection and use of an appropriate model of practice or frame of reference throughout the Occupational Therapy process. The course will utilize the Occupational Therapy practice framework, the family centered approach and developmental frame of reference. The best practices, documentation, reimbursement sources, ethics, legislation,

Occupational Therapy assistant roles, team collaboration and other particularities of this practice area in Puerto Rico are also discussed. The course includes laboratory experiences.

TEOC 6302
Theory and Practice of Occupational Therapy in Pediatrics II. Four (4) credits. Pre-requisite: TEOC 6301. Co-requisite: TEOC 6502.

This is the second of two-courses designed to continue the development of knowledge, skills and attitudes for the application of the Occupational Therapy process to pediatric and youth populations. Clinical reasoning skills and evidence based practice will be used to guide decisions related to the selection of an appropriate model of practice or frame of reference. This will be used to perform occupation-based assessments, treatment planning and intervention to the most common conditions that affect children and youth. This course will consider the use of the following models or frames of reference: Sensory Integration, Neurodevelopmental, Behavioral and the Model of Human Occupation. Documentation, ethical issues, professional development, trends, controversies and the distinctiveness of this practice area in Puerto Rico are further discussed. The course includes laboratory experiences.

TEOC 6401
Evidence Based Practice in Occupational Therapy I. Four (4) credits. Pre-requisite: TEOC 6001. TEOC 6008.

This course is the first of a three-course sequence. The emphasis of these courses is on developing skills to make clinical intervention decisions guided by scientific findings. They are designed to develop in the student the knowledge and skills to analyze and interpret research and outcome literature for clinical decision-making based on evidence. In the first course the student is exposed to conceptual and practical experiences related to the process of formulating descriptive and assessment type questions using an evidence based practice mode. Emphasis is given to the use of technology for literature search, as well as critical interpretation and analysis of scientific findings and outcome measures, in order to identify the best evidence to support clinical reasoning and decision-making in Occupational Therapy.

TEOC 6402
Evidence Based Practice in Occupational Therapy II. Two (2) credits. Pre-requisite: TEOC 6401.

This course is the second of a three-course sequence, designed to guide the student in the selection of clinical tools and intervention strategies, within the guides provided by the Evidence Based Practice (EBP) approach. Part II focuses on the formulation of intervention effectiveness EBP questions. Emphasis is given to the appraisal of the evidence, professional literature search and critical interpretation and analysis of scientific findings to identify the best evidence to support clinical intervention in Occupational Therapy. The fundamental concepts of qualitative research and the evidence provided by this type of research are also analyzed. The course provides laboratory experiences. Students will develop a research proposal, geared to answer a descriptive, assessment or intervention effectiveness evidence-based question.

TEOC 6403
Evidence Based Practice in Occupational Therapy III. Three (3) credits. Pre-requisite: TEOC 6402. Co-requisites: TEOC 6202, TEOC 6204, TEOC 6302, TEOC 6502.

This is the third of a three-course sequence designed to implement an evidence based practice/research project proposal, in an area of interest in Occupational Therapy, previously approved in the course TEOC 6402. Further analysis of the body of evidence that supports Occupational Therapy, as well as multiple reading and composition skills will be emphasized throughout the course. A selection of topics related to the dissemination and publication of research findings and basic grant writing skills, will be presented. Time will be devoted to discuss strategies geared to communicate the evidence to different audiences. Students will receive supervision and guidance from a faculty member during the implementation of the research proposal.

TEOC 6501
Fieldwork Experience Level I Part A. Two (2) credits. Pre-requisites: First Year courses, except TEOC 6005, TEOC 6006 and TEOC 6009*.

This Level I Fieldwork course will provide the students a supervised experience in which they will have the

opportunity to observe and participate in a variety of community and other health care scenarios. The experiential learning is stressed throughout the course. These previously selected settings will provide for the development of skills related to the Occupational Therapy evaluation and intervention processes, with emphasis in the occupational health-dysfunction continuum in a diversity of conditions, situations and age groups.

*Change in pre-requisites effective since June 2010.

TEOC 6502
Fieldwork Experience Level I Part B. Two (2) credits. Pre-requisites: Courses of the First Year of Study and courses of the First Semester of the Second Year of Study. Co-requisites: Courses of the Second Semester of the Second Year of Study.

This course is designed to develop in the student initial skills related to the Occupational Therapy process with emphasis on the client's roles and performance in occupations. Student supervision is provided by qualified personnel at the fieldwork site and by the educational program. The learning experiences are systematic and structured to integrate acquired knowledge and apply the clinical reasoning skills in real scenarios. Opportunities to demonstrate behaviors congruent with student's personal-professional development acquired throughout the didactic curriculum are facilitated. Students are placed in traditional and non-traditional scenarios that provides services to a variety of clients across all ages. Each fieldwork site prepares a specific educational program in collaboration with the academic supervisor according to their particularities and the students learning needs.

TEOC 6503
Fieldwork Experience Level II. Twelve (12) credits. Pre-requisites: All the Academic Program courses except TEOC 6403.

This Fieldwork Experience is designed to give students the opportunity to work with individuals and groups across all ages to promote occupational performance, quality of life, health, and well-being. Clinical reasoning skills and evidence-based practice will be applied throughout the Occupational Therapy process using a client-centered approach. Students will use a variety of occupations in evaluation and for intervention in traditional and non-traditional service delivery scenarios. It offers students the opportunity to assume a variety of roles congruent with those of entry-level occupational therapists. It enables them to work with family, caregivers and other team members. They will apply the ethical principles related to the profession and demonstrate professional behaviors. Qualified clinical educators provide student's direct supervision.

Grading System Passed (P), Fail (F) since July 2008.

PROGRAMS SHARED BY THE SCHOOL OF MEDICINE AND THE SCHOOL OF HEALTH PROFESSIONS (JOINT DEGREE PROGRAMS)

COURSE DESCRIPTIONS

GRADUATE COURSES

INCL 6005
Introduction to Clinical Research. One (1) credit.

The main objective of the course is to educate students in the essential aspects of clinical research and the basic processes of building patient-oriented research studies. This course provides the basic concepts of clinical research starting with the purpose of clinical studies. The history of fundamental studies and the researchers that made an impact in the field around the world and in Puerto Rico are discussed. In addition, this course will include the fundamentals of study conception, design, and conduct of clinical research with emphasis in different clinical settings and analyses. Management, ethics, funding, and regulatory aspects are discussed. The course will be offered through lectures, class discussions, computer demonstrations, and practices.

INCL 6006
Introduction to Health Services Research. One (1) credit.

This course presents the key principles, methodologies, and processes pertaining to health services research. It examines the multidisciplinary nature of health services research, through the discussion of studies from the research literature. It presents an overall picture of the area covered by health services research (utilization, costs, quality, accessibility, organization, financing, and outcomes of health care services) and the use of research outcomes for public policy analysis. The main instructional strategies will be case studies, group discussions, and independent study.

Grading System: Passed (P), Not Passed (NP)

INCL 6007
Gender Considerations in Clinical Research. One (1) credit. Pre-requisite: INCL 6005.

Through lectures, seminars, group discussions and student presentations this course will give students the opportunity to discuss differences in the composition of diseases between men and women. Topics such as: Underrepresentation of Women in Clinical Trials, Gender-Related Analysis Definition, Gender Framework for Health Research, Gender Variables that must be taken into Account in Research, NIH Guidelines on Including Women and Minorities in Clinical Trials, and How to Incorporate Women in Studies, will also be presented. Students will be able to assess the status of research on gender differences and it is expected that they prepare a critical analysis on gender-related clinical research.

INCL 6016
Application of Informatics in Research. One (1) credit.

The course focuses on three central knowledge areas: Principles and Applications of Informatics in Clinical Research, Database Management Systems and Web Resources, and Managing the Integration of Informatics in Clinical Research. This course provides informatics tools necessary for the practice of clinical research. These include web applications and research resources such as Medline (Online Medical Library), MD Consult, NLM (National Library of Medicine), and NIH (National Institutes of Health) sites. In addition the course will discuss the use of search engines and appropriate use of computer technology, including visual display of quantitative information and professional presentation tools.

INCL 6025
Bioethics and Regulatory Issues in Clinical Research. Two (2) credits.

In this course the historic framework that supports the ethical, legal, and regulatory aspects of research will be discussed. The development, enactment, and enforcement of all applicable principles, regulations and laws that govern the research enterprise will be discussed, interpreted, and analyzed. The course provides a spectrum of trends with a broad base on the ethical,

legal, and regulatory aspects that govern the practice of clinical research. These aspects will be discussed based on the actual definitions and situations that will provide the participants with perspectives of the research process in its multiple manifestations. The course will emphasize principle based ethics, and it will be offered through lectures, group discussions, and individual and group presentations.

INCL 6035
Epidemiology in Clinical Research I. Two (2) credit. Co-requisite: INCL 6041.

The objective of this course is to foster the understanding and use of scientific methods in clinical research which will lead to valid conclusions and interpretation of clinical and study results. The Clinical Epidemiology course will cover topics such as measures of disease frequency, measures of association, causation, study designs in epidemiologic research and the analysis and interpretation of study results with special emphasis in the evaluation of bias, confounding variables and interactions in the estimation of association. Students will have an active participation in the learning process.

INCL 6041
Biostatistic in Clinical Research I. Two (2) credits.

This course will give the opportunity to applied descriptive and inferential statistics. It is intended for students without previous statistical training. Topics include elementary probability theory, an introduction to statistical distributions, point and interval estimation, and hypothesis testing. Basic data analysis techniques will be introduced using statistical programs for personal computers. The material will be covered using the following instructional strategies: lectures, computer laboratory demonstrations, and practices.

INCL 6042
Biostatistic in Clinical Research II. Two (2) credits. Pre-requisite: INCL 6041.

This course is a continuation of Biostatistics in Clinical Research I. Through conferences and group discussions the student will refine the knowledge and skills in biostatistical inference and methods for clinical research. This course focuses on the study of more than two groups via analysis of variance and nonparametric tests. Classical regression and correlation analysis, logistic regression, ordinal logistic regression, and nominal logistic regression are also discussed. It also includes and introduction to survival analysis. A statistical computer program, STATA TM will be used for data entry, graphical, and statistical analysis.

INCL 6045
Introduction to Bioinformatics and Medical Genomics. One (1) credit. Pre-requisites: INCL 6016, INCL 6041.

This course provides an overview of topics in Genomic Medicine and its clinical applications at an introductory level. Students will solve problems involved in the analysis of biological data such as DNA/protein sequences, genomic data, gene expression data, and proteomics data and how to address problems in clinical research with these new technologies. The course reviews basic Molecular Biology, the central dogma of Molecular Biology, genetics and its application to populations. The use of Molecular Biology and genomic databases for biological research, through the internet using Bioinformatics will be presented. An overview of genomics and proteomics applied to clinical research, pharmacogenomics, and data analysis will be given. Ethical issues in clinical research involving genomics will be discussed.

INCL 6046
Epidemiology in Clinical Research II. Two (2) credits. Pre-requisites: INCL 6035, INCL 6041.

The objective of this course is to foster the understanding that clinical studies are valid and useful to the extent that errors in study design are minimized or control (i.e. calculation of sample size and estimation of power; research questions, hypothesis formulation and concordance with study type; avoidance and control of selection and information bias), standardized data collection protocols and appropriate analyses are implemented. Epidemiologic studies of the natural history of illness, evaluation of diagnostic and screening tests, randomized and non-randomized studies of therapeutic strategies will be compared with emphasis on threats to validity and the methods to prevent or control them. Specific topics will include measures of validity and reliability, collection of unbiased data, and the evaluation

and adjustment of confounded observations using bi-variable and multi-variable analyses.

INCL 6055
Clinical Trials. Two (2) credits. Pre-requisites: INCL 6035, INCL 6041.

This course is an introduction to the subject of clinical trials. It is designed for individuals interested in the scientific, policy, and management aspects of clinical research. through lectures and group discussions the clinical trials, protocol document, study design, treatment allocation, randomization and stratification, quality control, sample size requirements, stopping of trials and sequential design, patient consent, and interpretation of results, will be covered. Students will design a clinical investigation in their own field of interest, write a concept sheet for it, and write reviews critiquing recent published medical literature.

INCL 6056
Clinical Research Protocol Development. Two (2) credits. Pre-requisites: INCL 6035, INCL 6041.

The goal of this course is to systematically teach the process by which one takes a conceptual idea for a clinical research project and converts it into an NIH-style research protocol or grant application. Students will start from their own research question and build a short formal protocol throughout the course. Key elements of clinical research design, such as articulation of testable hypotheses, consideration of inclusion and exclusion criteria for study subjects, determination of the number or subjects needed, etc., will be reinforced throughout the course. Students will also develop the skills to differentiate between effective and ineffective proposal writing. Fundamentals of good technical writing skills will be taught in the course but the primary emphasis will be on the structure and elements of an outstanding protocol. At the end of the course students will have developed a written short version of a realistic protocol.

INCL 6065
Scientific Communication. Two (2) credits.

Through lectures and class discussions this course will provide experience and improvement in written communication. The course objective is that the students develop the skills to write a research proposal in order to obtain funding for research. Students will learn to write all of the elements of a scientific research proposal, including the abstract, introduction, statement of the problem, research design and methods, analyses, timeline, budget, and budget justification. Topics will include figure-table-text links, references, sentence parts, and word functions, among others. Students will learn to write with clarity, accuracy, comprehensiveness, and correctness, using the computer as a writing assistant. Students will apply the knowledge acquired by preparing a well-written research proposal.

Grading System: Passed (P), Not Passed (NP)

INCL 6075
Bioanalytical Methods in Clinical Research. Two (2) credits. Pre-requisites: INCL 6005, INCL 6016, INCL 6041.

This course will offer the students the review of the most relevant and popular methods applied today in clinical research studies. It will be focused on the scientific basis, rationale, potential applications and limitations of current analytical methodology. Some of the areas that will be covered include: Essentials of Quality Control, Normative Values, UV-VIS Spectroscopy, Gas Chromatography, High Performance Liquid Chromatography, ELISA (Immuno-assays), Flow Cytometry, Genetic Analysis, Metabolic Studies, Application of Molecular Biology Methods, Mass Spectrometry, and Kinetic Analysis (including an Introduction to Pharmacokinetics). The practical sessions will include demonstrations, visits to laboratories, and problem sets allowing the analysis and interpretation of data.

INCL 6085
New Frontiers in Clinical Research. One (1) credit.

This is a seminar series for the dissemination of the latest issues in Clinical Research. Distinguished clinical researchers will be invited to present their work. The speakers will provide some of their publications which will be required reading for the students. This course will provide students with the skills to interpret and critically appraise research articles.

Grading System: Passed (P), Not Passed (NP)

INCL 6095
Clinical Research. Six (6) credits. Pre-requisites: INCL 6056, INCL 6065.

This course is designed for the Postdoctoral Clinical Research student to apply his/her research skills in order to perform and complete his/her approved research project. The student will be able to apply the scientific skills required for the execution of his/her research project. They will also apply their writing skills as required for manuscript preparation and submission for publication in a peer reviewed journal. In addition, they will submit an abstract and present their findings in a national or international scientific forum.

Grading System: Passed (P), Not Passed (NP)

SCHOOL OF HEALTH PROFESSIONS FACULTY

ACEVEDO-CRUZ, EMILIA - Professor; Undergraduate Department – B.Ed. in Health; MPHE, University of Puerto Rico – Medical Sciences Campus; EdD, InterAmerican University of Puerto Rico – Metropolitan Campus.

AJA-ROLÓN, ANGEL R. -Professor; Undergraduate Department – GA in Dental Assisting with Expanded Functions; DMD, University of Puerto Rico – Medical Sciences Campus.

ALEMÁN-BATISTA, ADA MILDRED - Assistant Professor; Undergraduate Department – B. Health Ed.; MPHE, University of Puerto Rico – Medical Sciences Campus; Psy D, Ponce School of Medicine; M.A. Tanatology La Laguna University-Tenerife; Islas Canarias, Spain.

ÁLVAREZ-PAGÁN, LYVIA A. -Assistant Professor; Graduate Department; MD, Cuyo University – Argentina; Pathology Residence Dade County Medical Examiners Office, Miami, Florida, 1986-87.

ANGLERÓ-VEGA, IVONNE DEL C. - Professor; Graduate Department – Post Bachelor Certificate in Dietetic Internship; MMSc, Emory University, Georgia.

BÁEZ-CARRASQUILLO, NORMA I. - Associate Professor; Graduate Department – M.S. Occupational Therapy; MS, Occupational Therapy, New York University.

BAYRON-FLORES, FLAVIA E. - Professor; Graduate Department – M.S. Physical Therapy; MPA, University of Puerto Rico; Athletic Trainer Certified A.A.T.A.; Aquatic Therapy Clinical Specialist, Aquatic Therapy & Rehabilitation Institute Inc.; Ai Chi Certification #0206085 Ai Chi International; EdD, in progress Turabo University.

BERRIOS-PÉREZ, RAMÓN - Undergraduate Department: Ophthalmology, MD: Medical Sciences Campus, University of Puerto Rico. 1993.

BONET-RIVERA, IVETTE M. - Assistant Professor; Graduate Department – M.S. Physical Therapy; MA in Pathokinesiology Physical Therapy, New York University, 1998.

CABALLERO-COLÓN, ELINA - Instructor; Undergraduate Department – GA Ophthalmic Technology; BHS University of Puerto Rico – Medical Sciences Campus.

CAMACHO-FELICIANO, DELIA M. - Professor; Graduate Department – Post Doctoral Master in Clinical Research; PhD, University of Puerto Rico - Medical Sciences Campus.

CAMACHO-MARTÍNEZ, ALMA J. - Associate Professor; Graduate Department – Post Bachelor Certificate in Cytotechnology; MBA, Turabo University.

CARLO-COLON, MITZARIE - Assistant Professor Au.D., PhD.; Graduate Department - Audiology Doctor, University of South Florida.

CARLO-MIRABAL, EDNA J. - Instructor; Graduate Department – M.S. Speech-Language Pathology; MS, Texas Christian University.

CASTRO-FIGUEROA, ANADEL - Instructor; Graduate Department – Master of Health Information Administration; MS, Health Information Administration, University of Puerto Rico - Medical Sciences Campus.

COLÓN-RAMIREZ, WANDA I. - Assistant Professor; Graduate Department – M.S. Occupational Therapy; Ph.D. Nova South Eastern University & Neurodevelopment Therapy Certification.

COLÓN-RODRIGUEZ, NELSON - Professor; Sub-Graduate Department – Post Bachelor Certificate in Medical Technology; MS, MT (ASCP), CLS, NCA Long Island University.

COLÓN-SANTAELLA, CARMEN L. - Professor; Graduate Department – M. S. Physical Therapy; PhD Psychology, Academic Research University of Puerto Rico – Río Piedras Campus.

CRUZ-BOCANEGRA, HILDA - Assistant Professor; Graduate Department – Master of Health Information Administration; MS, University of Puerto Rico – Medical Sciences Campus.

CRUZ-GÓMEZ, CYNTHIA - Associate Professor; Graduate Department – M.S. Physical Therapy; MPH, University of Puerto Rico; APTA Certified Clinical Instructor APTA.

CRUZ-RIVERA, ARNALDO - Assistant Professor; Graduate Department – M.S. Occupational Therapy; Ph.D. Carlos Albizu University.

DÁVILA-MARTÍNEZ, ROBERTO - Professor; Graduate Certificate in Geriatrics, University of Puerto Rico – Medical Sciences Campus, 2004; EdD, InterAmerican University of Puerto Rico, 1986.

DÍAZ-BOULON ALICIA Z.- Professor; Graduate Department - Post Bachelor Certificate in Dietetic Internship; , M.H.S.N. University of PUerto Rico - Medical Sciences Campus.

DÍAZ-COLON, MARTA I. - Associate Professor; Graduate Department – Master of Health Information Administration; MS, University of Puerto Rico – Medical Sciences Campus.

ESPADA-CARO, MIRIAM - Professor; Undergraduate Department – B.S. Nuclear Medicine Technology; MPH, CNMT, University of Puerto Rico – Medical Sciences Campus.

ESTAPÉ-GARRASTAZU, ESTELA S. - Professor; Graduate Department – Post Doctoral Master in Clinical Research; PhD, Pharmacology, University of Puerto Rico - Medical Sciences Campus.

FIGUEROA-GONZÁLEZ, EDGARDO - Associate Professor; Undergraduate Department – GA Dental Assisting with Expanded Functions; DMD University of Puerto Rico – Medical Sciences Campus.

FUENTES-VÉLEZ, SOL SIREE - Instructor; Undergraduate Department – GA in Radiologic Technology; M.P.H., University of Puerto Rico - Medical Sciences Campus.

GARCÍA-GARCÍA, RUBÉN - Professor; Graduate Department – Post Doctoral Master in Clinical Research; PhD, University of Puerto Rico - Medical Sciences Campus.

GARCÍA-PÉREZ, MARITZA – Instructor; MEd, InterAmerican University of Puerto Rico – Metropolitan Campus.

GONZÁLEZ-BARRETO, NYDIA E. - Professor; Undergraduate Department – Bachelor in Health Sciences; MS, University of Puerto Rico – Medical Sciences Campus.

GONZÁLEZ-CARTAGENA, ANA M. - Professor; Graduate Department – M.S. Speech-Language Pathology; EdD, Pennsylvania State University.

GONZÁLEZ-PEÑA, ASLIN M. - Assistant Professor; Undergraduate Department – GA Dental Assisting with Expanded Functions; MPH, University of Puerto Rico – Medical Sciences Campus.

HARTGRAVES, STANLEY- Professor; M.S. Graduate Program- M.S. Physical Therapy; University of Southern California; Ph.D University of Southern California.

HERNÁNDEZ-QUIÑONES, GLORIA - Professor; Undergraduate Department – GA Radiologic Technology; MEd, Educational Administration, University of Puerto Rico, Río Piedras Campus; MS Anatomy University of Puerto Rico - Medical Sciences Campus.

HERNÁNDEZ-ORTIZ, DIANA E. - Assistant Professor; Graduate Department – M.S. Occupational Therapy; MPA, University of Puerto Rico.

IRIZARRY-GÓMEZ, DYHALMA - Professor; Graduate Department – M.S. Occupational Therapy; PhD, Pennsylvania State University.

IRIZARRY-RAMIREZ, MARGARITA - Associate Professor; Graduate Department – M.S. Clinical Laboratory; PhD, University of Puerto Rico - Medical Sciences Campus.

JIMÉNEZ-CASTRO, MARÍA I. - Associate Professor; Graduate Departement - M.S. Speech-Language Pathology; Ph.D. Indiana University.

LABOY-ZENGOTITA, PILAR - Instructor; Graduate Department – M.S. Speech-Language Pathology; MS, Speech-Language Pathology, University of Puerto Rico – Medical Sciences Campus.

LA PUERTA-RESTO, MARIZABEL - Professor; Graduate Department – M.S. Physical Therapy; MS, University of Puerto Rico – Medical Sciences Campus; DPT. Boston University.

L**EBRÓN-GONZÁLEZ, ADA** - Instructor; Graduate Department – M.S. Speech-Language Pathology; MS, Speech-Language Pathology, University of Puerto Rico – Medical Sciences Campus.

LINARES, NICOLÁS - Professor; Graduate Department – M.S. Speech-Language Pathology; PhD, University of Illinois.

LÓPEZ-ORTIZ, WILMA J. - Assistant Professor; Sub-Graduate Department – Post Bachelor Certificate in Medical Technology; MS, MT (ASCP), SM, University of Puerto Rico.

LÓPEZ.ORTIZ, YADIRIS - Graduate Department - Post Bachelor Ceritifcate in Cytotechnology; Msc Medical Sciences Campus.

MARRERO-MALAVÉ, MIGDALIA - Graduate Department – Master of Health Information Administration; Researcher; MS, University of Puerto Rico.

MARTÍNEZ-RODRÍGUEZ, MELWEEN I. - Professor; Undergraduate Department – B.S. Veterinary Technology; DMV, Tuskegee University.

MARTÍNEZ-VÁZQUEZ, MIGDALIA - Associate Professor; Sub-Graduate Department – Post Bachelor Certificate in Medical Technology; EdD, University of Puerto Rico – Río Piedras Campus.

MCDOWELL-NIXON, SHARON A. - Associate Professor; Sub-Graduate Department – Post Bachelor Certificate in Medical Technology; MA, New York University.

MEDINA-NATER, IVETTE M. - Assistant Professor; Undergraduate Department – B.S. Veterinary Technology; MBA, University of Phoenix.

MELÉNDEZ-SOSTRE, JUAN – Associate Professor; Undergraduate Department – GA Radiologic Technology; MPH, University of Puerto Rico - Medical Sciences Campus; MEd, Educational Administration and Supervision, Caribbean University of Puerto Rico - Bayamón Campus, June 1999.

MELÉNDEZ-TORRES, CARMEN O. -Professor; Sub-Graduate Department – Post Bachelor Certificate in Medical Technology; EdD, University of Puerto Rico – Río Piedras Campus.

MORALES-BERRIOS, MIGDALIA - Professor; Graduate Department – M.S. in Occupational Therapy; MS, Caribbean Center for Post Graduate Studies.

MULERO-PORTELA, ANA L. Associate Professor; Graduate Department - M.S. Physical Therapy; M.S. University of PUerto Rico - Medical Sciences Campus, PhD. Texas Woman´s University, 2000.

MUÑIZ-SANTIAGO, LUZ A. - Professor; Graduate Department – M.S. Occupational Therapy; EdD, InterAmerican University of Puerto Rico; Post Graduate Certificate in Gerontology University of Puerto Rico – Medical Sciences Campus.

MUÑIZ-SANTIAGO, MELBA L. - Associate Professor; Undergraduate Department – Bachelor in Health Sciences; MA, University of Puerto Rico – Medical Sciences Campus.

NEGRÓN-RIVERA, SONIA I. - Associate Professor; Undergraduate Department – Bachelor in Health Sciences; JDr, Law School, InterAmerican University of Puerto Rico.

OLIVIERI-VILLAFAÑE, ZULMA – Associate Professor; Deanship Academics Affairs; MS, Evaluation Research of Health Systems, University of Puerto Rico – Medical Sciences Campus.

ORABONA-OCASIO, ANNA - Associate Professor; Graduate Department – Master of Health Information Administration; EdD, University of Puerto Rico – Río Piedras Campus.

ORELLANO-COLÓN, ELSA M. - Assistant Professor; Graduate Department – M.S. Occupational Therapy; Ph.D. Nova South Eastern University.

ORTIZ-RODRIGUEZ, ALEXIS - Associate Professor; Graduate Department - M.S. Physical Therapy; PhD. Texas Woman´s Uniersity; Professional Certifications & Licenceses: Puerto Rico Physical Therapy Licence #1340, Texas Physical Therapy License #1136323, Certified Strength & Conditioning Specialist #200218476 (National Strength & Conditioning Association), Sports Clinical Specialist #13369 (American Board of Physical Therapist Specialists).

ORTIZ-REYES, CARLOS A. - Associate Professor; Undergraduate Department – B.S. Veterinary Technology; MBA, Information Systems, University of Phoenix.

OWEN-SANOGUET, GRACE A. - Associate Professor; Graduate Department – Audiology Doctor; ScD, Boston University.

PACHECO-RODRÍGUEZ, MIRNA L. - Assistant Professor; Undergraduate Department – GA Dental Assisting with Expanded Functions; MEd, Administration and Supervision, Metropolitan University of Puerto Rico.

PAGÁN-VILÁ, AMARILIS – Instructor; MA, University of Puerto Rico.

PARÉS-SANTIAGO, PEDRO - Professor; Undergraduate Department – Bachelor in Health Sciences; MD, Autonomous University of Santo Domingo.

PÉREZ-COLÓN, BRENDA - Instructor; Undergraduate Department – B.S. Nuclear Medicine Technology; MS, CNMT, University of Puerto Rico – Medical Sciences Campus.

PÉREZ-MERCADO, MARIBEL - Counselor III; Students Affairs Office; Graduate Certificate in Gerontology, University of Puerto Rico - Medical Sciences Campus; EdD, InterAmerican University of Puerto Rico.

REUS-VELÁZQUEZ, LOURDES DEL C. - Professor; Graduate Department – M.S. Physical Therapy; EdD, University of Puerto Rico – Río Piedras Campus; Credentialed Trainer APTA 2001.

REYES-LÓPEZ, MERCEDES - Professor; Undergraduate Department – B. Health Ed.; MPHE, University of Puerto Rico – Medical Sciences Campus; EdD, InterAmerican University of Puerto Rico – Metropolitan Campus. Coaching Certificate, University of Puerto Rico - Río Piedras Campus.

RIVERA-RIVERA, HERIBERTO – Instructor; MA, University of Phoenix.

RIVERA-VALDÉS, MERCEDES - Assistant Professor; Undergraduate Department – GA Ophthalmic Technology; MEd, University of Phoenix.

RIVERA-VELÁZQUEZ, ELIZABETH - Associate Professor; Undergraduate Department – B.S. Veterinary Technology; DMV, Tuskegee University.

RODRÍGUEZ-CALDERÓN, BLANCA - Associate Professor; Undergraduate Department – GA Dental Assisting with Expanded Functions; MEd, Administration and Supervision, InterAmerican University of Puerto Rico.

RODRÍGUEZ-DELGADO, CARMEN E. - Professor; Graduate Department – M.S. Occupational Therapy; PhD, and Post Graduate Certificate in Family Counseling Caribbean Center for Post Graduate Studies.

RODRÍGUEZ-FRAU, MARIA V. - Professor; Undergraduate Department – Bachelor in Health Sciences; EdD, InterAmerican University of Puerto Rico - Metropolitan Campus.

RODRÍGUEZ-TORRES, JESSICA - Assistant Professor; Graduate Department - M.S. Physical Therapy; M.S. University of Puerto Rico; DPT. University of Central Arkansas, 2003.

ROHENA-PAGÁN, MARÍA DE LOS A. - Associate Professor; Graduate Department – M.S. Occupational Therapy; EdD, InterAmerican University of Puerto Rico.

ROMÁN-GARCÍA, ELBA J. - Professor; Undergraduate Department – B.Health Ed.; MPHE, University of Puerto Rico – Medical Sciences Campus; CHES National Certification; EdD, InterAmerican University of Puerto Rico – Metropolitan Campus. Geriatric Graduated Certificate University of Puerto Rico - Medical Sciences Campus.

ROSADO-SANTIAGO, EDGARDO L. - Instructor; Undergraduate Department – GA Radiology Technology; BHEd, University of Puerto Rico, Medical Sciences Campus, June 1987; Current Student MPH, Maternal and Child Health, University of Puerto Rico - Medical Sciences Campus.

ROSARIO-HERNÁNDEZ, RUTH - Assistant Professor; Sub-Graduate Department – Post Bachelor Certificate in Medical Technology; MS, MT (ASCP), University of Puerto Rico.

RUIZ-SÁNCHEZ, LUZ A. - Professor; Graduate Department - Post Bachelor Certificate in Dietetic Intership; M.H.S.N. University of Puerto Rico - Medical Sciences Campus.

SAN MARTIN-FERNANDEZ, MARIA T. - Assistant Professor; Graduate Department – Post Doctoral Master in Clinical Research; MS, Andrews University Michigan.

SANOGUET, GRACE A. - Professor; Graduate Department - Audiology Doctor; Sc.D. Boston University.

SANTIAGO-DE SNYDER, SOAMI - Professor; Graduate Department – Audiology Doctor; PhD, University of Pittsburg.

SANTIAGO-GONZALEZ, NYDIA I. - Associate Professor; Graduate Department – Audiology Doctor; AuD, Central Michigan University.

SANTIAGO-RAMOS, LUIS J. - Assistant Professor; Undergraduate Department – B.S. Veterinary Technology; MPH, University of Puerto Rico – Medical Sciences Campus.

SANTIAGO-SÁNCHEZ, IRIS M. - Assistant Professor; Undergraduate Department – Bachelor in Health Sciences; MHSA, University of Puerto Rico – Medical Sciences Campus.

SANTIAGO-TOSADO, VIRGINIA - Professor; Graduate Department – Master of Health Information Administration; MEd, University of Puerto Rico; CHES National Certificate; CPM Local Certificate; JDr, Law School, University of Puerto Rico – Río Piedras Campus.

SANTOS-NIEVES, SANDRA I. - Associate Professor; Graduate Department – Master of Health Information Administration; MBA, University of Puerto Rico – Río Piedras Campus.

SANTOS-Y VARGAS, LEONIDES – Professor; PhD, Champaign Urbana Illinois.

SEGARRA-VAZQUEZ, BÁRBARA - Professor; Graduate Department – MS, Clinical Laboratory; MS, InterAmerican University of Puerto Rico

SERRANO-SERRANO, SONIA I. - Instructor; Graduate Department – Post Bachelor Certificate in Dietetic Internship; MPH, University of Puerto Rico – Medical Sciences Campus.

SILVA-CINTRÓN, SANDRA - Assistant Professor; Graduate Department – Master of Health Information Administration; MS, University of Puerto Rico – Medical Sciences Campus.

SOTO-ARCELAY, LILLIAN - Professor; Undergraduate Department – Bachelor in Health Sciences; MA, Temple University.

SOTO-VÁZQUEZ, LOURDES E. - Professor; Undergraduate Department – B. Health Ed.; MPHE, University of Puerto Rico – Medical Sciences Campus; EdD, University of Puerto Rico – Río Piedras Campus, Graduate Bioethics Certificate, University of Puerto Rico - Medical Sciences Campus.

TÁBORA-TIRADO, WANDA I. Professor; Undergraduate Department - B. Health Ed.; M.P.H.E. University of Puerto Rico - Medical Sciences Campus; CHES National Certification; Graduate Bioethics Certificate, University of Puerto Rico - Medical Sciences Campus, Current Student Ed. D. University of Puerto Rico - Río Piedras Campus.

VÉLEZ-BARRIOS, GLORIA M. -Associate Professor; Graduate Department – MS, Speech-Language Pathology; MS, University of Puerto Rico.

VIENTÓS-VALLE, JOSE A. - Associate Professor; Undergraduate Department – B.S. Veterinary Technology; DMV Kansas State University.

VILLANUEVA-REYES, ALBERT - Professor; Graduate Department – M.S. Speech-Language Pathology; EdD, University of Puerto Rico – Río Piedras Campus.

VINCENTY-LUYANDO, MARISOL - Associate Professor; Graduate Department – Audiology Doctor; PhD, University of Connecticut.



School of Nursing



MISSION AND GOALS

The School of Nursing is responsible for teaching, research, and service in the discipline of nursing, as accomplished through its educational programs. The School promotes the provision of quality nursing services with an interdisciplinary focus, in order to meet the present and emerging health needs of the Puerto Rican society.

The main goals of the School of Nursing are:

- Prepare nurse generalists at the baccalaureate level with the knowledge, skills, and attitudes necessary to practice as professional nurses, and to assume a leadership role in the nursing process when offering direct care to clients in a variety of settings, including primary, secondary, and tertiary health care levels.
- Prepare master's level nurses who may assume leadership roles as teachers in nursing education programs, administrators of nursing services, clinical nurse specialists and nurse anesthetists with a solid education in advanced clinical nursing.
- Provide continuing education activities to enhance the knowledge of professional nurses.
- Promote the development of nursing professionals for the improvement of health care in other countries.

ORGANIZATION AND ADMINISTRATION

Founded in 1940, the School of Nursing began as one of the programs of the School of Tropical Medicine, later becoming part of the Department of Preventive Medicine and of School of Public Health. In 1975, when the Medical Sciences Campus was reorganized, the School became a unit of the School of Health Professions, under the direction of an Associate Dean. On July 1, 1995 it became an autonomous faculty within the Medical Sciences Campus.

The Dean is the chief executive officer of the School. There is an Associate Dean for Academic Affairs, an Assistant Dean for Student Affairs, and a Director of Administrative Affairs. The School has an Undergraduate and a Graduate Department.

The Undergraduate Department offers a Bachelor of Science in Nursing degree program and the Graduate Department offers a Master of Science in Nursing degree program. All programs are accredited by the Puerto Rico Council on Higher Education and by the Commission on Collegiate Nursing Education (CCNE). In 1993, the Master of Science in Nursing with specialty in Anesthesia was accredited by the Council on Accreditation (COA) of Nurse Anesthesia Educational Programs.

LOCATION AND FACILITIES

The School of Nursing occupies two buildings at the Medical Sciences Campus with fourteen classrooms, an amphitheater, chemistry and anatomy laboratories, and the Nursing Skills Laboratory. The laboratory includes a conference room, multipurpose room, nurses station, utility room, and a multimedia and interaction center with 20 personal computers, workstations and other equipment . The Medical Sciences Campus has established agreements with several government agencies, communities, homes for the elderly, the Veterans Administration Hospital, and private agencies for the clinical practice of students.

School of Nursing addresses:

Medical Sciences Campus
School of Nursing
PO Box 365067
San Juan, Puerto Rico 00936-5067

ACADEMIC PROGRAMS
BACHELOR OF SCIENCE IN NURSING PROGRAM

The purpose of the Bachelor of Science in Nursing Program is to prepare nurse generalists with the knowledge, skills, and attitudes necessary for professional nursing practice in a variety of health settings in primary, secondary, and tertiary levels of care. The curriculum

includes courses in general education, the humanities, basic sciences, and nursing.

The program is organized in four academic years. It consists of 131 semester credit-hours distributed as follows:

- 36 credit-hours in general education, including a course in statistics.
- 34 credit-hours in bio-psychosocial sciences.
- 61 credit-hours in nursing sciences.

The general education courses must be taken at an accredited institution of higher education during the first year of study. The remaining three years of study (95 semester credit-hours) are completed at the School of Nursing. The second year of studies consists of courses in bio-psychosocial sciences and three introductory courses of the nursing major.

During the third and fourth year of studies, students are introduced to both the theoretical and clinical foundations of nursing in order to prepare them for nursing interventions with clients at all stages of growth and development, moving along the wellness-illness continuum. Nursing interventions are carried out in primary, secondary, and tertiary level health care facilities.

Through the curriculum, students develop the cognitive, psychomotor, and affective skills necessary for nursing, which enable them to practice as nurse generalists at different levels of care within the health system. It also enables them to utilize knowledge from biopsychosocial areas as frames of reference when making nursing care decisions in interventions with individuals, families, and communities.

Throughout the program, students have the opportunity to select twelve elective credits (including nursing electives) to further enrich their personal and professional growth and development.

Admission Requirements

This program has a guaranteed transfer agreement with the following University of Puerto Rico System units as long as the student complies with the established academic progress criteria: Carolina, Río Piedras and Bayamón.

- Approve 36 credits in the courses specified below.
- Have a minimum general and specific grade point average of 2.00 or higher (the specific index is based on science and mathematics courses).
- Apply to the program before the deadline established by the originating unit.
- Interview with a faculty member.

Required Courses	Semester Credit-Hours
Biological Sciences	6
Basic Course in Spanish	6
Basic Course in English	6
Social Sciences	6
Humanities	6
Mathematics	3
Elements of Statistical Reasoning	3
Total	36

Graduation Requirements

- A minimum grade point average of 2.00 (on a scale of 4.00).
- Approve the program's 131 credit-hours.

Accreditation

The undergraduate and graduate programs of the School of Nursing are currently accredited by the Commission on Collegiate Nursing Education (CCNE) for the maximum period of twelve years. CCNE address is as follows:

One Dupont Circle, NW
Suite 530
Washington, DC 20036-1120
(202) 887-6791
Fax (202) 887-8476
www.aacn.nche.edu

BACHELOR OF SCIENCE IN NURSING

TOTAL SEMESTER CREDIT-HOURS: 95

Professional Courses: 89 credit-hours

ANAT 4011 Human Anatomy and Physiology I 4

ANAT 4012	Human Anatomy and Physiology II	4
QUIM 3021	Fundamentals of General Chemistry	4
QUIM 3022	Fundamentals of General Chemistry	4
SOCI 3245	Principles of Sociology	3
PSIC 3005	General Psychology	3
MICR 3345	Microbiology	3
ENFE 4116	Nursing in the Social System	3
ENFE 4075	Introduction to the Research Process	3
INTD 4005	Health: A Holistic Approach	5
ENFE 4006	Alterations in Normal Physiology	3
ENFE 4125	Principles of Drug Therapy for Nurses	3
ENFE 4136	Nursing Process with the Human Being in Primary Care	6
COOP 3006	Group Dynamics	3
ENFE 4137	Nursing Process with Families during Pregnancy and Disease of Children and Adolescents	6
ENFE 4147	Nursing Process with Individuals, Families, and Groups with Mental Health Interferences	6
ENFE 4138	Nursing Process Applied to Promotion and Maintenance of Community Health	6
ENFE 4150	Nursing Process with Families Confronting Normal Crisis and Disruption of Health of the Adult	6
ENFE 4155	The Role of Nursing Leadership	8
Professional Electives		6
Electives		6

MASTER OF SCIENCE IN NURSING

The Master of Science in Nursing Program prepares advanced practice nurses with a functional role in education, administration of nursing services, or clinical nurse specialists. The graduate student gains expert knowledge in the nursing sciences and refines skills that enable him/her to perform in more complex settings.

The curriculum is organized in two academic years for students attending the day program and three academic years for students attending the evening program. The program requires the completion of 41 semester credit-hours and 11 trimester credits-hours. These include: interdisciplinary core course, core nursing courses, advanced clinical nursing, research component, functional role, and electives.

The functional roles offered are: Teaching of Nursing in Higher Education, Nursing Services Administration, and Clinical Nurse Specialist. The program includes the choice of two (2) out of the following clinical nursing track courses: Maternal Cycle, Children and Adolescents, Adults, Elderly, Mental Health, Psychiatric Care, Family, Community, and Critical Care (I and II).

Admission Requirements

- BSN degree from an accredited school.
- Statistics course at the baccalaureate level (3 crs).
- Graduate Record Examination Test (GRE) or EXADEP.
- Obtain a minimum of 55% cumulative average in which the following factors are considered:

The minimum academic index	25%
EXADEP or GRE SCORE	25%
Interview with graduate program faculty	20%
Critical analysis of journal article	5%
Analysis of Curriculum Vitae (short courses, professional trips, special distinctions, publications, continuing education)	5%

Nursing License

- At least one-year experience in a critical care unit.
- Advanced Cardiac Life Support Certificate.

Graduation Requirements

- General grade point average of 3.00 or higher (on a scale of 4.00).
- Complete all the required courses of the curricular sequence and all nursing courses with a B average.
- Complete all theoretical and clinical activities specified by the program.
- Complete the total number of credits required for the MSN degree.

- A minimum of 800 hrs. clinical practice and the number of anesthesia cases required by the COA of Nurse Anesthesia Educational Programs.
- Take the Self Evaluation Examinatio (SEE).
- Take and approved the National Certification Examination (NCE).

MASTER OF SCIENCE IN NURSING

TOTAL CREDIT-HOURS: 41 SEMESTER C.H. + 11 TRIMESTER C. H.

Required Courses: 14 semester credit-hours + 11 trimester C.H.

MEDU 6500	Core Course in Public Health	6tr
ENFE 6600	Conceptualizing Man	2
BIOE 6525	Statistical Analysis	5tr
ENFE 6601	Nursing as Process and Nursing Theories	6
ENFE 6608	Nursing Research	3
ENFE 6615	Research Project	3

Track Courses: 12 credit-hours a year (2 tracks) among the following 6 semester credit-hours

ENFE 6602	Nursing Intervention throughout the Maternal Cycle	6
ENFE 6603	Nursing Intervention with Children and Adolescents	6
ENFE 6604	Nursing Intervention with Adult Persons	6
ENFE 6605	Nursing Intervention with Elderly Persons	6
ENFE 6606	Nursing Intervention with the Family Unit	6
ENFE 6607	Nursing Intervention with the Community	6
ENFE 6617*	Nursing Intervention in Mental Health and Psychiatry I	6
ENFE 6618*	Mental Health and Psychiatry Nursing II	6
ENFE 6635**	Nursing Intervention with Critically Ill Persons I	6
ENFE 6636**	Nursing Intervention with Critically Ill Persons II	6

Specialty: 9 credit-hours a year chosen from the following courses, depending on selected role

ENFE 6609	Theory and Practice of Administration for Nursing I	4
ENFE 6610	Theory and Practice of Administration for Nursing II	5
ENFE 6611	Theory and Practice of Teaching Nursing I	4
ENFE 6612	Theory and Practice of Teaching Nursing II	5
ENFE 6613	Clinical Nurse Specialist Role I	4
ENFE 6614	Clinical Nurse Specialist Role II	5
Electives		6

*Students enrolling in ENFE 6617 should enroll in ENFE 6618.

**Students enrolling in ENFE 6635 should enroll in ENFE 6636.

MASTER OF SCIENCE IN NURSING WITH SPECIALTY IN ANESTHESIA (This program will not admit new students until reaction from moratorium status)

The Master of Science in Nursing with specialty in Anesthesia requires a total of 53 semester credits and 5 trimester credits to be eligible for the degree. Courses include core courses (nursing and research component), anesthesia specialty courses, and elective courses.

Admission Requirements

- BSN degree from an accredited school.
- Statistics course at baccalaureate level (3 crs).
- Graduate Record Examination Test (GRE) or EXADEP SCORES.
- Obtain a minimum of 55% cumulative average in which the following factors are considered:

The minimum academic index	20%
The minimum specific index	25%
EXADEP or GRE	25%
Interview with graduate program faculty	20%

Critical analysis of journal article	5%
Analysis of Curriculum Vitae (short courses, professional trips, special distinctions, publications, continuing education)	5%

- Nursing License.
- At least one-year experience in a critical care unit.
- Advanced Cardiac Life Support Certificate

Graduation Requirements

- General grade point average of 3.00 or higher (on a scale of 4.00).
- Complete all the required courses of the curricular sequence and all nursing courses with a B average.
- Complete all theoretical and clinical activities specified by the program.
- Complete the total number of credits required for the MSN degree.
- A minimum of 800 hrs. clinical practice and the number of anesthesia cases required by the COA of Nurse Anesthesia Educational Programs.
- Take the Self Evaluation Examination (SEE).
- Take and approved the National Certification Examination (NCE).

MASTER OF SCIENCE IN NURSING WITH SPECIALTY IN ANESTHESIA

TOTAL CREDIT-HOURS: 53 SEMESTER C.H. + 5 TRIMESTER C. H.
Professional Courses: 47 semester C.H +5 tr. CH

CMED 6001	Advanced Human Anatomy and Physiology I	2
CMED 6002	Advanced Human Anatomy and Physiology II	3
BIOE 6525	Statistical Analysis	5tr
ENFE 6600	Conceptualizing Man	2
ENFE 6601	Nursing as Process and Nursing Theories	6
ENFE 6608	Nursing Research	3
ENFE 6615	Research Project	3
ENFE 6637	Biomedical Principles Related to Anesthesia	3
ENFE 6645	Nursing Intervention with Clients Requiring Anesthesia (Pharmacology) - Track I	6
ENFE 6646	Nursing Intervention with Clients Requiring Anesthesia Track II	6
ENFE 6647	Nursing Intervention with Clients Requiring Anesthesia Track III	6
ENFE 6690	Anesthesia Clinical Internship	7
Electives		6

MASTER OF SCIENCE IN NURSING WITH SPECIALTY IN FAMILY NURSE PRACTITIONER

The graduate department of the School of Nursing offers a Master of Science in Nursing (MSN) with Specialty in Family Nurse Practitioner. The program has a total of 56.33 credits distributed in 24 consecutive months (including summer) Part-time studies are completed in 3 years, 3 summers or 4 years and 2 summers.

The curriculum has been designed to prepare professional nurses as Family Nurse Practitioners with the competencies, knowledge and skills needed to deliver comprehensive health care promotion, maintenance, risk reduction, illness prevention and palliative care across the life span.

Admission Requirements

- BSN from an accredited school.
- Basic statistics course at baccalaureate level (3 crs.).
- Updated professional nursing license.
- Evidence one or more professional nursing practice experience.
- Active member of the Puerto Rico College of Professional Nursing
- Result of the Graduate Record Exam (GRE) or the Spanish test of Aptitude for Graduate Studies (EXADEP)
- A minimum average of 55% as a result of the sum of the following criteria:

The minimum academic index	20%
The minimum specific	25%
EXADEP or GRE SCORE	20%
Interview with graduate program faculty	20%
Critical analysis of journal article	10%

Graduation Requirements

- General grade point average of 3.00 or higher (on scale of 4.00).
- Complete all concentration courses with a B average.
- All didactic courses and clinical experiences must be completed as specified by the program guidelines.

MASTER OF SCIENCE IN NURSING WITH SPECIALTY IN FAMILY NURSE PRACTITIONER

TOTAL CREDIT-HOURS: 53 SEMESTER C.H. + 5 TRIMESTER C.H.
PROFESSIONAL COURSES: 47 SEMESTER C.H. + 5 TR. C.H.

ENFE 6650	Advanced Physical Assessment	3
ENFE 6651	Advanced Pathophysiology	3
ENFE 6657	Primary Care in the Lifecycle	2
ENFE 6656	Nursing Theories Seminar	1
ENFE 6658	Differential Diagnosis Seminar	1
BIOE 6525	Statistical Analysis	5tr
ENFE 6621	Evidence Based Research for FNP	3
ENFE 6665	Pharmacology for Family Nurse Practitioner	4
ENFE 6661	Primary Care I	5
ENFE 6675	Diagnostics for Primary Care	2
ENFE 6625	Bioethics in Nursing	2
ENFE 6622	Evidence Based Research Project for FNP	3
ENFE 6662	Primary Care II	5
ENFE 6685	Professional and Legal Aspects of Advanced Practice and Public Policy	2
ENFE 6663	Primary Care III	5
ENFE 6664	Residency in Primary Care	6
Electives		6

Course Descriptions
Faculty

SCHOOL OF NURSING

COURSE DESCRIPTIONS

UNDERGRADUATE COURSES

ANAT 4011
Human Anatomy and Physiology I. Four (4) credits.

This course is designed for students of Allied Health Professions. It integrates basic knowledge in Anatomy and Physiology necessary to provide an understanding of the human body as prerequisite in the Health Sciences for further understanding of clinical disciplines. The fundamentals concepts in bodily structure and function will be presented in a balanced, integrated approach. It includes basic concepts of Cellular Biology, Histology and the Skeletal, Muscular, Nervous and Endocrine Systems.

ANAT 4012
Human Anatomy and Physiology II. Four (4) credits.

This course is designed for students of Allied Health Professions as a continuation of the course Human Anatomy and Physiology I, necessary to provide an understanding of the human body. It includes the study of Hematology, Cardiovascular and Respiratory Systems, Body Fluids, Urinary and Reproductive Systems. The students will acquire the knowledge to further understanding the clinical disciplines. The fundamental concepts in bodily structure and function will be presented in a balanced, integrated approach. The objectives will be accomplished through lectures, demonstrations and laboratories exercises.

COOP 3006
Group Dynamics. Three (3) credits.

Diverse theories and interpretations of group conduct. Group dynamics seen as a basis for the understanding of the structure and dynamism of small groups. Analysis of social interaction, individual motivation, group processes, objectives and goals of group pressures and regulations, functional differentiations, sociometric relationships and leadership. Open group discussion will allow the student to put into practice the theories learned and to handle group situations in an effective manner.

ENFE 3055
Fundamentals of Nursing. Five (5) credits.

ENFE 3081
Ward Management. Three (3) credits.

Principles in administration and its application to the Clinical Ward are studied. The nursing process as a mean to offer a good quality of nursing care is emphasized.

ENFE 3082
Basic Course in Supervision for Nurses. Three (3) credits.

Concepts and principles of modern supervision as well as specific functions of supervisor are discussed. Opportunity is provided for planning a supervision program and for the practice of some of the methods used by the supervisor in his daily work.

ENFE 4006
Alterations in Normal Physiology. Three (3) credits.

This course is designed to study those conditions which occur due to disruptions in the different systems of the human body as it moves along the health-illness continuum during the life process. The most common interferences caused by these disruptions and their possible causes are studied. A system approach guides this study.

ENFE 4075
Introduction to the Research Process. Three (3) credits.

This course focuses on the importance of research in the improvement of nursing practice. Emphasis is placed in research methodology as the systematic way for the collection, organization, and analysis of data.

ENFE 4115
Nursing in the Social System. Four (4) credits.

The mayor concepts of Systems Theory as related to the process of the historical evolution of Nursing in a Social System are studied. Emphasis is placed on roles and functions of Nursing throughout history.

ENFE 4116
Nursing in the Social System. Three (3) credits.

The mayor concepts of Systems Theory as related to the process of the historical evolution of Nursing in a Social System are studied. Emphasis is placed on roles and functions of Nursing throughout history.

ENFE 4125
Principles of Drug Therapy for Nurses. Three (3) credits.

This course focuses on the study of the effects of drugs in the maintenance and restoration of health. Emphasis is placed on the role of the nurse in drug therapy.

ENFE 4136
Nursing Process with the Human Being in Primary Care. Six (6) credits. Pre-requisites: ANAT 4011, ANAT 4012, ENFE 4075, ENFE 4116, INTD 4005, MICR 3345, QUIM 3021, QUIM 3022. Co-requisites: ENFE 4006, ENFE 4125.

In this course the student integrate selected concepts of the human being and his environment. Human being is studied as a whole as it grows and develop in continuous interaction with the environment. The Fundamentals Nursing Techniques to assists the client meeting their human basic needs are emphasized.

ENFE 4137
Nursing Process with Families during Pregnancy and Disease of Children and Adolescents. Six (6) credits.

The nursing process is utilized for the intervention in health promotion, health maintenance with families in the process of child bearing and child rearing. Clinical experiences are provided for nursing intervention in crisis of normal pregnancy, labor, post partum, and during health interferences in children and adolescents.

ENFE 4138
Nursing Process Applied to Promotion and Maintenance of Community Health. Six (6) credits.

This course is geared to the development of knowledge, skills, and attitudes needed for the care of individuals, groups and community to assist them in achieving optimum levels of health. Nursing intervention is carried out with groups with health risks and with the family as a primary source for achieving goals of distributive nursing practice.

ENFE 4141
The Nursing Process with Families in Normal Crisis and Disruption of Health in Children and Adolescents. Eight (8) credits.

This course is built on concepts from previous nursing courses. The nursing process is utilized for the intervention in health promotion, health maintenance with families in the process of child bearing and child rearing. Clinical experiences are provided for nursing intervention in crisis of normal pregnancies, labor, post-partum and during health interferences that are common from birth through adolescence. Deliberation and discriminative abilities are reinforced as fundamental skills for nursing interventions.

ENFE 4142
The Nursing Process with Families Confronting Normal Crisis and Disruption of Health of the Adult. Eight (8) credits.

The nursing process is utilized in the care of patients ranging from young adult to old age. Concepts and principles of physiopathological and psychological process occurring in man as he responds to harmful agents in environment are studied. Resources available in man's environment to render health care as he deals with normal crisis and disruptions of health are utilized in implementing the nursing process. Emphasis is placed on critical analysis of data related the management of nursing care in complex health problems. Clinical experience is carried out in primary, secondary, and tertiary level care agencies including psychiatric care units.

ENFE 4147
Nursing Process with Individuals, Families, and Groups with Mental Health Interferences. Six (6) credits.

This course is geared to the development of knowledge, skills, attitudes that will enable students to intervene with individuals, families, and groups. Communication is emphasized as the tool for the maintenance of interpersonal relationships with clients. Concepts and principles applied to crisis intervention are stressed. Mental

health and the bio-psychosocial factors that promote or alter it are analyzed. Clinical practice is carried out in primary, secondary, and tertiary health care settings.

ENFE 4150
Nursing Process with Families Confronting Normal Crisis and Disruption of Health of the Adult. Six (6) credits.

The nursing process is applied to the care of the adult from young to old age as they move along the health-illness continuum. Emphasis is placed on critical analysis of data related to the management of nursing care in complex health problems. Clinical experiences are carried out in secondary and tertiary level care agencies.

ENFE 4155
The Role of Nursing Leadership. Eight (8) credits.

In this course concepts of role and leadership in nursing care are analyzed. It provides students the opportunity to make the transition from student's role to the professional nurse's role. They assume the role of leader and change agent to cope with clinical problems in nursing situations. Opportunity is given for students to select an area of choice for clinical practice. Clinical experiences are offered in primary, secondary, and tertiary health care settings.

ENFE 4165
Legal Aspects of Nursing. Three (3) credits.

This course is designed to increase knowledge of legal principles, concepts, facts, and laws related to health and nursing practice. Opportunity is provided for the analysis of the above mentioned topics so as to acquaint students with the rights and duties of the professional nurse in relation to the law.

ENFE 4175
Principles and Methods of Health Teaching to the Pregnant Family. Three (3) credits.

This course is designed to broaden the knowledge of concepts, teaching techniques, and procedures utilized by a nurse generalist in the health care of pregnant mothers. Emphasis is placed in the teaching learning process and instructional methods and techniques.

ENFE 4185
Care of the Elderly. Three (3) credits.

This course provides the opportunity to expand the knowledge of the historical, social, and cultural aspects affecting the aging individual. Opportunity is provided for the analysis of theories related to the aging process, the sociocultural changes in Puerto Rico, and the effect of those changes upon the old age population. Awareness and sensitivity toward the student's own aging process is encouraged.

ENFE 4195
Concepts Related to Death and Dying. Three (3) credits.

This course is designed to increase the knowledge and skills necessary for the care of the dying person.

ENFE 4205
Nursing System and the Interpersonal Relationship Processes. Three (3) credits.

This course is designed to expand the knowledge of the physical, environmental, and social factors that inference the interpersonal relationship. Emphasis is placed in the human life cycle as an inherent evolution in the development of the relationship and in the awareness of the influence that human behavior exerts in different levels of these relations. Students analyze principles, theories, and barriers related to the process of communication.

ENFE 4215
Nutrition Needs Life Cycle. Three (3) credits.

ENFE 4225
Cancer Nursing. Three (3) credits.

This course broadens the knowledge of the innovative approach, modern methods, and modalities in the treatment of Cancer and management of nursing care. The psychological, social, and economic impact of Cancer in families is discussed.

ENFE 4235
Trends in Maternal and Child Care. Three (3) credits.

This course focuses on those aspects related to the historical and social development of maternal and

child care significant issues, current problems and role of the nurse generalist in maternal and child care are studied and emphasized in relation to the new trends of care in our society and within our Health Care System.

ENFE 4245
Emotional Aspects of Hospitalized Children and Adolescents. Three (3) credits.

The course broadens the knowledge to the emotional development of children and adolescents as affected by hospitalization and how they respond psychologically to illness. The content as discussed help the student in the management of emotional support and assisting children, adolescents, and families in coping with hospitalization crisis.

ENFE 4255
Familiar Health Nursing. Three (3) credits.

The course focuses in the family as a unit coping with changes in the environment in an attempt to maintain a steady state. Family structure, role, and functions are emphasized as well as the effects of stress and crisis on the dynamics of family life.

ENFE 4265
Nursing Care of Individual with Coronary and Health Diseases. Three (3) credits.

This course expands the knowledge in the management of comprehensive care provided to the patient with coronary health problems and to his family. Emphasis is given to the role of generalist in the prevention, early detection of signs and symptoms of the conditions in the acute phase, convalescence, and rehabilitation. Opportunities are provided for students to develop specific skills in the expanded functions of the nurse (such as the electrocardiogram interpretation).

ENFE 4275
Rehabilitation Nursing. Three (3) credits.

The principles of the Bio-Physical Sciences as applied in the care of the handicapped person are discussed. The social and psychological implications of rehabilitation are studied. Emphasis is placed in the role of the nurse generalist in the care of the physically handicapped and the nurse's more within the rehabilitation team.

ENFE 4395
Integrated Professional Nursing Concepts. Three (3) credits. Pre-requisites: Approval of Third Year courses.

In this course students have the opportunity to reexamine theories and clinical aspects of courses studied in their academic program, in an integrated form. The purpose of this course is to prepare students in their efforts to take the professional practice exam according to Law #9, October 1987. Students will develop specific study skills that will help them organize, manage time, discriminate among multiple choice questions, and manage anxiety in an effective manner, for the professional practice exam.

Grading System: Passed (P), Not Passed (NP)

ENFE 5015
Childbirth Education. Three (3) credits. Pre-requisite: Maternity Course/ Theory and Clinic.

In this course the student has the opportunity for an in depth exposure to perinatal education aspects and the interventions expected from the Health Professional. Emphasis will be given in health promotion and prevention complication during pregnancy as well as a positive experience during labor and birth. Specific aspects of childbirth education with the psychoprofilactic method will be covered with emphasis in breathing exercises, physical conditions , and relaxation techniques.

ENFE 5100
Nursing Process Applied to the Management of Individuals or Groups who use and Abuse Substances. Three (3) credits. Pre-requisites: ENFE 4006, ENFE 4125, ENFE 4136, ENFE 4137, ENFE 4147 (The pre- requisites are not required for the Master Degree students).

This course presents an integral view of the addictive process and its effects in the health and well-being of individuals families, and communities within the Puerto Rican Society. Theories related to the development of addiction, the identification and evaluation of the clients who use and abuse alcohol and drugs, and treatment modalities are discussed. The learning experiences guide the students in the development of knowledge, attitudes and skills necessary for the intervention with

persons who have addiction problems or with high risk groups. The students shall intervene in a holistic way with individuals, families, and groups in different stages of growth and development. Nursing principles shall be integrated in the learning activities including direct care so that students apply their previous knowledge when working with dysfunctional patterns manifested in relation to the use and abuse of alcohol and drugs. Selected clinical experiences shall be carried out in different settings at the primary, secondary and tertiary level.

ENFE 5115
Women and Health: Integral Perspective in Sexual and Reproductive Health. Three (3) credits.

This course will include a depth discussion of the sexual and reproductive health of women in Puerto Rico from a holistic perspective emphasizing the clinical and social component. Nurses and Health Care Professionals interested in this topic, will be prepared within his/her roles and responsibilities to attend the Puerto Rican women's needs using resources and services available.

INTD 4005
Health: A Holistic Approach. Five (5) credits.

Introduces the student to the concepts of Health and Public Health and to his professional role as a member of the Interdisciplinary Health Team. Various fundamental processes utilized to study the health level in a community are examined. Several of Puerto Rico's health problems, are discussed and the main given to health education, legislation and health alternatives for the promotion and maintenance of individual and collective health.

MICR 3345
***Microbiology.* Three (3) credits.**

Immunology, Physiology, and Genetics of microorganisms. The most important groups of pathogenic microorganisms are discussed from among the bacteria, fungi, viruses, and protozoas. Is oriented toward the needs of nursing students.

PSIC 3005
General Psychology. Three (3) credits.

An introduction to scientific Psychology, its range and limits,the biological and cultural basic constituing the human subject and selected topics in General Psychology: perception, emotion, cognition, learning, memory, language and a reflection on the social functions of Psychology.

QUIM 3021
Fundamentals of General Chemistry. Four (4) credits.

Principles of General Chemistry for Health Related Professions students. Includes system of measurements, matter and energy, stoichiometry, atomic and molecular structure, solutions, liquid state, gaseous state, chemical equilibrium, chemical kinetics and radioactivity.

QUIM 3022
Fundamentals of General Chemistry. Four (4) credits.

Principles of Organic Chemistry and Biochemistry for Health Related students, nomenclature, structure, properties and important relations of the different families of hydrocarbons, alcohols, aldehydes, ketones, carboxylic acids, esters, ethers, amines and amides. Biochemical principles with emphasis in carbohydrates, lipids and proteins.

SOCI 3245
Principles of Sociology. Three (3) credits.

Fundamental concepts of Sociology: society, human nature, communication, interaction, competition and conflict, groups, adjustment and assimilation, social control, status, change, etc. An overall view which enables the student to interpret concrete situations and form the basis for later scientific preparation in the Social Sciences.

GRADUATE COURSES

CMED 6001
Advanced Human Anatomy and Physiology I. Two (2) credits.

This is a first part of two courses designed for Health Professionals who need profound knowledge of Human Anatomy and Physiology. The Part I course emphasizes to processes related to the Cellular Physiology from a cell membrane processes and biophysics perspective. The Nervous and Endocrine Systems are studied. Various diseases will be discussed as models of pathophysiological processes.

CMED 6002
Advanced Human Anatomy and Physiology II. Three (3) credits. Pre-requisite: CMED 6001.

This is a Second Part of a course designed for Health Professionals who need to profound knowledge of Human Anatomy and Physiology. The part emphasizes the Immune, Cardiovascular, Respiratory, Renal and Digestive Systems from the perspectives of the normal physiological processes and anatomical relation. The functional capacities of each system is analyzed with emphasis on the physiological principles and the human response to a variety of stimulus.

CMED 6005
Advanced Concepts in Human Anatomy and Physiology. Five (5) credits.

These course is designed for Health Care Professionals who need advanced knowledge in Human Anatomy and Physiology. The Cellular Physiology is discussed based on concepts from biophysic of the cellular membrane and basic cellular processes. The Nervous, Endocrine, Immunologic, Hematologic, Cardiovascular, Respiratory, Urine, and Digestive Systems are studied from the perspectives of the normal physiological processes and anatomical relations. The functional capacities of each system is analyzed with emphasis on the physiological principles and the human response to a variety of stimulus.

ENFE 5015
Childbirth Education. Three (3) credits. Pre-requisite: Maternity Course/ Theory and Clinic.

In this course the student has the opportunity for an in depth exposure to perinatal education aspects and the interventions expected from the Health Professional. Emphasis will be given in health promotion and prevention complication during pregnancy as well as a positive experience during labor and birth. Specific aspects of childbirth education with the psychoprofilactic method will be covered with emphasis in breathing exercises, physical conditions , and relaxation techniques.

ENFE 5100
Nursing Process Applied to the Management of Individuals or Groups who use and Abuse Substances. Three (3) credits. Pre-requisites: ENFE 4006, ENFE 4125, ENFE 4136, ENFE 4137, ENFE 4147 (The pre- requisites are not required for the Master Degree students).

This course presents an integral view of the addictive process and its effects in the health and well-being of individuals families, and communities within the Puerto Rican Society. Theories related to the development of addiction, the identification and evaluation of the clients who use and abuse alcohol and drugs, and treatment modalities are discussed. The learning experiences guide the students in the development of knowledge, attitudes and skills necessary for the intervention with persons who have addiction problems or with high risk groups. The students shall intervene in a holistic way with individuals, families, and groups in different stages of growth and development. Nursing principles shall be integrated in the learning activities including direct care so that students apply their previous knowledge when working with dysfunctional patterns manifested in relation to the use and abuse of alcohol and drugs. Selected clinical experiences shall be carried out in different settings at the primary, secondary and tertiary level.

ENFE 5115
Women and Health: Integral Perspective in Sexual and Reproductive Health. Three (3) credits.

This course will include a depth discussion of the sexual and reproductive health of women in Puerto Rico from a holistic perspective emphasizing the clinical and social component. Nurses and Health Care Professionals interested in this topic, will be prepared within his/ her roles and responsibilities to attend the Puerto Rican women's needs using resources and services available.

ENFE 6600
Conceptualizing Man. Two (2) credits.

In this course students analyzed man throughout his life process as an indissoluble reality from his environment. Various postulates from different philosophical points of view are analyzed. As a basis to better understand man and his set of values. They study man as a human being constantly interacting with his environment, undergoing changes, and seeking his optimum health potential. Man's capability for critical thinking, for inquiry, and for communication are also examined.

The analysis, synthesis, interpretation, and abstraction of communicated ideas are emphasized. Theories and concepts of human interaction and communication are studied in terms of the behavioral processes of man as an individual or as a group member. These behavioral processes are analyzed from the perspective of the psychodynamics of interdisciplinary relationships.

ENFE 6601
Nursing as Process and Nursing Theories. Six (6) credits.

The students re-examine nursing as a constantly evolving process and conceptualize its essence. Nursing is examined from a philosophical standpoint and in terms of the present realities of its practice. They analyze selected nursing theories and other relevant theories based upon the concept of nursing as a process and on nursing attuned to present day practice. The students broaden their proficiency in the application of the concept of nursing as a process and initiate skills in the development of assessment tools. Selected clinical activities are provided to help students apply a nursing theory to a clinical situation.

ENFE 6602
Nursing Intervention Throughout the Maternal Cycle. Six (6) credits.

Theories, principles, and facts relevant to the women from conception and pregnancy through the neonatal period are studied. Emphasis is placed on the development of the individual and the family. Normal, pathological, and psychopathological modes of man's interaction are examined. Physical and psychological stress factors and coping mechanisms are studied in depth for its application in the practice of advanced nursing throughout the maternity cycle. The practical component of this subject consists of the clinical study of the family through the pregnancy cycle. It includes the ministering of care based on the nursing process and nursing theories applying and testing previously and presently acquired knowledge to help mothers in the attainment of the maternal role. The clinical practice is carried out in maternity centers and/or the clients' homes.

ENFE 6603
Nursing Intervention with Children and Adolescents. Six (6) credits.

In depth study of the life process from infancy through adolescence, within the context of the family. Emphasis is given to the sequential growth and development of the child through adolescence and to the intervening environmental, physical, and psychological factors significant in shaping the nature and direction of adapting behavior and in determining health and illness. Knowledge of prevalent pathological conditions of special relevance to this age group is included. The practical component of this course consists of the clinical study for children and adolescents. It includes performing the nursing process utilizing previous knowledge and applying and testing nursing theories in the direct care of clients in hospitals, clinics, community agencies, and/or in the clients' homes.

ENFE 6604
Nursing Intervention with Adult Persons. Six (6) credits.

In depth study of theories and concepts from the Physical, Biological, and Behavior Sciences geared toward the development of a better understanding of adult persons. They relate the implications of these theories and concepts to nursing interventions. The students examine in detail the specific developmental characteristics of adult persons and the responses of adults to health disruptions, they study in depth the most prevalent health problems of adults, and identify nursing strategies to better assist adult persons to achieve their optimum health potential. They increase competence in the practice of clinical nursing by further refining their skills in carrying out nursing actions. Emphasis is given to increase the students' skills in the use of assessment tools to evaluate the person's health situations and the effectiveness of nursing intervention. The students carry out nursing actions with selected persons in the adult stage of the life process in settings where primary, secondary, and/or tertiary care is provided.

ENFE 6605
Nursing Intervention with Elderly Persons. Six (6) credits.

In depth study of theories and concepts from the Physical, Biological, and Behavioral Sciences geared toward the development of a better understanding of elderly persons. They relate the implications of these theories and concepts to nursing intervention. The course includes detailed examination of the developmental characteristics

of elderly persons and the responses of the aged to developmental changes and health disruptions, study of most prevalent health problems of the elderly, and identification of nursing strategies to better assist elderly persons to achieve their optimum health potential. They increase competence in the practice of clinical nursing actions and in the use of assessment tools to evaluate the person's health situation and the effectiveness of nursing intervention. The students carry out nursing actions with selected elderly persons in settings where primary, secondary, and/or tertiary care is provided.

ENFE 6606
Nursing Intervention with the Family Unit. Six (6) credits.

Theories, concepts, and skills related to the family as a unit are discussed and applied in nursing interventions in a variety of health care settings and/or clients' homes. Emphasis is placed on different patterns of organizations and on the dynamics of individual-family-community interactions. Family disorganization, the vulnerable family, and society mores are analyzed. The students apply the principles of primary, secondary, and tertiary prevention to families or they cope with health-illness situations.

ENFE 6607
Nursing Intervention with the Community. Six (6) credits.

Theories, concepts, and skills related to the community as collective man are discussed and applied in nursing interventions in a variety of settings, emphasis is given to the community structure, organization, the political process, and the interrelationship of ecological factors. Assessment tools for community diagnosis are developed and utilized. Implementation of the nursing prescription to meet the identified health needs and the application of related theories are carried out in selected communities.

ENFE 6608
Nursing Research. Three (3) credits.

In depth examination of the scientific process of investigation as it relates to clinical nursing is emphasized. Provisions are made for the development of skills in the identification of clinical nursing researchable problems.

ENFE 6609
Theory and Practice of Administration for Nursing I. Four (4) credits.

Theories, concepts, and practices involved in the administrative process in nursing are studied. Emphasis is given to the administrative process and the problem-solving and decision-making models.

ENFE 6610
Theory and Practice of Administration for Nursing II. Five (5) credits.

The theories, concepts, and skills already presented in ENFE 6609 are implemented in a variety of nursing settings.

ENFE 6611
Theory and Practice of Teaching Nursing I. Four (4) credits.

The role of teacher in nursing in higher education; where the student studies and applies to the teaching of nursing in higher education the fundamentals of curriculum development, theories, concepts and principles of teaching and learning, change in instructional strategies and evaluation techniques.

ENFE 6612
Theory and Practice of Teaching Nursing II. Five (5) credits.

The development of skills necessary for the functional role of a teacher, basing this on knowledge, concepts, and theories.

ENFE 6613
Clinical Nurse Specialist Role I. Four (4) credits.

Study of the different theories and concepts involved in the role of clinical nurse specialist. In depth exploration of the knowledges pertinent to the area of the specialty selected, and the skills of evaluation and intervention while giving direct patient care are refined.

ENFE 6614
Clinical Nurse Specialist Role II. Five (5) credits.

The role of clinical nurse specialist in the different health agencies which provide primary, secondary,

and tertiary care. Analysis of complex situations, direct intervention with selected patient and the development of clinical competencies.

ENFE 6615
Research Project. Three (3) credits.

Students have the opportunity to concentrate on the study of a problem related to nursing practice utilizing research methodology. The students are guided to identify preferable a nursing problem from one of their selected clinical courses. Under the preceptorship of a faculty member they carry out their research project and report their findings.

ENFE 6616
Development of In-Service Education Programs in Nursing. Three (3) credits.

The content of this course focuses on analyzing the philosophy, objectives and nature of in-service education programs for nursing. Principles of planning, organizing, directing, and evaluating in-service programs for nursing personnel of a health agency are included. Various theories related to adult-teaching and learning are examined. Some aspects of the content and theories studied are implemented through laboratory experiences.

ENFE 6617
Nursing Intervention in Mental Health and Psychiatry I. Six (6) credits.

In depth study of theories related to the field of Mental Health as well as theories of growth and development and human behavior. This course also includes the study of emotional disorders and social pathology of clients throughout the life cycle. Emphasis is given to the development of skills needed to offer nursing care in the mental health psychiatric nursing settings. The students develop instruments for the assessment of nursing needs and the evaluation of the nursing care given. Participation in sensitivity group experiences for the development of self-awareness and personal growth are part of the learning experiences in this course.

ENFE 6618
Mental Health and Psychiatry Nursing II. Six (6) credits.

This course is based on the knowledge, skills, and attitudes developed in the course ENFE 6617. The main focus is the life process of man and his interpersonal relationships within the family, groups, and community structures. The students apply and test theoretical models utilized in the practice of mental health and psychiatric nursing with families, groups and communities in primary, secondary, and tertiary settings. Emphasis is given to the development of skills as a psychotherapeutic nurse in the intervention with families, groups, and communities who have patterns of disorganization. The nursing process is utilized in the analysis of high risk factors that threaten the mental health of individuals. It also includes the identification of inadequate patterns of functioning in the family groups and community systems with the purpose of formulating the nursing diagnosis, establishing a plan of intervention and evaluating its effectiveness. The students develop instruments for assessing the health status of the community to detect high risk factors in the community. They also develop instruments to evaluate the effectiveness of their nursing intervention.

ENFE 6621
Evidence Based Research for FNP. Three (3) credits.

In this course students will have the opportunity to examine nursing research designs and methods in depth, through critical appraisal of research published in journals. Special emphasis will be given to evidence based research. Students will develop knowledge and skills to apply research based evidence into family practice. It is expected that students will develop an evidence based research proposal in the outpatient primary care scenario. The student will be guided in the step by step process.

ENFE 6621
Evidence Based Research for FNP. Three (3) credits.

In this course students will have the opportunity to examine nursing research designs and methods in depth, through critical appraisal of research published in journals. Special emphasis will be given to evidence based research. Students will develop knowledge and skills to apply research based evidence into family practice. It is expected that students will develop an evidence based research proposal in the outpatient primary care scenario. The student will be guided in the step by step process.

ENFE 6622
Evidence Based Research Project for FNP. Three (3) credits. Pre-requisites: ENFE 6621.

In this course students will have the opportunity to conduct the research process independently with the instructor supervising the application of the research proposal drafted in the previous course.

ENFE 6625
Bioethics in Nursing. Two (2) credits.

Current bioethics issues in nursing are analyzed and discussed in this course. The nature and needs of the human as a thinking being are discussed in relation to the purpose and functioning of health care systems in the society. Different dilemmas are selected and analyzed to justify the most appropriate decisions and actions to solve them in an ethical manner. Discussion will be directed to ethical dilemmas in the context for health systems.

ENFE 6635
Nursing Intervention with Critically Ill Persons I. Six (6) credits. Pre-requisites: ENFE 6600, ENFE 6601.

This is the First Part of a sequence of two courses on Advanced Critical Care Nursing Intervention. The concept "Critical State" is integrated with the nursing process, holism, growth & developments and pathophysiology. The scientific method-instrument application-is utilized as reference for the advanced nursing intervention with patients in critical care conditions. The clinical phase of the course will be in the different types of critical care units of secondary & tertiary agencies.

ENFE 6636
Nursing Intervention with Critically Ill Persons II. Six (6) credits. Pre-requisites: ENFE 6600, ENFE 6601, ENFE 6635.

This course is designed to develop nursing professionals at a graduate level with advanced skills in nursing intervention with patients in critical care settings. The concept "Critical State" is integrated with others like nursing process, holism, growth and development and pathophysiology which are fundamental to the nursing intervention. The clinical phase of the course will be carried out in the critical and intensive care unit specialties that are located in secondary and tertiary health care agencies.

ENFE 6637
Biomedical Principles Related to Anesthesia. Three (3) credits. Pre-requisites: BIOE 6525, ENFE 6600, ENFE 6601, MEDU 6500. Co-requisites: CMED 6005 (New cod. CMED 6001, CMED 6002).

The course is designed to relate chemical and physical laws to the sciences and practice of Anesthesia. Emphasis is placed on the chemical and physical properties of the anesthetic agents and the biochemical systems affected in the biotransformation of the agents.

ENFE 6645
Nursing Intervention with Clients Requiring Anesthesia (Pharmacology)- Track I. Six (6) credits. Pre-requisites: CMED 6005, ENFE 6637.

The course provides knowledge to the student of Anesthesia of Clinical Pharmacology,common anesthetic agents and adjunctive drugs used in the Clinical Anesthesia Practice. Advanced concepts and principles of safe and effective administration and management of Anesthesia are studied.

ENFE 6646
Nursing Intervention with Clients Requiring Anesthesia Track II. Six (6) credits. Pre-requisites: ENFE 6637, ENFE 6645.

This course is designed to offer a comprehensive and encompassing-view of the professional and developmental foundation of the Anesthesia world. It includes the basic principles , techniques and procedures in the practice of Anesthesia for the nurse anesthetist, the untoward sequelae of Anesthesia, and the ancillary Anesthesia care. It includes directed clinical practicum and clinical conferences.

ENFE 6647
Nursing Intervention with Clients Requiring Anesthesia Track III. Six (6) credits. Pre-requisite: ENFE 6646.

This course is designed to present advanced concepts and principles of safe and effective administration of Anesthesia. The student will develop techniques in the management of different surgical specialties. A practical internship is designed for the student to practice with high risk patients. Through correlate didactic and clinical experiences research is emphasize. Seminars

are conducted in order to integrate concepts and to prepare the student for certification in this area.

ENFE 6650
Advanced Physical Assessment. Three (3) credits.

In this course the students discuss, carry out and interpret theorical knowledge and develop psychomotor skills related to physical assessment of the individual and family throughout the life cycle. They develop communication skills needed for health history taking. Through the health history taking process they develop critical analysis skills to identify the final differential diagnosis. They will have the opportunity to interact with clients in different clinical settings, especially in primary care areas. Also, they will give emphasis to health promotion and preventive intervention including planning culturally sensitive care.

ENFE 6651
Advanced Pathophysiology. Three (3) credits.

In this course students analyze the complex interrelationships and interdependence of pathophysiological concepts that produce alterations in the human functioning across the life span. This will serve as a primary component of the foundation for clinical assessment, decision-making, and management for advanced nursing practice. Content includes the cell, genetics, Cancer, and pathophysiology of the following systems: Neurologic, Endocrine, Reproductive, Hematologic, Cardiovascular and Lymphatic, Pulmonary, Renal, Digestive, Muscular, as well as Multiple Organ Dysfunction Syndrome.

ENFE 6656
Nursing Theories Seminar. One (1) credit.

An in depth study of all dimensions of the human being, based in a holistic, biopsychosocial and spiritual vision is done in this course. Philosophical viewpoints and their application to the human being, as well as theories and developmental concepts are examined. Nursing theories and their application to nursing practice are also analyzed.

ENFE 6657
Primary Care in the Lifecycle. Two (2) credits.

Within this course, students discuss and analyze concepts and theories related to health promotion, illness prevention and health maintenance. These concepts and theories of the health illness continuum are analyzed and related to individuals, family and community. Beliefs, practices, disparities and values related to health are analyzed according to different cultures within Puerto Rico. Different human development theories, epidemiological concepts applied to advance nursing practice, as well as health promotion strategies and illness prevention, are analyzed.

ENFE 6658
Differential Diagnosis Seminar. One (1) credit.

This course is focused on the application of theoretical knowledge and data collected from the client to establish a differential diagnosis. This diagnosis is identified depending on findings from the health history and physical assessment. This course will be offered concurrently with the Advance Physical Assessment course. Case studies will be discussed, based on topics presented in the Physical Assessment course.

ENFE 6661
Primary Care I. Five (5) credits. Pre-requisites: ENFE 6650, ENFE 6651, ENFE 6657, ENFE 6658.

First part of a three-part series of courses, which increase in level of competence, knowledge and expertise, focused on primary care practice. This course emphasizes the theoretical concepts in health promotion and illness prevention in individuals of all ages. Includes diagnosis, therapeutic and non therapeutic management, of common, acute and chronic health problems. Concepts and theories regarding nursing, transcultural nursing, teaching and learning theories, family systems theory, principles of counseling and therapeutic communication are integrated in class and in their clinical experience. Students will assess, diagnose and manage in collaboration with physicians and other health professionals, acute and chronic health problems. Clinical components will be divided as follows: 1/3 ob-gyn, 1/3 in pediatrics, and 1/3 in family practice scenarios at Centros Mas Salud de San Juan.

ENFE 6662
PRIMARY CARE II. Five (5) credits. Pre-requisites: ENFE 6661.

This course emphasizes the theoretical concepts in health promotion and illness prevention in individuals

of all ages. Include diagnosis, therapeutic and non-therapeutic management, of common, acute and chronic health problems including health maintenance issues, cardiovascular adults, cardiovascular pediatrics, arterial and venous disorders, hematological disorders, immunologic disorders, arthritic disorders, musculoskeletal disorders, opthalmologic disorders, endocrine disorders, GI disorders, nutritional disorders, concepts and theories regarding nursing, trans-cultural nursing, teaching and learning theories, family systems theory, principles of counseling and therapeutic communication are integrated in class and in their clinical experience. The clinical course hours will be divided accordingly: one third in ob-gyn, one third in pediatric and one third in adult family practice settings of "Centros Mas Salud de San Juan".

ENFE 6663
Primary Care III. Five (5) credits. Pre-requisites: ENFE 6662.

This course continues developing the concepts and skills of the previous course Primary Care II for common, acute and chronic health problems including: genitourinary, gynecologic, musculoskeletal, neurologic, and hematology problems; normal and high risk pregnancy; sexually transmitted diseases; family planning; and emergencies. Concepts and theories regarding nursing, trans-cultural nursing, teaching and learning theories, family systems theory, principles of counseling, and therapeutic communication are integrated in class and in their clinical experience. Students will assess, diagnose and manage in collaboration with physician and other health care professionals. The clinical course hours will be divided accordingly: one third in ob-gyn, one third in pediatric and one third in adult family practice settings of Centros Mas Salud de San Juan.

ENFE 6664
Residency in Primary Care. Six (6) credits. Pre-requisites: ENFE 6663.

The focus of this course is the functioning of the family nurse practitioner student as a primary care provider working in collaboration with other health care providers in a selected practice setting. This experience will provide to the family nurse practitioner student the opportunity for the role analysis and role integration through application of theory in the clinical setting. The student will continue to apply and refine knowledge and skills previously learned and continue to develop competencies as family nurse practitioner. Discussion of the clinical experiences will provide for the integration of the management of clinical cases and models of practice.

ENFE 6665
Pharmacology for Family Nurse Practitioner. Four (4) credits. Pre-requisites: ENFE 6650, ENFE 6651, ENFE 6658.

This course provides the practical exposure to general principles of providing and monitoring drug therapy as Family Nurse Practitioner. Identification of acute and chronic diseases, as well as the drugs to treat them will be discussed. Students will analyze how to prescribe systematically and upon protocols in collaboration with physicians, considering patients needs and adjusting therapy upon the established protocol.

ENFE 6666
New Trends in Nursing. Three (3) credits.

The course provides for the discussion of current issues in nursing. By means of critical analysis the impact of new trends in nursing and how these evolve into professional issues is discussed. The students have the opportunity to select and issue, analyze it in depth in terms of social, economic, cultural and scientific factors, and state their position in relation to it. They are also expected to participate actively in discussion and analysis of other issues brought up by their peers in class.

ENFE 6675
Diagnostics for Primary Care. Two (2) credits. Pre-requisites: ENFE 6650, ENFE 6651, ENFE 6657, ENFE 6658.

Students will develop advanced practice proficiency in the ordering, analysis and interpretation of appropriate diagnostic tests related to primary care for accurate diagnosis, treatment and referral. Knowledge of clinical decision making will be discussed. This includes comprehension of important pathophysiologic, epidemiological, psychosocial and clinical management concepts that will help the FNP to determine which diagnostic tests are indicated given the patient's clinical presentation. Discussion and practice of proper specimen

collection, handling of specimens, appropriate use of diagnostic tests, accurate interpretation of test results with an appreciation of sensitivity and specificity of the particular test and appreciation of time factors that influence availability and interpretation of test results will also be included. Practical laboratory sessions will be given concurrently with the theory sessions.

ENFE 6684
Nursing Research. Three (3) credits.

ENFE 6685
Professional and Legal Aspects of Advanced Practice and Public Policy. Two (2) credits.

In this course the social, economical, cultural and political forces that impact the primary care in health care delivery services are explored. The professional and legal aspects of advanced practice including how to implement model role, work description, among others, will be discussed and analyzed. Legal aspects of advanced practice will be discussed, analyzed, and applied at local, state and national levels. Public policy and legislation will be discussed and focused at local, national and global level. Students will examine public policy development and will analyze its effect in the health status of the communities in Puerto Rico. Students will have the opportunity to design new innovative strategies that may influence the direction of the public policy to improve the addressing and quality of the health care and advanced practice of nursing.

ENFE 6690
Anesthesia Clinical Internship. Seven (7) credits.
Pre-requisites: All the required courses for the Master Degree in Nursing with Specialty in Anesthesia.

The Anesthesia Internship is a clinical course in which the master student practices the procedures and techniques of the specialty in a variety of settings. The clinical activities are performed during the pre-operative, intra-operative and post-operative phases of different surgical procedures. Emphasis is paid to pain management techniques, quality assurance and facturation processes and the utilization of the nursing process as well as the research process as part of the anesthetist role.

ENFE 6995
Independent Study. One to three (1-3) credit(s).

The course provides the student the opportunity to develop critical thinking and independent study skills. The student examines and studies topics related to nursing practice according to their needs and interests. Some areas to be studied are advanced clinical nursing, functional roles and others related to the nursing practice.

DIVISION OF CONTINUING EDUCATION AND PROFESSIONAL STUDIES COURSES

ENFE 0155
Critical Care to Patients with Neuroendocrine Alterations. Three (3) credits.

In this course the student develops skills to apply the nursing process with a holistic approach in the management of critically ill patients with endocrine disturbances and their family. Anatomy and physiology of the neurological and endocrine systems is discussed as well as the diagnosis, etiology, pathophysiology, treatment and nursing interventions for endocrine conditions. This course includes clinical practice in specialized neurosurgical (acute and moderate) and medical surgical intensive care units.

ENFE 0156
Advanced Pathophysiology. Four (4) credits.

This course is an in-depth study of the pathophysiology of disease.The students will analyze the basic concepts of pathophysiology and the consequences of pathologic processes on the structure and function of the human body. It provides the students exposure to the concepts of pathophysiology, identification of acute and chronic diseases, as well as the treatment will be discussed. The content of this course will include the cell, genetics, mechanisms of self defense, cellular proliferation: cancer, and alteration in organs and systems including multiple interacting systems.

ENFE 0170
Nursing Assessment of Cancer Patients. Six (6) credits.

This course is geared to analyze the scientific bases necessary to perform the nursing role in assessing health status of cancer patients. The processes of normal cell changes and adaptation as well as damages are analyzed. Evolution of cancer, pathophysiology and clinical aspects for diagnosis are studied. Topics related to professional oncology nursing are considered. Emphasis is placed on the nurses role in performing health history and physical examination in order to evaluate health status of cancer patients. this course includes a clinical practice that is carried out in oncology units.

ENFE 0171
Nursing Care of Cancer Patients. Six (6) credits.
Pre-requisites: ENFE 0170.

In this course, the student acquires the knowledge and advanced skills to provide nursing care to cancer patients. Nursing role in the administration of cancer chemotherapy, pain management, ethical issues related to the end of life, quality of life, suffering and affliction is analyzed. Nursing interventions for most common types of cancer and their complications are studied. This course includes clinical practice that is carried out in oncology units.

ENFE 0187
Advanced Pharmacology. Four (4) credits.

This course provides for an in-depth study of the pharmacology of drugs. It is designed to prepare clinical nurse specialists (CNS) in a collaborative role with the physician, to accurately describe, administer, and counsel patients regarding appropriate and safe drug therapy. In addition clinical nurse specialists will be prepared to prescribe medications within their scope of practice. Basic pharmacologic principles for common primary care disorders and the pharmacologic actions of the major drug classes will be discussed in relation to physiologic systems, with emphasis on the application of these agents.

ENFE 0275
Critical Care to Patients with Cardiorespiratory Alterations. Four (4) credits.
This course is designed to develop skills for the assessment, diagnosis, planning, implementation and evaluation of nursing interventions including the bio-psycho-social and spiritual aspects of the patient with cardio respiratory disturbances and the impact to the family unit. It emphasizes health promotion, maintenance and restoration of health considering ethical-legal aspects. Anatomy and physiology of the cardiovascular and respiratory systems are studied from health and disease standpoints. This course includes clinical practice in specialized critical care units, such as intensive coronary, post-surgery intensive care, and intensive medical-surgical units.

ENFE 0365
Critical Care of Patients with Gastrointestinal and Renal Alterations. Three (3) credits.

This course is designed to develop skills for the assessment, diagnosis, planning, implementation and evaluation of nursing interventions using a holistic approach geared to the management of critically ill patients with gastrointestinal and renal disturbances and their families. Anatomy and physiology of the gastrointestinal and renal systems from health and illness standpoints are discussed. This course includes clinical practice in critical care units such as post surgical intensive and medical surgical intensive care units.

ENFE 0455
Nursing Care of Patients with Immunology, Intergumentary Disturbances, Trauma and Complications at Intensive Care Unit (ICU). Four (4) credits.

In this course the student develops skills to apply the nursing process in the management of critical care patients with disturbances of the immunology and intergumentary systems. Nursing interventions in patients with trauma and complications (such as: shock, intoxication, and high risk pregnancy) including bio-psycho-social and spiritual aspects will be discussed. This course includes clinical practice in critical intensive care units, trauma and burn units.

SCHOOL OF NURSING
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ALMENAS-HERNÁNDEZ, MARTA N. - Assistant Professor; Undergraduate Department; MSN, University of Puerto Rico – Medical Sciences Campus (1988).

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CASTRO-LABOY, MARÍA I. - Professor; Graduate Department; PhD, Post-doctoral fellow (1996), Ponce School of Medicine. MSN, University of Puerto Rico-Medical Sciences Campus (1986)-

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FIGUEROA-GARCÍA, JUDITH - Graduate Department; Associate Professor; EdD Inter American University of Puerto Rico (2009). MSN, University of Puerto Rico – Medical Sciences Campus; (1983).

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SEGUÍ-RODRÍGUEZ, ASTRID G. - Assistant Professor; Undergraduate Department; MSN, University of Puerto Rico – Medical Sciences Campus (1998).

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The Medical Sciences Campus curricula are dynamic and are regularly revised in accordance to the educational needs of the students and new trends and advances in the various disciplines. Such revisions follow the guidelines of accrediting bodies.

Curricular revisions are ongoing at the Medical Sciences Campus and all programs are subject to changes, termination, or relocation within the system.

Prospective students are advised to contact the Office of the Dean or the director of the program of their interest in order to receive updated information.

The information in this Catalog does not constitute a contract, express or implied, between any applicant, student, or faculty member and the Medical Sciences Campus, or the University of Puerto Rico System. The student is responsible for obtaining updated information and meeting all the graduation requirements of his/her program at the Medical Sciences Campus.

The Medical Sciences Campus reserves the right to make changes as to requirements for admission, registration, tuition and fees, calendar, curricula, attendance, conduct, academic standing, promotion, and graduation.

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