Universidad de Puerto Rico, Recinto de Ciencias Médicas
University of Puerto Rico, Medical Sciences Campus

Senado
Académico
Academic
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2024-2025
Certificación 047

Yo, Raúl Rivera González, Secretario Ejecutivo Interino del Senado Académico del Recinto de Ciencias Médicas de la Universidad de Puerto Rico, Certifico:

Que el Senado Académico en su reunión ordinaria del 3 de abril de 2025, luego de recibir el Infome del Comité de Asuntos Académicos, acordó:

- **Aprobar la Propuesta para elevar el Certificado Post Bachillerato en Citotecnología a un Programa de Maestría en Citología Diagnóstica.**

Y, para que así conste, expido y remito la presente Certificación bajo el sello del Recinto de Ciencias Médicas de la Universidad de Puerto Rico, en San Juan, Puerto Rico, hoy 11 de abril de 2025.

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Secretario Ejecutivo Interino

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UNIVERSITY OF PUERTO RICO
MEDICAL SCIENCES CAMPUS
SCHOOL OF HEALTH PROFESSIONS

Academic Change Proposal to Master in Diagnostic Cytology

Submitted by the Faculty of the Cytotechnology Program

August 2024

Approved by:	Date / Certification
Faculty, Cytotechnology Program	August 30, 2024
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Executive Summary

Cancer continues as one of the leading causes of death in Puerto Rico according to statistical data presented by the Health Department of Puerto Rico. The education of a highly qualified professional in the early detection of Cancer is crucial for the Puerto Rican community.

The Cytotechnology Program was established in 1961 as a 12-month post baccalaureate certificate program under the sponsorship of the Cancer Control Bureau of the Health Department of Puerto Rico. It was authorized by the Council of Higher Education from Puerto Rico by Certification 128 (78-79). The curriculum emphasizes theory during the first six months and supervised practice for the remaining six months. The Program has affiliated institutions, in Puerto Rico and United States, to provide the setting for clinical experiences. The Program remains as the unique educational program preparing this professional in Puerto Rico and the Caribbean. It is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEAP).

The Program is part of the academic offerings under the Department of Graduate Programs, School of Health Professions (SHP) from the Medical Sciences Campus (MSC), University of Puerto Rico (UPR). The mission and goals of the Program are compatible with the mission and goals of the SHP and MSC.

In September 2023, the Program received, from CAAHEAP, notice that changes proposed to Standards and Guidelines for the Accreditation of Educational Programs in Cytology were approved including changes to the Curriculum Competencies for Educational Programs in Cytology and change in the entry level. Main changes included in this proposal are elevating the degree granted to a master's degree as the entry-level to the profession, change in name of the program, reorganization of courses content, change in total number of credits required for the degree, and increase from 12 to 16 months to complete the degree.

For a cytologist to practice in Puerto Rico must have the Board of Certification (BOC) of the American Society for Clinical Pathology or be eligible to take it. The BOC requires that the individual has graduated from an accredited program to take the exam. Therefore, it is essential to be able to maintain the accreditation of the program and not affect our students that this proposal is submitted.

These changes are considered significant according to the General Guide for the Preparation and Processing of Proposals for Academic Change of the University of Puerto Rico since this proposal is submitted in the first instance to increase the level of the degree to be granted from Post Baccalaureate Certificate to a master's degree as required by the accrediting agency (CAAHEP).

I. Introduction to Academic Changes

A. Name of Program and Academic degree

This academic change proposal is to establish a **master's degree in Diagnostic Cytology. This is a significative academic change.** This change is to comply with the entry level in the profession as established in the accreditation standards recently approved in September 2023 by the *Cytotechnology Programs Review Committee (*CPRC*) of the* Commission on Accreditation of Allied Health Education Programs *(CAAHEP*). The academic degree to be conferred is a **master's degree in Diagnostic Cytology (MDC)**. The proposed program raises the current preparation level of the Post bachelor's degree to a master's degree. The new program's name is **Master in Diagnostic Cytology**. The Spanish program's name is ***Maestría en Citología Diagnóstica***. The suggested code for the Classification of instructional Programs (CIP) is 51.1002.

The proposed program retains the basic essential content elements such as the mission and goals, graduate profile, and program philosophy. Content remains focused on the main areas of the profession such as general concepts of cells and pathophysiology, cytopreparatory techniques, federal regulations, and cytopathology of various anatomical areas of the human body.

B. Current Program Description

The current program is a 12-month full-time Post Bachelor's degree in Cytotechnology. Consists of thirty-eight (38) credits semester credits offered in two academic sessions and a summer. It is housed under the Department of Graduate Programs at the School of Health Profession, one of the six schools at the Medical Sciences Campus. The curriculum consists of six didactic courses and one clinical practicum course for a total of thirty-eight (38) credits. The main content covers the anatomy, normal cytology, and neoplasia for gynecologic and non-gynecologic body sites. Didactic courses also cover basic principles of cells, cell response to damage and death, carcinogenesis process, laboratory techniques, management, quality control, and quality assurance processes and regulations, among other general concepts. Courses are offered face-to-face. The curriculum is designed to develop a highly qualified and proficient professional in cytology. Courses are varied and balanced in cognitive (knowledge), Affective (behavior) and Psychomotor skills. The sequence and organization of the curricular content provides students with the knowledge and skills required to perform the expected roles and the profession. This is accomplished as the students develop from the simple to complex bases of the cytology skills. Balance between general education, technical, and professional preparation is achieved through the admission requirements and the content of the professional curriculum. Clinical learning experiences are planned concurrently as part of the teaching strategies and provided under the supervision of a qualified BOC certified cytotechnologist. At the end of the year, students are required to pass a comprehensive exam with a minimum of 80% to obtain the degree. Students must also complete a Capstone Project of a case study as part of the graduation requirements.

C. Proposed Program Description

The entry level program, **Master in Diagnostic Cytology,** will be a full-time face-to-face curriculum. It is housed under the Department of Graduate Programs of the School of Health Profession, one of six schools at the Medical Sciences Campus. The curriculum consists of four academic sessions, including the summer session. Students are expected to complete the degree with forty-two (42) credits. Of the total of courses, only four courses (11%) will be offered online (see Table I), most of the content will remain to be offered face-to-face through ten courses (89%). This is a program whose main content is clinical since it has nineteen credits (45%) in the clinical component. Didactic courses cover basic principles of cells, cell response to damage and death, carcinogenesis process, laboratory techniques, management, quality control, and quality assurance processes and regulations, among other general concepts. The main content covers the anatomy, normal cytology, and neoplasia for gynecologic and non-gynecologic body sites. The curriculum is designed to develop a highly qualified and proficient professional in cytology. Courses are varied and balanced in cognitive (knowledge), Affective (behavior) and Psychomotor skills. The sequence and organization of the curricular content provides students with the knowledge and skills required to perform the expected roles and the profession. This is accomplished as the students develop from the simple to complex bases of the cytology skills. A balance between general education, technical, and professional preparation is achieved through the admission requirements and the content of the professional curriculum. Clinical learning experiences are planned concurrently as part of the teaching strategies and provided under the supervision of a qualified BOC certified Cytologist. The maximum time to complete the degree is three years.

Table I: Full-Time, Entry-Level Curriculum

Online Courses	HC	HR	Face-to-face Courses	HC	HR
Molecular Cytopathology (Cellular, Molecular and Immunodiagnostics)	1.5	36	Cytopathology of Non Gyn I (Respiratory System, Thyroid, Body Cavities including CSF, Urinary System)	4	72
Capstone Project*	1	27	Cytopathology of Non Gyn II (Gastrointestinal System and Liver, Pancreas, Head and Neck (Salivary gland and nodules), Bone and Soft Tissue among others)	4	72
Ethics and Good Practices	1	27	Introduction to Diagnostic Cytology	1.5	27
Histology and Gross Pathology	1	27	Laboratory Operation	1	18

Online Courses	HC	HR	Face-to-face Courses	HC	HR
			Cytopathology of the female genital system I (Vulva, Vagina, Cervix and Uterus)	5	90
			Cytopathology of the female genital system II (fallopian tubes, ovary, and breast)	3	54
			Clinical Experience I	4	360
			Clinical Experience II	4	360
			Clinical Practice I	3	270
			Clinical Practice II	8	720
Total	4.5/42	117	Total	37.5/42	2,043
4/14 =28.6% courses	11% credits		10/14 = 71.4% courses	89% credits	

**Can be repeated up to two times with zero (o) credits*.

D. Modality

The proposed degree is a face-to-face program with a small online component.

E. Effectiveness for Academic Changes

The master's degree is projected to begin in August 2026.

F. Time to Complete the Degree

The curriculum consists of 1.5 years or four (4) academic sessions, including three semester sessions and a summer session. The maximum time to complete the degree is three years.

II. Justification for Changes

A. Professional Accreditation

The Cytotechnology Program is accredited by the *Commission on Accreditation of Allied Health Education Programs* (*CAAHEP*). Their most recent re-accreditation visit was in January 2023, granting the maximum time of seven years. *CAAHEP* is a postsecondary accrediting agency recognized by the Council for Higher Education Accreditation (CHEA). CAAHEP conducts its accreditation activities in cooperation with 25 Accreditation Review Committees recognized by the profession as a quality standard for the purpose of promoting excellence in educational programs.

B. Requirements for Professional Practice in Puerto Rico

In Puerto Rico, there is no Board of Examiners or law regulating the practice of the profession. However, to practice the profession as required in the United States, you must comply with the regulations established by the *Clinical Laboratory Improvement Act* (*CLIA)* as amended in 1988. CLIA states that you must have approved the *Board of Certification (*BOC*) exam of the* American Society for Clinical Pathology *(*ASCP) or be eligible to take it to practice the profession. To be eligible to take the exam, you must have completed the curriculum in a *CAAHEP-accredited* program. The graduate has five years and five opportunities to take the exam and become certified. Once board certified must comply with the Certified Maintenance Programs (CMP) of the American Society of Clinical Pathology (ASCP) every three years.

C. Relevance of the Proposed Changes

The establishment of new diagnostic modalities and emerging technologies brought with it the need to renew the education and training of professionals in cytology to establish more accurate diagnoses and treatments. In September 2023, after several years of discussion on changes in the professional competencies of the Cytologist, amendments to accreditation standards and professional competencies were approved (see Annex I). With these changes, the level of entry into the profession was elevated to a master's degree. These changes were effective in January 2025. Being able to comply with these changes is imperative to maintain the accreditation of the program so that our graduates may be eligible to take the BOC. As can be evidenced in the data reported by the program (see Table II), it fully complies with the achievement indicators for both the accrediting agency and the institution.

Table II: ***Program Outcomes***

	2022-2023	2021-2022	2020-2021	2019-2020	2018-2019
# Applications	30	42	31	43	45
# Admissions*	5	5	6	6	5
# Retention	4/5(80%)	4/5(80%)	6/6(100%)	6/6(100%)	5/5(100%)
# Employability	4/4(100%)	4/4(100%)	6/6(100%)	6/6(100%)	5/5(100%)
# Exam Pass	4/4(100%)	4/4(100%)	6/6(100%)	6/6(100%)	4/5(80%)

**Program Capacity: five (5) students per year*

As shown in Table II, the demand rate in the program has fluctuated between 6:1 and 11:1 in the five years presented and has met the established quota. This implies that the program continues to be attractive to students who aspire to complete a professional academic degree. The retention rate in the program has fluctuated between 80% and 100%. It can be evidenced that students who are admitted to the program complete the academic degree. The employability rate remained consistently at 100% (on or before six months after completing the degree) while the three- and five-year national certification exam (BOC) pass ratio has remained at 92%. Our students fill the community's needs through this profession. These academic changes will be effective for the cohort admitted in August 2026.

III. Academic Changes Proposed

A. Mission

The mission for the master's Program in Diagnostic Cytology has not been fundamentally modified from the previous program's mission. The main change incorporated is that the program proposed is at the master's level and has been updated to include current professional jargon and demonstrate compliance with the learning domains of the Medical Sciences Campus according to the requirements of a mission. Below is a comparison table (see Table III) of both missions. The mission has congruency with the SHP's and the MSC's missions.

Table III: ***Current versus Proposed Mission***

Current Mission *(Revised in August 2019)*	**Proposed Mission** *(Revised in October 2023)*
The Post-Baccalaureate Certificate Program in Cytotechnology prepares professionals in the field of cytotechnology through didactic courses and clinical experiences for the development of competencies in the management and diagnosis of cytology tests for the early detection of tumor cells. Through the curriculum, the student develops critical thinking by collaborating with the work team in an interdisciplinary way in decision-making for appropriate management and diagnosis. The student is expected to show human sensitivity and ethical values in the performance of his/her duties.	The master's level Cytology Program prepares professionals in the field of cytology through didactic courses and clinical experiences for the development of competencies in the management and diagnosis of cytology tests for the early detection of malignant cells. Through the curriculum, the student develops critical thinking and teamwork by collaborating with the pathologist in an interdisciplinary way in the decision-making process for appropriate management and diagnosis. The student will show human sensitivity and ethical values in the performance of their duties and roles throughout lifelong learning.

B. Goals and Objectives

The goals of the Cytology Program will remain, essentially, the same. Minimal changes were performed to align the program goals with changes in competencies. Table IV is a comparison table showing minimal changes proposed**.**

Table IV: *Current versus Proposed Goals*

Current Goals (*Revised in August 2023*)	**Proposed Goals** (*Revised in October 2023*)
Prepare qualified and competent Cytotechnologists to serve their communities of interest, in accordance with the entry-level competencies developed by the *CPRC.*	The main goal of the Diagnostic Cytology Program is: "To prepare competent entry-level cytologists in the domains of cognitive (knowledge), psychomotor (skills), and affective (behavioral) learning." This includes:
1. Recruit students who demonstrate both the academic background and personal qualifications necessary to become competent Cytotechnologists.	1. Recruit and retain highly qualified students who possess the academic preparation, personal qualifications, and professional commitment needed to successfully complete the degree and be BOC certified.
2. To offer students didactic and clinical practice experiences that promote the optimal development of their professional competencies.	2. To offer the students the didactic content and appropriate clinical experiences that promote the optimal development of professional competencies under current professional standards and trends.
3. To develop professionals who contribute together with the pathologist and other members of the health community to improve the health of the Puerto Rican community, processing specimens that help in the early prevention, diagnosis and treatment of neoplasms and other conditions.	Moved to 4a
----------	3. Provide a faculty that remains competent and up to date on cutting-edge professional topics.

4. Prepare the student with the necessary skills that allow him or her them to function satisfactorily in the management of the Cytology Laboratory in coordination with the Department of Pathology.	4. Graduate highly competent professionals in cytology with the necessary skills and experiences to: a. Contribute with the pathologists and other health professionals to improve the community's health through the processing and diagnosis of cytology for the prevention and early treatment of malignancies and other conditions. b. Provide the community with highly competent professionals in cytology diagnosis. c. Develop the skills of critical thinking and problem-solving so that they can evaluate and make decisions in the context of their roles throughout long life. d. Promote self-learning throughout long life as a responsibility in their professional and personal development. e. Be sensitive to the human and ethical values that promote social responsibility and justice on a personal level, interprofessional, and the community that serves. f. Satisfactory manages a Cytology Laboratory in coordination with the Pathologist and other health professionals in an integrated manner.
5. Contribute to the early diagnosis of uterine cancer in a greater number of women, making possible the early administration of therapy, which leads to a reduction in deaths caused by this type of cancer.	Removed

Current Goals (*Revised in August 2023*)	Proposed Goals (*Revised in October 2023*)
6. Increase the number of cytotechnologists and thus increase the number of tests performed in the population at higher risk of cancer.	Moved to 4b
7. To prepare the student with the necessary competencies that will allow him to obtain his license through the "Board of Registry Examination".	Removed
8. Offer continuing education for the professional development of Cytotechnologists.	Removed
9. Participate in collaborative activities with other healthcare-related disciplines	Removed

Table V presents the objectives related to the program's goals. The objectives remain the same and are aligned with the goals.

Table V: *Proposed Goals aligned to Objectives proposed*

Proposed Goals	Proposed Objectives
(*Revised in October 2023*)	
The main goal of the diagnostic cytology program is: "To prepare competent entry-level cytologists in the domains of cognitive (knowledge), psychomotor (skills), and affective (behavioral) learning." This includes:	
1. Recruit and retain highly qualified students who possess the academic preparation, personal qualifications, and professional commitment needed to successfully complete the degree and be BOC certified.	1.1 Maintain a continuous recruitment process, which ensures the recruitment of highly qualified students. 1.2 Provide academic advising by faculty with expertise to prospective students.
2. To offer the students the didactic content and appropriate clinical experiences that promote the optimal development of professional competencies in accordance with	2.1 Provide a diverse and updated program that includes updated didactic courses and complementary clinical experiences.

Proposed Goals	Proposed Objectives
(*Revised in October 2023*)	
current professional standards and trends.	2.2 Provide a wide variety of clinical experiences that are consistent with the scope of practice in Cytology. 2.3 Maintain adequate physical facilities, equipment, and educational/clinical materials. 2.4 Provide a diverse team for teaching didactic courses and clinical experiences. Assure compliance with the requirements established by the CPRC for all clinical practice centers.
3. Provide a faculty that remains competent and up to date on cutting-edge professional topics.	3.1 Promote faculty development in emerging topics of the profession and teaching. 3.2 Maintain a faculty development plan. 3.3 Ensure compliance to keep professional credentials up to date.
4. Graduate highly competent professionals in cytology with the necessary skills and experiences to:	
a. Contribute with the pathologists and other health professionals to improve the community's health through the processing and diagnosis of cytology for the prevention and early treatment of malignancies and other conditions.	4.1 Offer teaching strategies that allow the development of skills in the processing of cytological samples. 4.2 Assure the development of competencies in the evaluation of cytological samples. 4.3 Provide opportunities to develop the ability to work effectively as a member of a healthcare team demonstrating respect for diversity, equity, and inclusion. 4.4 Provide teaching activities that allow the use of clinical data and diagnostic tests to determine a diagnosis and its differential diagnoses.
b. Provide the community with highly competent professionals in cytology diagnosis.	4.5 Provide students with the competencies required to meet the needs of the employer. 4.6 Meet the demand of the profession in the communities it serves. 4.7 Promote participation in professional societies and cytology communities.

	4.8 Raise awareness about the importance of demonstrating excellent communication skills and professional conduct.
c. Develop the skills of critical thinking and problem-solving so that they can evaluate and take decisions in the context of their roles throughout long-life.	4.9 Encourage critical and reflective thinking in the student in their intervention with other professionals in diagnosing patients. 4.10 Critically evaluate medical literature, its relevance and reliability to consider the decision-making process.
d. Promote self-learning throughout long-life as responsibility in its professional and personal development.	4.11 Provide the opportunity for the student to assume responsibility by identifying areas that deserve improvement at the professional and personal level. 4.12 Raise students' awareness of the importance of continuing education in excellence in professional practice.
e. Be sensitive to the human and ethical values that promote social responsibility and justice on a personal level, interprofessional and the community that serves.	4.13 Provide students with the foundations and principles of human sensitivity and social responsibility. 4.14 Students will demonstrate ethical conduct in their professional practice.
f. Satisfactory manages a Cytology Laboratory in coordination with the Pathologist and other health professionals in an integrated manner.	4.15 Offer activities that develop the general knowledge of laboratory administration. 4.16 Graduates will apply knowledge and skills in quality control and quality assurance. 4.17 Provide experiences for students to collaborate with the Pathologist and other health professionals in the decision-making process and resolving laboratory troubleshooting.

C. Graduate Profile

The Graduate Profile remains in essence the same. It has been updated in wording to be more specific describing what graduates must know, understand and be able to do according to the new competencies (see Table VI).

Table VI: ***Current versus Proposed Graduate Profile***

Current Graduate Profile (*Revised in January 2019*)	**Proposed Graduate Profile** (*Revised in October 2023*)
Graduates of the Cytotechnology Program perform important social work since cancer is one of the most important public health problems in our country. The Cytotechnologist makes microscopic studies of exfoliated and scraped cells from living tissues that reveal to the expert eye the presence of precancerous lesions or cancer. This professional process analyzes and interprets cytological samples to differentiate between malignant cells and normal cells. He collaborates with the clinical team and works in conjunction with the pathologist in the prevention, early detection, and treatment of neoplasia and other conditions. They also acquire basic knowledge in administration, laboratory operation and research profile. To do this, it is equipped with the effective elements in terms of habits, attitudes, values, knowledge, and the necessary skills.	The Graduates of the Diagnostic Cytology Program perform important social work through the prevention of cancer, one of the most important public health problems. Collaborates with the pathologist and other health care professionals in the diagnosis and treatment of neoplasia and other conditions. Is prepared with the cognitive, psychomotor, and affective skills necessary to conduct his/her professional roles in an ethically and sensitively manner throughout lifelong learning. Will be able to: • Explain and apply the basic principles for specimen collection, acceptance, rejection, and processing techniques. • Identify and resolve staining and preparation issues. • Review the patient's medical history and gather relevant clinical information prior to evaluating any cytology specimen. • Detect, select, and appropriately mark the cells most representative of the nature of any pathological process if present when given any specimen. • Analyze cytology specimens from a diversity of anatomical sites to establish a diagnosis. • Prepare a report using a contemporary, reproducible, uniform reporting system of interpretative terminology. • Perform a morphologic correlation of cytologic findings with relevant (concurrent/prior) histologic material. • Develop a differential diagnosis based on synthesis of appropriate data after morphologic evaluation. • Identify and apply principles of quality assurance and quality control.

D. Educational Philosophy

The wording of the educational philosophy has been updated to be more specific and describes what faculty and graduates believe, know, understand, and be able to do according to the new competencies described in Table VII.

Table VII: *Current versus Proposed Educational Philosophy*

Current Educational Philosophy (*Established in 1968*)	**Proposed Educational Philosophy** *(Revised in October 2023)*
The current educational philosophy is as follows: The goal of education is self-realization where the person attains the highest degree of unity; fully identifies with the world around them; fine-tunes their ability and power; and performs spontaneously and responsibly in their role, reaching their highest creative potential through their continuous self-education. Education: human development and vocational training take place in a democratic environment, where individuals develop their habits, attitudes, ideals, and values freely and select the profession that best suits their interests and motivations. As a vehicle for satisfying the immediate needs of society, education must aim at the emancipation of man, and of society itself, from the forces of nature through their knowledge and control. Education is, then, an instrument for the evolution, creation, and recreation of man as the greatest exponent of creation. The progress of man and society varies directly with the availability of development opportunity for each individual in that society. It is imperative that in a society that aspires to emancipation and progress there is equitable access, commensurate with talent, to the treasures of science, to knowledge and to advanced skills. The motivation and opportunity to move forward and the elimination of artificial barriers will allow the different socioeconomic levels of the	The proposed educational philosophy for the master's degree in diagnostic cytology is as follows: The master's degree in Diagnostic Cytology Program recognizes the interdisciplinary and collaborative approach of the Cytopathology area that supports the needs of the patient and community. The discipline focuses on ensuring the best possible diagnosis to prevent malignant lesions. The variety of clinical experiences and the diversity of methodologies in the didactic courses provide the opportunity to use professional knowledge, self-reflection, problem-solving, and the application of evidence to establish a final diagnosis and its differential diagnoses. The learning process emphasizes the integration of the contents and their application to the roles and functions of their performance in the professional field. It is based on the development of cognitive, psychomotor, and affective skills to promote quality in the processing, diagnosis, and treatment of the patient. The development of professional competencies is active and collaborative to generate knowledge and stimulates education in the work and the social context. The curriculum is framed in the mission, vision, and values of the Medical Sciences Campus. Teaching and learning are a complex, bi-directional process that, to be effective, must entail growth, transformative, cooperative,

Current Educational Philosophy (*Established in 1968*)	**Proposed Educational Philosophy** *(Revised in October 2023)*
population to make the optimal contribution to progress. The education system must respond to the functional efficiency needs of the service systems, but both will get their most out when they facilitate the full contribution of all their members. Just as important as pure technological inventions are social inventions that foster cooperation as an operational and motivational tool. It is also possible to combine cooperation with competition within your system that rewards behavior at different functional stages, so that the two modes can coexist complementarily. In this way, we can benefit from cooperation in the symbolic sphere as a support for initiative and motivation for self-improvement. The University must respond to the changing needs of Puerto Rican society, producing the human resources that the country requires. Within this demand of our society, it is imperative that the University of Puerto Rico produce human resources with the necessary knowledge, skills, and attitudes and with the aspiration for the development of a creative capacity to face the most pressing problems facing the country. The Medical Sciences Campus is the most important resource of the University System as an educational component in the health sector, with teaching, research, and service functions. The Cytotechnology Program of the Graduate Department of the School of Health Professions responds to the health needs of society by providing the professional who works together with the Pathology Department and collaborates with other professionals, to contribute to the work of prevention and early detection of cancer, the second cause of death on our island. to the present. The Cytotechnologist is the technologist who is dedicated to the part of exfoliative cytology that deals with cells, their structure, functions, and pathogenic	and problem-solving experiences along the program's curriculum. The educational process must be active and dynamic in which the participation of students is essential as well as the guidance of the professor as a facilitator of learning. Open communication, respect, trust, recognition of strengths, and a balance between structure and flexibility as well as interrelationships and mutual support between professors and students are essential in the teaching and learning process and established learning environment. Students acquire and integrate knowledge, skills, values, and ethical behavior, within the context of their own development, experiences, and lifestyles. Through the experience and skills acquired, they develop critical thinking skills to lay the foundations for the advancement of the teaching-learning process. Students are expected to be trained and able to demonstrate human sensitivity, intrinsic motivation, and commitment to best practice, lifelong learning, and advocacy for the profession in the needs of society. Values, social awareness, ethics, and ongoing commitment to the patient are enhanced as the student progresses through the curriculum. As an educational program, we are committed to a teaching and learning process to support lifelong learning, continuous professional and personal improvement, and impact the health and well-being of society through early cancer diagnosis in the society we serve.

Current Educational Philosophy (*Established in 1968*)	Proposed Educational Philosophy *(Revised in October 2023)*
variations. The program, together with the other health professions, operates within the philosophical conceptual framework of the University of Puerto Rico, as expressed in the objectives of the University Law of 1966.	

E. Relationship of the Program with the Mission and the Strategic Plan of the UPR and the Unit

The Cytology Program responds to the mission of the SHP and the MSC of the UPR by proposing a cutting-edge academic offer. This is achieved through the preparation of cytologists who contribute to the diagnosis and treatment of cancer in Puerto Rico.

The program responds to the commitment to align the academic offer to the emerging needs of the new health scenario through the evaluation process in accordance with goal # 1 (Objectives 1.1) of the SHP Strategic Plan 2024-2029 and goals 1, goal 2 and goal 3 of the strategic area of Academic excellence and innovation of the MSC Strategic Plan 2024-2029. The program also complies with goals 1, 2, and 3 of the UPR Strategic Plan 2023-2028 of the strategic area Academic Innovation.

These proposed changes reiterate the institution's commitment and responsibility to the health of the Puerto Rican society. The proposed changes are consistent with compliance with CAAHEP's newly approved accreditation standards to ensure the quality of the program and its graduates.

In view of the above, the proposed program is framed within the institutional mission and strategic plan by considering the needs and challenges of the health system and professional practice.

F. Relationship of the Program with the Current Academic Offer inside and outside the UPR

The proposed Master in Diagnostic Cytology is the only one in the University of Puerto Rico System and other Puerto Rico higher education institutions. In the SHP there are no programs related to the proposed academic offer.

In the United States, there are currently eighteen (18) accredited academic programs, of which only 6 are at the master's level. Of the twelve programs that have not yet moved to master's degrees, there is a risk that some of them will not be able to move to master's degrees because their educational institutions are at the undergraduate level. Details of master's degree programs at U.S. colleges are presented in Table VIII. During the last few years, there has been a significant decrease in the number of academic programs available that prepare this professional, so it is essential to maintain the accreditations of existing programs and meet the current demand of the profession. There is also the possibility

that in the next future coordinated program agreements will be made with some of these educational institutions in the U.S.

Table VIII: ***Master's Programs in the United States***

Institution	Program Name	Duration	Total Credits
University of Nebraska Medical Center	Master's Degree in Diagnostic Cytology	16 months	38.5 credits
Rutgers, State University of New Jersey	Master's Program in Diagnostic Cytopathology	16 months	Option 1: 43 credits Option 2: 35 credits
Albany College of Pharmacy and Health Sciences	Masters in Cytology and Molecular Cytology	16 months	55 credits
Daemen College	Master's Degree in Cytology	12 months	36 credits
Thomas Jefferson University	Master's Degree in Cytotechnology and Cell Sciences	Varied	Between 30 and 56 credits Option 1: 3+2 BS/MS Dual Degree (153-156 credits total) = 82 credits required for admission, 40 credits from the undergraduate phase, 30 credits from the graduate phase Option 2: Combined BS/MS (152-154 credits) = 82 credits required for admission, 40 credits in the undergraduate phase, 30 credits in the graduate phase Option 3: 1-year master's degree (56 credits) Option 4: 2-year master's degree (56 credits) Option 5: 1-year advanced master's degree (32-33 credits)

Institution	Program Name	Duration	Total Credits
			Option 6: 2-Year advanced master's degree (32-37 credits)
University of Tennessee Health Science Center	Master of Cytopathology Practice (MCP) Program	2 years (21 months)	72 credits

G. Curriculum Design, Structure and Components

1. Current Curriculum

The current curriculum sequence is offered in two (2) semester sessions and the summer. It includes six main courses (CITO 6505, CITO 6507, CITO 6509, CITO 6515, CITO 6516, and CITO 6517) and a clinical practice course (CITO 6518), which has an integrated clinical practice component where students apply the theory learned in the courses. A total of 1,410 clock hours are granted equivalent to thirty-eight (38) credits (312 didactic +1,098 clinical through the curriculum). Free periods for individual cases study are provided throughout the academic year. The courses are based on the development of specific competencies and are presented in such a way that the student moves from the simplest competencies to the most complex ones. Table IX shows a description of courses by academic semester and a distribution of credit and clock hours according to components (didactic and clinical).

Table IX: *Current Distribution of Courses*

S1					S2				
Course Title	**HC**		**HR**		**Course Title**	**HC**		**HR**	
CITO 6505 *Introduction to Cytotechnology*	1		24		CITO 6516 *Urinary System and Body Fluids*	2		54	
	Didactic	Clinical	Didactic	Clinical		Didactic	Clinical	Didactic	Clinical
	1	0	24	0		1	1	18	36
CITO 6507 *General Concepts in Basic Sciences*	2		36		CITO 6517 *Mammary glands and Miscellaneous*	2		54	
	Didactic	Clinical	Didactic	Clinical		Didactic	Clinical	Didactic	Clinical
	2	0	36	0		1	1	18	36
CITO 6509 *Female Genital System*	12		360		CITO 6518 *Clinical Practicum* (includes the summer)	13		770	
	Didactic	Clinical	Didactic	Clinical		Didactic	Clinical	Didactic	Clinical
	8	4	144	216		0	13	0	770
CITO 6515 *Respiratory and Gastrointestinal Systems*	6		180						
	Didactic	Clinical	Didactic	Clinical					
	4	2	72	180					
Total	**21**		**600**		**Total**	**17**		**878**	

2. Proposed Curriculum

The proposed master's program in Diagnostic Cytology consists of 42 credits. The curriculum of the Program is geared to the attainment of entry-level Cytologist competencies. The student must have a bachelor's degree in sciences prior to being admitted. The curriculum will be offered in four academic sessions, three semester sessions and a summer session. The total clock hours for the degree are 2,160 hours (450 hours for didactic component and 1,710 hours for clinical component). Free periods for individual study are still provided throughout the academic year to guarantee the development of screening competencies. The courses are still based on the development of specific competencies and are presented in such a way that the student moves from the simplest competencies to the most complex ones. All courses in the curriculum are required. The student does not select concentration or choose elective courses. Courses have been updated to incorporate updated content. Clinical content has been split from didactic courses and placed in separate courses to ensure the development and aptitude of the student's clinical competencies prior to a formal clinical practice. The capstone project course can be repeated two additional times in two different academic sessions with zero credits to complete the case study when required by professor. The comprehensive test will be offered during the first semester in the second academic year. Students have two opportunities to pass the test. Table X shows the curriculum design and sequence.

Table X: ***Curriculum Sequence***

First Academic Year

S1			S2		
Course Title	**HC**	**HR**	**Course Title**	**HC**	**HR**
CITO 6507 Introduction to Diagnostic Cytology (Face-to-face)	1.5	27	CITO 65XX Cytopathology of Non Gyn II (Gastrointestinal System and Liver, Pancreas, Head and Neck (Salivary gland and nodules), Bone and Soft Tissue among others) (Face-to-face)	4	72
CITO 65XX Molecular Cytopathology (Cellular, Molecular and Immunodiagnostics) (Online)	1.5	36	CITO 6505 Laboratory Operation (Face-to-face)	1	18
			CITO 65XX Ethics and Good Practices (Online)	1	27
CITO 6509 Cytopathology of the Female Genital System I (Vulva, Vagina, Cervix and Uterus) (Face-to-face)	5	90	CITO 65XX Clinical Experience II (Face-to-face)	4	360
CITO 65XX Clinical Experience I (Face-to-face)	4	360	CITO 65XX Histology and Gross Pathology (Online)	1	27

S1			S2		
Course Title	**HC**	**HR**	**Course Title**	**HC**	**HR**
CITO 65XX Cytopathology of Non Gyn I (Respiratory System, Thyroid, Body Cavities including CSF, Urinary System) (Face-to-face)	4	72	CITO 65XX Cytopathology of the Female Genital System II (Fallopian Tubes, Ovary and Breast) (Face-to-face)	3	54
			CITO 65XX Capstone Project* (Online)	1	27
Total	**16**	**585**	**Total**	**15**	**585**

*Can be repeated up to two times with zero (0) credits.

Summer

Course Title	HC	HR
CITO 65XX Clinical Practice I (Face-to-face)	3	270
Total	**3**	**270**

Second Academic Year

S1		
Course Title	**HC**	**HR**
CITO 65XX Clinical Practice II (Face-to-face)	8	720
Total	**8**	**720**

Total credits=42 credits
Total hours = 2,160 hours

The curriculum designed is divided into three components including: a) Professional Foundation Component (2 courses for a total of 2.5 credits), b) Professional Application Component (8 courses for a total of 20.5 credits), and c) the Clinical Component (4 courses for a total of 19 credits).

Table XI: ***Curriculum Design***

Curricular Component	Courses		Credits		Contact Hours	
	Quantity	*Percent*	*Quantity*	*Percent*	*Quantity*	*Percent*
Professional Foundations • CITO 6507 Introduction to Diagnostic Cytology • CITO 65XX Ethics and Good Practices	2	14%	2.5	6%	54	3%

Professional Application • CITO 65XX Molecular Cytopathology • CITO 6509 Cytopathology of the Female Genital System I • CITO 65XX Cytopathology of Non Gyn II • CITO 6505 Laboratory Operation • CITO 65XX Histology and Gross Pathology • CITO 65XX Cytopathology of Non Gyn I • CITO 65XX Cytopathology of the Female Genital System II • CITO 65XX Capstone Project	8	57%	20.5	49%	396	18%
Clinical • CITO 65XX Clinical Experience I • CITO 65XX Clinical Experience II • CITO 65XX Clinical Practice I • CITO 65XX Clinical Practice II	4	29%	19	45%%	1,710	79%
Total	**14**	**100%**	**42**	**100%**	**2,160**	**100%**

The Didactic Courses are equivalent to 23 credits (450 hours) distributed in 2.5 credits for Professional Foundation Component and 20.5 credits for Professional Application Component. The clinical courses are equivalent to 19 credits (1,710 hours).

Table XII shows a comparison between the current and the proposed curriculum. Changes in courses respond to the reassignment of contents for a better understanding and organization of the courses, clinical components have been split from didactic courses, content has been added to the curriculum or has been given greater emphasis to meet the new competencies. The proposed curriculum will be composed of fourteen courses instead of seven courses. Five courses from the current curriculum remain with minimal changes, nine will be considered as new courses, and two courses will be eliminated. The content of courses eliminated has been reassigned in other courses. Table XI shows the relation between the didactic and clinical components of the proposed curriculum.

Table XII: ***Comparison of course content from current versus proposed curriculum***

Current Course	Proposed Course	Action	Comments
CITO 6505-Introduction to Cytotechnology	Cito 6505-Laboratory Operation (Face-to-Face Course)	Change in Registered Course	Change in name and Incorporates content of 6507.
CITO 6507-General Concepts in Basic Sciences	CITO 6507 – Introduction to Diagnostic Cytology (Face-to-Face Course)	Change in Registered Course	Change in name and Incorporates content of 6505.
----------	CITO 65XX-Molecular Cytopathology (Cellular, Molecular, and Immunodiagnostic) (Online Course)	**New Course**	Incorporates content from CITO 6505.
CITO 6509-Female Genital	CITO 6509-Cytopathology of the female genital system I (vulva, vagina, uterus and cervix) (Face-to-Face Course)	Change in Registered Course	Change in name. Laboratory hours are assigned to a new course (Clinical Experience I)
	CITO 65XX Cytopathology of the female genital system II (fallopian tubes, ovary, and breast) (Face-to-Face Course)	**New Course**	Incorporates content from CITO 6509 and CITO 6517
CITO 6515-Respiratory and Gastrointestinal System	----------	Eliminate Course	Content is assigned to the course Cytopathology of non-gynecology I and II. Laboratory hours are assigned to a new course (Clinical Experience I and II).
CITO 6516-Urinary System and Body Fluids	----------	Eliminate Course	Content is assigned to the course Cytopathology of non-gynecology I. Laboratory hours are assigned to a new course (Clinical Experience I and II).

Current Course	Proposed Course	Action	Comments
----------	Cytopathology of Non Gyn I (Respiratory System, Thyroid, Body Cavities including CSF, Urinary System) (Face-to-Face Course)	**New Course**	Integrates content from CITO 6515 and Cito 6516 and CITO 6517.
CITO 6517-Mammary Glands and Miscellaneous	Cytopathology of Non Gyn II (Gastrointestinal System and Liver, Pancreas, Head and Neck (Salivary gland and nodules), Bone and Soft Tissue among others) (Face-to-face Course)	Change in Registered Course	Laboratory hours are assigned to a new course (Clinical Experience I and II)
----------	Clinical Experience I (Face-to-face Course)	**New Course**	Laboratory hours from courses CITO 6509 and CITO 6515 are assigned to this course.
----------	Ethics and Best Practices (Online Course)	**New Course**	Incorporates and expands content from CITO 6505
----------	Clinical Experience II (Face-to-face Course)	**New Course**	Laboratory hours are assigned to a new course (Clinical Experience I and II)
Clinical Practicum (CITO 6518)	CITO 65XX -Clinical Practice I (Face-to-face Course) CITO 6518 -Clinical Practice II (Face-to-face Course)	**New Course** Change in Registered Course	The clinical Practicum course has been divided into two courses.
----------	CITO 65XX-Gross Histology and pathology (Online Course)	**New Course**	New content assigned to the curriculum
Capstone Project	CITO 65XX- Capstone Project (Online Course)	**New Course**	Content for the Capstone Project is going to be assigned to a course.

New Courses	9
Change in Registered Course	5
Courses eliminated	2

3. Courses Description

Descriptions for each proposed course (news and changes in registered courses) are detailed in Table XIII.

Table XIII: ***Courses Description***

Course Code/Name/Credits/Prerequisites/ Corequisites	**Course Description**
CITO 6505 Laboratory Operations (Modified) Credits: 1 Prerequisites: None Corequisites: None	This course covers the regulations for cytology laboratories including the Clinical Laboratory Improvement Act (CLIA), among others. Basic requirements for physical facilities, personnel, safety standards, statistics and compliance reports are described. Concepts of management, billing and coding are also presented. The instructional strategies include, but are not limited to, lectures, case study exercises, and independent study. The course will be offered face to face.
CITO 6507 Introduction to Diagnostic Cytology (Modified) Credits: 1.5 Prerequisites: None Corequisites: None	This course introduces the history and evolution of the field of cytology. It introduces the concept of the cell, the pathological processes that affect the cell and the mechanism of cellular damage response. Professional aspects such as the Code of Ethics and professional competencies will be discussed. Emphasis will be placed on the use of equipment, processing of cytological specimens, adequacy of specimens, and the importance of the cytologist as a professional member of the health care team. Instructional strategies include, but are not limited to lectures, case study exercises, and independent study. The course will be offered face-to-face.
CITO 6509 Cytopathology of the Female Genital System I (Modified) Credits: 5 Prerequisites: None Corequisites: None	This course covers the first part of gynecologic cytology including vulva, vagina, cervix, and uterus. Main topics include anatomy, histology, normal cytology, pre-malignancies, and malignancies. Hormonal cytology, microorganisms and treatment modalities are also described. Students will distinguish between benign and neoplastic processes. The instructional strategies include, among others: lectures, case study exercises, case discussions, slide screening, and independent study. The course will be offered face to face.

Course Code/Name/Credits/Prerequisites/ Corequisites	**Course Description**
CITO 65XX Cytopathology of the Female Genital System II (New) Credits: 3Prerequisites: None Corequisites: None	This course covers the second part of gynecologic cytology including ovaries, breasts and fallopian tubes. Main topics include anatomy, histology, normal cytology, pre-malignancies, and malignancies. Students will distinguish between benign and neoplastic processes. The instructional strategies include, among others: lectures, case study exercises, case discussions, slide screening, and independent study. The course will be offered face to face.
CITO 65XX Ethic and Good Practices (New) Credits: 1 Prerequisites: None Corequisites: None	This course defines the ethical concept, ethical role and the importance of maintaining professional competencies. Regulations related to patient confidentiality will also be covered. Aspects related to diversity, equity and inclusion applied to patients and team members are included. The instructional strategies include, among others: lectures, case study exercises, and independent study. The course will be offered online.
CITO 65XX Cytopathology of Non Gyn I (New) Credits: 4 Prerequisites: None Corequisites: None	This course covers non-gynecologic cytology including the Respiratory System, Thyroid, Body Cavities including Cerebrospinal Fluid (CSF), and the Urinary System. Main topics include anatomy, histology, normal cytology, pre-malignancies, and malignancies. Microorganisms and treatment modalities are also described. Students will distinguish between benign and neoplastic processes. The instructional strategies include, among others: lectures, case study exercises, case discussions, slide screening, and independent study. The course will be offered face to face.
Cito 6517 Cytopathology of Non Gyn II (Modified) Credits: 4 Prerequisites: None Corequisites: None	This course covers non-gynecologic cytology including the Gastrointestinal System (including Anal samples), Liver, Pancreas, Head and Neck (Salivary gland and Lymphoid nodules), Bone and Soft Tissue among others. Students will study anatomy, histology, normal cytology, and malignancies. Microorganisms and treatment modalities are also described. The instructional strategies include, among others: lectures, case study exercises, case discussions, microscopic slide screening, and independent study. The course will be offered face to face.

Course Code/Name/Credits/Prerequisites/ Corequisites	**Course Description**
CITO 65XX Clinical Experience I (New) Credits: 4 Prerequisites: None Corequisites: None	This course is the first of two clinical experiences where students will develop competence in the processing, evaluation, and interpretation of cytological specimens. Students will demonstrate the ability to review and evaluate histologic tissue sections, and pertinent clinical data for the purpose of establishing and correlating the final diagnosis. They will comply with laboratory safety measures and regulations including quality control and quality assurance processes. Through clinical experiences, the students will be able to assist the clinician in the FNA procedures and the evaluation of the samples. The course will be offered thought a diversity of clinical settings during the first semester of the first year. The clinical experience should be done as a complement to gynecology and non-gynecology courses to apply didactic content of courses and develop the competencies required. The clinical experiences will be offered face to face.
CITO 65XX Clinical Experience II (New) Credits: 4 Prerequisites: None Corequisites: None	This course is the second of two clinical experiences where students will develop competence in the processing, evaluation, and interpretation of cytologic specimens. Students will demonstrate the ability to review and evaluate histological sections of tissue and relevant clinical data to establish and correlate the final diagnosis. They will comply with laboratory safety measures and regulations, including quality control and assurance processes. Throughout the clinical experiences, students will be able to assist the clinician in FNA procedures and in the evaluation of samples. The course will be offered face to face through a diverse of clinical settings during the second semester of the first year. The clinical experience must be carried out as a complement to the gynecology and non-gynecology courses to apply the didactic content of the courses and develop the required competencies at a level higher than that of clinical experience I.

Course Code/Name/Credits/Prerequisites/ Corequisites	**Course Description**
CITO 65XX Molecular Cytopathology (New) Credits: 1.5 Prerequisites: None Corequisites: None	This course covers concepts related to molecular cytopathology and diagnostics including the immunology of cells. Main topics include flow cytometry, immunohistochemistry, special stains, polymerase chain reaction (PCR) and in situ hybridization. Digital image analysis and Telepathology are also discussed. The instructional strategies include, among others: lectures, case study exercises, case discussions, and independent study. The course will be offered online.
CITO 65XX Histology and Gross Pathology (New) Credits: 1 Prerequisites: None Corequisites: None	This course covers concepts related to histology and gross pathology. Students will be exposed to the process of gross examination for small biopsies and will be able to perform quality protocols in the lab to assure identification, fixation, and accurate measurements. Students should be able to perform gross descriptions and resolve basic troubleshooting. The instructional strategies include, among others: lectures, case study exercises, case discussions, and independent study. The course will be offered online.
CITO 65XX Clinical Practice I (New) Credits: 3 Prerequisites: Cito 6507 Introduction to Diagnostic Cytology Cito 6509 Cytopathology of the FGS I Cito 65XX Cytopathology of the FGS II Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II Cito 65XX Clinical Experience I Cito 65XX Clinical Experience II Corequisites: None	This course is the first of two full-time clinical practices 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 a health professional team. Students will demonstrate at a higher level of performance than clinical experiences the ability to review and evaluate cytologic samples and histologic tissue sections, as pertinent clinical data for the purpose of establishing and correlating the final diagnosis. They will comply with laboratory safety measures and regulations including quality control and quality assurance processes. Throughout clinical practice, the students will be able to assist the clinician in the FNA procedures and the evaluation of the samples. The course will be offered thought a diversity of clinical settings during the summer session. The clinical practices will be offered face to face.
CITO 6518 Clinical Practice II	This course is the second of two full-time clinical practices designed to enable students in the processing, evaluation, and interpretation of

Course Code/Name/Credits/Prerequisites/ Corequisites	Course Description
(Modified) Credits: 8 Prerequisites: Clinical Practice I Corequisites: None	cytological specimens, and in the management of laboratory activities as similar as possible to the ones that they will encounter as a health professional team. Students will demonstrate at a higher level of performance than the course of Clinical Practice I the ability to review and evaluate cytological samples and histologic tissue as pertinent clinical data for the purpose of establishing and correlating the final diagnosis. They will comply with laboratory safety measures and regulations including quality control and quality assurance processes. Throughout the clinical practices, the students will be able to assist the clinician in the FNA procedures and the evaluation of the samples. The course will be offered face to face.
CITO 65XX Capstone Project (New) Credits: 1 Prerequisites: None Corequisites: None	This course will provide students with basic concepts related to types, designs, and research methodologies. They will have the opportunity to review scientific literature, evaluate cytology, clinical data, and other available ancillary techniques to establish the diagnosis and differential diagnoses related to the case under study. Upon completion of the course, students must write an abstract or poster to be presented in a scientific journal, annual meeting, or other recognized, peer-reviewed publication platform. The course will be offered online.

H. Relation of Competencies with Courses

Entry Level Professional competencies were updated in September 2023. Competencies are organized as Cognitive, Psychomotor and Affective. Changes to competencies were minimal and consisted in being more specific, wording and reorganization for being more comprehensive. Annex I present a comparative table for previous competencies (2013) and current competencies approved by CAAHEAP in 2023. Competencies define the Graduate Profile.

Table XIV shows alignment of the competencies for each course. This is a competencies-based curriculum, which the student acquires from the basic to the complex through didactic and clinical courses. The graduate's profile is based on the development of six core competencies described in the table below. Is prepared with the cognitive, psychomotor, and affective skills necessary to conduct his/her professional roles in an ethical and sensitive manner throughout lifelong learning.

Table XIV: ***Competency / Course sequencing***

Course code	Course Title	Competencies					
		Screening & Interpretation	Laboratory Techniques	Laboratory Operations	Companion Technologies	Evidence based Medicine	Professional Development/Professionalism
CITO 6505	Laboratory Operation			x			
CITO 6507	Introduction to Diagnostic Cytology		x			x	x
CITO 65XX	Ethic and Good Practices	x	x	x			x
CITO 6509	Cytopathology of the Female Genital System I	x	x	x	x	x	x
CITO 65XX	Cytopathology of the Female Genital System II	x	x	x	x	x	x
CITO 65XX	Clinical Experience I	x	x	x	x	x	x
CITO 65XX	Cytopathology of Non Gyn I	x	x	x	x	x	x
CITO 6517	Cytopathology of Non Gyn II	x	x	x	x	x	x
CITO 65XX	Clinical Experience I	x	x	x	x	x	x
CITO 65XX	Molecular Cytopathology				x		
CITO 65XX	Histology and Gross Pathology	x	x	x			
CITO 6518	Clinical Practicum II	x	x	x	x	x	x
CITO 65XX	Clinical Practicum I	x	x	x	x	x	x
CITO 65XX	Capstone Project	x			x	x	

I. Admission, Tuition, and Graduation

1. Admission Requirements

Admission Requirements are described in table XV.

Table XV: ***Comparison of Admission Requirements***

Current Admission Requirements	Proposed Admission Requirements
Applicants to the program must have completed a Bachelor of Science or Bachelor	Applicants to the program must have completed a Bachelor of Science degree from an accredited college or university. Students

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 Specific Grade Point Average of at least 2.50 in science courses. • Present evidence of completion of the following courses (42 credits) or their equivalents: **Required Courses** **Courses** — **Credits** Mathematics — 6 Semester Credit – Hours College Physics — 8 Semester Credit – Hours Chemistry — 8 Semester Credit – Hours Biology* — 20 Semester Credit – Hours • 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.	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 Specific Grade Point Average of at least 2.50 in science courses. • Present evidence of completion of the following required courses (34 credits) or their equivalents: **Required Courses** **Courses** — **Credits** Mathematics — 6 Semester Credit – Hours Chemistry — 8 Semester Credit – Hours Biology* — 20 Semester Credit – Hours • 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, Molecular Biology, Immunology and Microbiology. *Applicants who have earned a degree from a non-US accredited institution must comply with the applicable University policies and submit: Transcript evaluation by World Education Services (WES) or other SHP approved equivalent evaluation services. Course and grade evaluation are both required.

2. Enrollment Projection and Tuition

Enrollment projections for the first five (5) years after admitting the first cohort are as follows in table XVI. We will be admitting a maximum of five (5) students each year. Enrollment for the first year is five (5) students and subsequent years' enrollment will be ten (10) students per year.

Table XVI: ***Enrollment Projection for the First Five (5) Years***

	2026-2027	2027-2028	2028-2029	2029-2030	2030-2031
Students admitted	**5**	**5**	**5**	**5**	**5**
Students enrolled	5	10	10	10	10

The maximum students permitted is the one approved by CAAHEAP who accredits the program. According to resources available the maximum number of students per year is five (5). Regarding current tuition fees Table XVII shows the income from admitted students currently and projected for the first five (5) years. The tuition costs of students who are currently applying for the certificate pay a fixed cost for the year. The projected income from tuition was based on the current cost of $205 per credit for master's degree, maintenance fee of $100 and technology fee of $50. It represents an increase of $23,950 in the first year and an increase of $33,300 annually for the next years.

Table XVII: ***Current vs. Projected Enrollment Income***

	Current	Projected				
Registration Fees	**2024-2025**	**2025-2026**	**2026-2027**	**2027-2028**	**2027-2028**	**2027-2028**
Admitted students	5	5	10	10	10	10
Credits cost	11,000 (Based on 38 credits)	34,850 (Based on 42 credits)	43,050 (Based on 42 credits)	43,050 (Based on 42 credits)	43,050 (Based on 42 credits)	43,050 (Based on 42 credits)
Fees						
Maintenance	1,500	2,000	2,000	2,000	2,000	2,000
Technology	750	750	1,000	1,000	1,000	1,000
Application for Admission	150	150	150	150	150	150
Seat reservation	125	125	125	125	125	125
Degree Payment	400	0	400	400	400	400
Total	**$13,425**	**$37,375**	**$46,725**	**$46,725**	**$46,725**	**$46,725**

3. Graduation Requirements

Changes in graduation requirements are detailed in Table XVIII.

Table XVIII: ***Graduation Requirements Comparison***

Current Graduation Requirement	Proposed Graduation Requirements
• Obtain a minimum grade point of average of 2.00 or higher in didactic courses and 3.00 or higher in the supervised practice.	• Complete the didactic courses with a minimum grade point average of 2.50 or higher and the clinical courses with 3.00 or higher.

• Satisfactorily complete the six (6) didactic courses and the supervised practice. • Submit a research project related to the cytotechnology profession. • Evaluate and interpret a minimum of sixty (60) cytological samples daily with ninety-five percent (95%) accuracy during the final practicum. • To approve a comprehensive test offered by the program with a minimum of 80%. • To present evidence of the Board of Registry exam payment before July 31.	• Approve the capstone project. • Evaluate and interpret a minimum of sixty (60) cytological samples daily with ninety-five percent (95%) accuracy during the final practicum. • Approve a comprehensive test offered by the program with a minimum of 80%. • Present evidence of the Board of Registry exam payment at the completion of the curriculum.

J. Summary of Proposed Changes

Table XIX shows a comparison between the summary of current curriculum contents and the changes proposed.

Table XIX: *Summary of Proposed Changes*

Current Curriculum	Changes Proposed
Name of Program	
Post Bachelor Certificate in Cytotechnology	Master in Diagnostic Cytology
Degree Conferred	
Post Bachelor Certificate	Master's degree
Completion Time to Degree	
One year (12 months) of theoretical and practice after a bachelor's degree.	One and half years (1.5 years-16 months) including theoretical and practice courses is the minimum time for completion degree requirements. The maximum time granted to completion of curriculum requirements is three (3) years.
Admission Requirements	
• Bachelor of Science or Bachelor of Arts degree Have a General and Specific Grade Point Averages of at least 2.50. • Evidence of completion of 42 credits of required courses: 6 credits in Mathematics, 8 credits in Physics, 8 credits in Chemistry and 20 credits in Biology. • Interview with faculty members. • Fluency in Spanish and knowledge and comprehension of English.	Candidates applying to the program must comply with the following requirements to be considered in the admission process. • Have a Bachelor of Science degree. • Have a General and Specific Grade Point Averages of at least 2.50. • Present evidence of completion of thirty-four (34) credits of required courses: 6 credits in Mathematics, 8 credits in Chemistry and 20 credits in Biology. • Attend an Interview process with faculty members. • Be fluent in the Spanish language and have knowledge and comprehension in the English language.
Graduation Requirements	
1. Obtain a minimum grade point of average of 2.00 or higher in didactic courses and 3.00 or higher in the supervised practice.	• Complete the didactic courses with a minimum grade point average of 2.50 or higher and the clinical courses with a minimum grade point average of 3.00 or higher.

Current Curriculum	Changes Proposed
2. Satisfactorily complete the six (6) didactic courses and the supervised practice. 3. Submit a research project related to the cytotechnology profession. 4. Evaluate and interpret a minimum of sixty (60) cytological samples daily with ninety-five percent (95%) accuracy during the final practicum. 5. To approve a comprehensive test offered by the program with a minimum of 80%. 6. To present evidence of the Board of Registry exam payment before July 31.	• Approve the capstone project. • Evaluate and interpret a minimum of sixty (60) cytological samples daily with ninety-five percent (95%) accuracy during the final practicum. • Approve a comprehensive test offered by the program with a minimum of 80%. • Present evidence of the Board of Registry exam payment at the completion of the curriculum.
Courses	
The curriculum consists of 7 courses.	The curriculum consists of fourteen (14) courses. • 9 New Courses • 5 Change in Registered Course • 2 Courses eliminated
Credit Hours / Clock Hours	
Thirty-eight (38) credits/1,410 hours	Forty-two (42) credits/2,160 hours

IV. Program's Evaluation Plan

The Master in Diagnostic Cytology Program recognizes the need to assess the quality of the program and students' teaching-learning experiences. The proposed evaluation design is based on the outcome assessment approach. The outcome appraisal approach is a systematic approach to collect quantitative and qualitative data that demonstrates congruence between the mission, goals, and objectives of the program with the achievement of the results outlined in the plan in each time.

The process of evaluation is conducted through the achievement of the competencies established in the profile of the graduate, the approval rates of the BOC exam, and the evaluation of competencies in the student by the employer and the graduates. As part of the assessment, retention, graduation, and job placement rates are used as indicators of effectiveness.

The program's evaluation plan was updated to be aligned with the new standards and competencies approved by CAAHEAP in 2023 (see Annex II).

V. Faculty

A. Faculty Profile

The faculty of the Diagnostic Cytology program is highly competent and qualified to comply with the proposed curricular changes. Currently, the program has two core full-time permanent faculty. Both are professional certified as Cytologist. One has a full Professor rank and the other has an Associate Professor rank, evidence that both have sufficient experience in teaching, as well as in the professional clinical area. Both possess doctoral degrees; one has a Doctoral degree in Public Health and the other faculty member a Doctorate degree in Education with concentration in Management and Leadership.

Table XX, shown below, presents the Program's Faculty Profile. The program enriches its curriculum with the participation of part-time ad-honorem faculty, experts in various areas such as Molecular Biology, Cytopathology, and Anatomy, among others. As a team-teaching program, these part-time ad-honorem faculty, who are members from other programs of the institution or from private pathology laboratories, do not offer a complete course, only specific assigned lectures according to their experience so they enrich the curriculum. Table XXI demonstrates faculty expertise for courses they teach. Once approved, the proposal is expected **to recruit a part-time (.5) faculty** member for a total of 2.5 FTE positions. The part time faculty required does not substitute the ad-honorem faculty currently participation in the Program. Candidates for this position must meet the requirements in Standard III.B.4 of the *Commission on Accreditation of Allied Health Education Programs* (CAAHEP), an accrediting agency of health sciences and health professions education. *The sponsoring institution and program assure that all faculty and staff possess the academic and professional qualifications appropriate for their teaching tasks.*

See Annex III for Faculty CV's.

Table XX. *Faculty Profile*

Name	Academic Rank	Type of Appointment related to Program				
		Part Time (PT)	Full Time (FT)	Permanent (P)	Contract (C)	Ad Honorem
Alma Camacho	Professor		X	X		
Yadiris López	Associate Professor		X	X		
Roberto Dávila*	Professor	X (shared)				
José Santiago*	Professor	X (shared)			X	
Elinette Albino*	Associate Professor	X (shared)				X

Name	Academic Rank	Type of Appointment related to Program				
		Part Time (PT)	Full Time (FT)	Permanent (P)	Contract (C)	Ad Honorem
Ruth Rosario*	Professor	X (shared)				X
María Marcos*	Professor	X (shared)				X
Gloria Ramos*	Assistant Professor	X (shared)				X
José Reilova	Ad-honorem	X				X
Zalimech Díaz	Ad-honorem	X				X
Wanda Nieves	Ad-honorem	X				X
Laura Vega	Ad-honorem	X				X
Lymaris Quiñonez	Ad-honorem	X				X
Ana Ramos	Ad-honorem	X				X
Jennifer Correa	Ad-honorem	X				X
Astrid Pérez	Ad-honorem	X			X	
Rosa Ramos	Ad-honorem	X				X
Rita Vargas	Ad-honorem	X				X
Evelisse Padilla	Ad-honorem	X				X
Zuleyka Martínez	Ad-honorem	X				X
Víctor Carlo	Ad-honorem	X				X
María del M. Rivera	Ad-honorem	X				X
Juan Santa	Ad-honorem	X				X

*****_Faculty from other disciplines, schools or campuses who participates as lecturers._

Table XXI: ***Alignment of Faculty with Courses***

Name	Academic Preparation	Courses
Alma Camacho	Doctor in Education Master's in Business Administration Post Bachelor in Cytotechnology	Cito 6505 Laboratory Operations Cito 6507 Introduction to diagnostic cytology Cito 6509 Cytopathology of the FGS I Cito 65XX Cytopathology of the FGS II Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II
Yadiris López	Doctor in Public Health Master's in Public Health Post Bachelor in Cytotechnology	Cito 6505 Laboratory Operations Cito 6507 Introduction to diagnostic cytology Cito 6509 Cytopathology of the FGS I Cito 65XX Cytopathology of the FGS II Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II Cito 65XX Clinical experience I Coordination and teaching Cito 65XX Clinical experience II Coordination and teaching Cito 65XX Clinical Practicum I Coordination Cito 6518 Clinical Practicum II Coordination
Roberto Dávila	Doctor in Administration	Cito 6505 Laboratory Operations
José Santiago	Doctor in Physiology and Biophysics (Neuroscience)	Cito 6509 Cytopathology of the FGS I Cito 65XX Cytopathology of the FGS II Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II
Elinette Albino	Doctor in Biomedical Sciences Master's in Clinical Laboratory Baccalaureate in Science Medical Technology	CITO 65XX Molecular Cytopathology
Ruth Rosario	Master's in clinical laboratory administration, Subspecialty – Clinical Immunology Baccalaureate in Science Medical Technology	CITO 65XX Molecular Cytopathology
María Marcos	Medical Doctor - Anatomic and Clinical Pathology	Cito 65XX Clinical experience I Cito 65XX Clinical experience II Cito 65XX Clinical Practicum I Cito 6518 Clinical Practicum II
Gloria Ramos	Medical Doctor - Anatomic Pathology	Cito 6509 Cytopathology of the FGS I Cito 65XX Cytopathology of the FGS II

Name	Academic Preparation	Courses
	Cytopathology Fellowship	Cito 6517 Cytopathology of Non Gyn II
José Reilova	Medical Doctor - Anatomic and Clinical Pathology	Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II
Zalimech Díaz	Post Bachelor in Cytotechnology	CITO 6518 Clinical Practicum II (Instruction)
Wanda Nieves	Post Bachelor in Cytotechnology	CITO 6518 Clinical Practicum II (Instruction)
Laura Vega	Post Bachelor in Cytotechnology	Cito 6507 Introduction to diagnostic cytology Cito 65XX Clinical experience I (Instruction) Cito 65XX Clinical experience II (Instruction) Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Lymaris Quiñones	Post Bachelor in Cytotechnology	Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Ana Ramos	Post Bachelor in Cytotechnology	Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Jennifer Correa	Post Bachelor in Cytotechnology	Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Astris Pérez	Post Bachelor in Cytotechnology	Cito 65XX Clinical experience I (Instruction) Cito 65XX Clinical experience II (Instruction) Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Rosa Ramos	Post Bachelor in Cytotechnology	Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Rita Vargas	Post Bachelor in Cytotechnology	Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Evelisse Padilla	Post Bachelor in Cytotechnology	Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Zuleyka Martínez	Post Bachelor in Cytotechnology	Cito 65XX Clinical Practicum I (Instruction) Cito 6518 Clinical Practicum II (Instruction)
Víctor Carlo	Medical Doctor - Anatomic Pathology Cytopathology Fellowship	Cito 65XX Cytopathology of the FGS II Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II
María del Mar Rivera	Medical Doctor - Anatomic Pathology Cytopathology Fellowship	Cito 65XX Cytopathology of the FGS II Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II
Juan Santa	Medical Doctor - Anatomic and Clinical Pathology	Cito 65XX Cytopathology of Non Gyn I Cito 6517 Cytopathology of Non Gyn II

B. Faculty Development

Faculty development is strongly encouraged at the MSC, as evidenced by goal 2 of the strategic area of Academic excellence and innovation of the MSC Strategic Plan 2024-2029. University regulations promote faculty development through strategies such as: sabbaticals, financial aid, study leaves, continuing education activities, travel funds, tuition exemption, and time to attend courses offered within the UPR System. Our faculty comply with the Certified Maintenance Program (CMP) of the American Society of Clinical Pathology (ASCP) every three years voluntarily, since they are only required to comply with the CMP those BOC certified after January 2014.

VI. Infrastructure for Teaching, Research, and Service

A. Administrative Structure

The Master in Diagnostic Cytology Program is one of the seventeen (17) academic programs from the SHP, one of the six schools of the MSC from the UPR System. It is in the Department of Graduate Programs of the SHP. Administratively, the program is not expected to undergo any changes. It is supported administratively by one Program Director who acts as the Educational Coordinator and a Clinical Coordinator. These are the two main faculties providing teaching and guidance to the program, they are the only two positions assigned to the program. Most of the clinical components are fulfilled by external staff ad-honorem as well as some of the theoretical lectures in the classroom. At this moment, the program does not have administrative staff assigned. The program is supported by the department's secretary in some tasks. The School of Health Professions is processing a job offer for the position of administrative staff.

B. Teaching Support Facilities, Laboratories and Equipment

The proposed Program has the physical facilities and technological resources essential for its competitiveness, as well as for the achievement of its mission, goals, and objectives.

The Diagnostic Cytology Program offices are located on the sixth floor of the School of Health Professions building. The Program office will have a secretarial area, and offices for the clinical practice coordinator and the director. It also has physical facilities, including classrooms and offices for each doctor.

On the second floor (Room 235) is the classroom and the laboratory room. The laboratory has two microscopes for case discussion, one double head and one digital. There is also a space with individual cubicles for each student with a microscope.

Each classroom has a 70" LCD TV where the images and information used to complete the course are projected. In addition, each classroom has a built-in control button system for PC, PVD, and Apple TV. iPad and iPhone are also integrated.

The program has the necessary and appropriate physical facilities for the development of skills in Cytology. For the clinical component, collaboration agreements with several Clinical Practice Affiliations are established (see Table XXII). The use of these facilities will allow the

proper development of the different teaching strategies of each course with demonstrations, group work and clinical skills practice. Clinical practice centers will have an additional role in rotations to complete clinical competencies, as they will serve as teaching facilities.

C. Practice Centers or External Locations

As an essential part of the curriculum of the Cytology program, it has a diversity of clinical practice centers, government, and private institutions, where students develop clinical competencies (see Table XXII). Each clinical center has an affiliation contract to receive student interns. It must meet quality standards and must be approved by CAAHEP. The Cytology Program has a Student Manual. It sets out the rules governing clinical practice. Table XXII presents a list of clinical affiliations available for student's clinical experiences in the proposed program.

They maintain a contractual relationship with the MSC, which is overseen by the Campus's Office of Legal Affairs.

Table XXII. ***Affiliated Clinical Centers***

Name of Institution	Term of the Contract
Banner Health, an Arizona nonprofit corporation	December 2022 to December 2027
Puerto Rico Medical Services Administration (ASEM)	July 2024 to June 2026
Atlantic Pathology, Inc	January 2021 to October 2025
Core Plus Pathological Services, LLC	May 2022 to July 2027
University Medical Services, Inc. UPR Hospital	July 2023 to June 2025
Hato Rey Pathology Associates, Inc.	January 2021 to November 2025
Dr. Noy Pathology and Clinical Laboratory	June 2020 to July 2025
José de Diego Clinical and Pathological Laboratory	November 2022 to December 2027
Puerto Rico Pathology Associates, PSC.	October 2024-January 2023
Southern Pathology Services, Inc.	November 2020 to November 2025
Florida Woman Care Laboratory, LLC.	March 2023 to year-year
VA Caribbean Health Care System	August 2022 to August 2032

VII. Budget Plan

The annual budget of the University of Puerto Rico Medical Sciences Campus is made up of three main sources: university funds or general funds (allocated by the government of Puerto Rico with tuition income and other sources), external funds (income from federal government contracts or grants with state agencies and donations), and other funds (mainly from the sale of services and bond issuance). The institution allocates resources according to the needs of the programs.

Since its inception, this program has been conceived based on the general fund. Since it was conceptualized since its inception as a Post-Baccalaureate Certificate, an annual tuition fee of $2,200 plus maintenance and technology fees was charged for a total of $ **13,425.00** per year in tuition revenue.

Currently, the cost of tuition for master's degree programs is $205 per credit, plus maintenance and technology fees.

The budget of the master's degree program has been projected on a 3-year basis as required by the certification starting from the 2025-2026 academic year. The budget is an estimated projection of expenses for the implementation of the change to master's degree of the cytology program. Projected annual income is **$37,375** for the first year and **$ 46,725** for the second year onwards**.** It represents an increase of program income from tuition by 3 times the previous tuition. The master's degree program requires an increase of approximately 12% for the first year of implementation from the current budget which consists of **$331,210.69**. Budget increase is due to the need of an additional part-time faculty member. Other considerations for the increase in budget are not considered related to the curricular change proposal. Most of the changes are related to the salary increase for actual faculty members and projections in cost of accreditation fees, laboratory equipment and materials.

The proposal for academic change of the cytology program is framed in Pillar 1 Academic Quality, Goal 1, of the Strategic Plan of the SHP, which seeks to strengthen the development of academic programs so that they respond to the evolution and requirements of the disciplines, the university, and the needs of the population within a global context.

One of the strengths of this program reviewed by the accrediting agency is the high commitment of its graduates to support the program. All clinical instructors who provide instruction to students in their clinical practices are graduates of the program and give their time ad-honorem.

No additional resources in terms of space or equipment are required for the proposed program.
Projected budget for the first three years is presented in table XXIII.

Table XXIII: ***Projected Budget***

Program Budget Projection (3 Years)	2025-2026	2026-2027	2027-2028
Faculty (Include .5 Faculty)	*$222,708.00*	*$223,776.00*	*$223,776.00*
Director Bonus	*$4,800.00*	*$4,800.00*	*$4,800.00*
Subtotal Faculty Salaries	$227,508.00	$228,576.00	$228,576.00
Non-Faculty Salaries	$14,160.00	$14,160.00	$14,160.00
Total Salaries	$241,668.00	$242,736.00	$242,736.00
Employer Contributions	$118,606.00	$119,743.00	$120,463.00
Total Salaries and Employer Contributions	**$360,274.00**	**$362,479.00**	**$363,199.00**
Accreditation			
Total Membership and Accreditation Fees	**$3,000.00**	**$3,200.00**	**$3,500.00**
Materials and Equipment			
Laboratory Materials	$2,500.00	$3,000.00	$3,500.00
Equipment Maintenance	$2,000.00	$2,300.00	$2,600.00
Office Materials	$500.00	$700.00	$90.00
Laboratory Equipment	$6,500.00	$7,000.00	$7,500.00
Total materials and equipments	$11,500.00	$13,000.00	$13,690.00
Travels			
Program Director Annual Meeting	$2,500.00	$3,000.00	$3,500.00
Total Expenses	**$377,274.00**	**$381,679.00**	**$383,889.00**

Table XXIV shows a comparison of the current budget versus tuition income and the budget and tuition projections. As can be observed, the additional expense is practically absorbed with the program projections.

Table XXIV: ***Budget and Tuition Income Projections***

Expenses	2024-2025	2025-2026	2026-2027	2027-2028
Faculty Salaries	*$190,062.00*	$227,508.00	$228,576.00	$228,576.00
Non Faculty Salaries	$14,160.00	$14,160.00	$14,160.00	$14,160.00
Total Salaries	$204,222.00	$241,668.00	$242,736.00	$242,736.00
Employer Contributions	$111,788.69	$118,606.00	$119,743.00	$120,463.00
Total Salaries & Employer Contributions	**$316,010.69**	**$360,274.00**	**$362,479.00**	**$363,199.00**
Memberships and Accreditation Fees	$3,000.00	$3,000.00	$3,200.00	$3,500.00
Material, travels, and equipment	$12,200.00	$14,000.00	$16,000.00	$17,190.00
Total Expenses	**$331,210.69**	**$377,274.00**	**$381,679.00**	**$383,889.00**
Difference in Expenses	$-	$46,063.31	$50,468.31	$52,678.31
Tuition Income	**$13,425.00**	**$37,375.00**	**$46,725.00**	**$46,725.00**

VIII. Student Services

A. Student Service and Support System:

At the MSC, students receive services through the programs and offices of the Student Deanship. Likewise, at the level of the school to which they belong through the Office of Student Affairs (OSA).

The Student Deanship is the administrative structure in charge of offering services, support, help, and activities aimed at enriching and complementing the university life of the students of the six MSC schools. To fulfill this purpose, the Deanship has different programs and offices. The services offered are listed and described below.

1. Office of Promotion and Recruitment – develops activities to promote the RCM's academic offerings: Summer Seminar and Open House. Guides students, faculty, and school counseling teams on academic offerings, admission requirements, financial aid, and cost by level.
2. Office of Admissions – offers direct services to students in being admitted to one of the academic programs. It publicizes admission requirements and receives, processes, and evaluates applications for admission.
3. Office of Financial Aid – provides an alternative to defray tuition fees (more information will be provided in section B of this part).
4. Office of Cultural and Development Activities – coordinates and prepares social development events: concerts, conferences, workshops, fairs, and exhibitions, among others.
5. Student Center for Counseling and Psychology (acronym in Spanish CECSi) – provides counseling and psychology services. It offers workshops and talks and plans and coordinates activities in conjunction with the OAE of each school. It provides support services to veterans and encourages participation in boarding schools.
6. Office of Services for Students with Disabilities (acronym in Spanish OSEI) – responsible for receiving requests for reasonable modification and processing them to the Office of Student Affairs (OSA) of the appropriate School.
7. Quality of Life Program – disseminates and promotes compliance with institutional policies. It coordinates and offers services for the prevention of risky behaviors, and for the strengthening of responsible lifestyles. He represents the MSC and participates in the CRUSADA Interuniversity Consortium. It offers activities aimed at integral development: Zumba sessions, dance classes (hip hop, salsa, modern dance); quality and safety fairs, among others. He coordinates the FIESTA Program (prevention of alcohol use among university drivers), in conjunction with the Commission for Traffic Safety.
8. Student Health Services Clinic – offers evaluation, diagnosis, and management of primary conditions and referrals. Provides guidance on health insurance (admission requirements) and provides refers to immunization services. Offers educational activities, HIV exposure protocol, universal protection measures, and infection control. They maintain the students' health record for as long as they are active in the MSC.

9. Student Ombudsman's Office – works with the university community, especially students, in resolving conflicts that affect the quality of educational experiences during their years of study at the Medical Sciences Campus. 10. Office of Administration – responsible for the administration and allocation of budgets. Administers the funds for the Assistantship Program and the Student Travel Program. It provides administrative support to the General Student Council and the Faculty Student Councils.

Extended hours are currently offered at the registrar's offices, payable during the enrollment period. In addition, the Quality-of-Life Office offers its services from 8:00 – 4:00 p.m. This schedule is extended when deemed necessary.

On the other hand, the OSA of the School of Health Professions is the body that offers services to students, undergraduates, and graduates, at different times. Among the services they provide, the following stand out:

1. Comprehensive Counseling program: offers individual counseling to undergraduate students as referred by the faculty and directors of the academic programs, with the student's consent. Also, to students who voluntarily request the service. In addition, group counseling is provided. Faculty, principals, and students can also request this type of intervention, if they understand that a particular group needs it. Group psycho-educational workshops are provided. Referrals are also made to psychology and psychiatry when the cases warrant it.
2. Promotion and Recruitment - students are provided with general information about our academic offers. If you have an interest in a particular program, you are referred to the program for more detailed information.
3. Processing of travel requests made by students.
4. Other activities for students include but are not limited to:
    a. Orientation for new students
    b. Welcome and farewell social activity
    c. Achievement Day
5. School Student Council: The OSA is responsible for holding the Candidate Nomination Assembly. Likewise, it is committed to ensuring that students participate in the electronic voting process and then certify those elected.

In addition, it provides advice to the Council.

B. Economic Aid:

The Office of Financial Aid seeks to provide financial aid for students to achieve their study goals. The funds used come from the Legislature of the Commonwealth of Puerto Rico, appropriations from the U.S. federal government, institutional funds, and private donations.

Students who are admitted to the Master in Diagnostic Cytology are eligible to receive financial aid. The Medical Sciences Campus Financial Aid program offers three (3) types of financial aid: scholarships, loans, and work-study programs. Students in the program are entitled to apply for the following financial aid:

- Federal Supplemental Educational Opportunity Grant.
- Bank & Federal Loans
- State Supplemental Incentive Grant (SSIG)

These grants are granted in accordance with the requirements established by the entities that grant them. However, the U.S. Department of Education states that a student with twelve (12) credits or more is considered a full-time student. The financial aid that the student acquires will be adjusted according to the number of credits on which he or she is enrolled.

In addition, they can enjoy institutional benefits, for which they must contact the Office of Collections. This includes tuition waiver, honors, and extensions to pay tuition charges.

IX. Catalog and Dissemination:

The Cytology program, once approved by the Board of Governors and the Board of Postsecondary Institutions (JIPS), will be disseminated through the Institutional Catalog of the Medical Sciences Campus of the University of Puerto Rico in the offer of graduate programs of the School of Health Professions (EPS). It will be disseminated through the social networks of the MSC and the SHP. The program's website will also be updated.

X. Information Resources

The Conrado F. Asenjo Library (CFAL) is the island's premier health sciences information resource library, occupying five floors of a six-story building built in 1972. The structure houses one of the most comprehensive collections of its kind in the Caribbean.

The library staff includes six academic-grade librarians and twelve (12) non-teaching staff members. Library faculty members participate in teaching, the Academic Senate, institutional committees, and accreditation processes.

The library's collection includes materials originally held by the Institute of Tropical Medicine, established in 1912, which were later transferred to the School of Tropical Medicine, which was a joint effort with Columbia University from 1926 to 1949. Currently the collection includes thousands of materials in various formats (books, magazines, multimedia, and some memorabilia), covering the topics of the fields of study offered in the academic programs of the Campus. Here is a compilation of the library's collection:

47,054	18 suscripciones activas a revistas impresas y 47, 036 libros.
1,259	acceso al texto completo de publicaciones periódicas electrónicas activas de ciencias de la salud, 16 en *The American Physiological Society*, 7 en *BMJ Journals*, 9 en *JAMA Network*, 107 en *Karger eJournals Collection*, *New England Journal of Medicine*, 549 en OVID, 4 en *PsychiatryOnline*, 40 en *ScienceDirect (Elsevier)*, 157 en *Wiley Online Library* y 370 de otras editoriales. 1,277, total de suscripciones a revistas activas; impresas (18), electrónicas (1,259).

15,588	acceso a revistas de salud de texto completo desde bases de datos: 697 en *ClinicalKey*; 5,731 en *EBSCOhost*; 5,889 en *InfoTrac*; y 3271 en *ProQuest*.
1,282	materiales de referencia de ciencias de la salud que se detallan a continuación: 895 en *EBSCOhost*, 181 en *InfoTrac*, 118 en *ClinicalKey*, el atlas interactivo de *NetAnatomy*, 3 (de 4) en la plataforma *Nutrition Care Manual*, así como el *CREDO* recientemente adquirido para enfermería y ciencias aliadas a la salud (41), *CREDO* para Ciencias Farmacéuticas (15) y *CREDO* para Rehabilitación y Terapia (27) colecciones.
10	bases de datos de revisiones sistemáticas: *EMBASE* (con financiamiento del Departamento de Educación de los EE. UU. Título V Subvención # PO31S200104), Medline with Full Text (EBSCOHost) and *OVID (EBM Reviews - ACP Journal Club, EBM Reviews - Database of Abstracts of Reviews of Effects, EBM Reviews - Cochrane Database of Systematic Reviews, EBM Reviews - Cochrane Clinical Answers, EBM Reviews - Cochrane Central Register of Controlled Trials, EBM Reviews - Cochrane Methodology Register, EBM Reviews - Health Technology Assessment, EBM Reviews - NHS Economic Evaluation Database, and Medline).*
6	base de datos de medicamentos: *IBM Micromedex, Natural Medicines, incluyendo BMJ Best Practice, ClinicalKey, DynaMed y EMBASE*. Además, *Physicians' Desk Reference* (*PDR*) está disponible como parte de nuestra suscripción a *IBM Micromedex*.
1,404	temas de decisión clínica: 104 en *BMJ Best Practice* y 1.300 de instrucciones para altas de pacientes en *EBSCO's Patient Education Reference Center*.
1,024	procedimientos y pruebas de laboratorio; 337 en ClinicalKey, y 660 en *EBSCO's Patient Education Reference Center*; así como 27 videos de procedimientos médicos en BMJ *Best Practice*.
7,261	libros electrónicos de las plataformas suscritas; 987 en *ClinicalKey*, 2,803 en *EBSCOhost*, 59 en *Gale InfoTrac eBooks*, 3,044 en *ProQuest Central databases y EBook Central (Academic One),* y 39 en *PsychiatryOnline* con acceso continuo para 221 en *Books@OVID* y 108 en OVIDEspañol.
2,026	acceso a textos médicos y libros electrónicos (monografias, reportes, etc.) de agencias gubernamentales o asociaciones y organizaciones gubernamentales como *National Academies Press* (1,165), *BookShelf of the National Center for Biotechnology Information* (1,203), *World Bank Group* (173), *Agency for Healthcare Research and Quality* (96), *National Institute for Health and Care Excellence* (88), y World *Health Organization* (89).
46,365	títulos de películas de *Alexander Street Nursing Education in Video: Third Edition* (395), *Films on Demand* (45,625) y *Dental Education in Video* (345)

The library is affiliated with the National Library of Medicine (NLM) as one of the resources of the National Network of Southeastern/Atlantic Medical Libraries (NNLM). As part of the network, it participates in the program of sending documents and information

resources to share with other libraries. He is also a member of the Consortium of Southern Biomedical Libraries (CONBLS). Through these programs, those resources that are not available in the library's collection can be obtained from other medical libraries using the ARIEL program to process interlibrary loans electronically. There are also collaborative agreements with the library of the Veterans Hospital Administration, the Natural Sciences library of the Rio Piedras Campus, and units of the University of Puerto Rico system. As a member of the

The University of Puerto Rico system participates in the Consortium of Electronic Resources shared by the system's libraries.

Multimedia materials such as CD-ROMs, DVDs, and other digital formats are available from the Multimedia Resources and Services Centre (CReSeM). There are physical facilities for individual and group visits (the latter by appointment). To ensure the significant investment of money in print and online resources, the Conrado F. Asenjo Library selects high-quality materials based on continuous evaluation of usage statistics and relevance to campus programs.

Available resources may change over time as contracts with suppliers are renegotiated, in addition, new products are available for trial periods and others are discontinued if necessary. For the most up-to-date list of available resources, patrons should access the library's webpage at https://www.upr.edu/biblioteca-rcm/.

To provide better and more efficient access to subscribed resources, more comfortable spaces, and new services, three floors of the library were remodeled in 2006. The renovation of the 4th floor was recently completed, and furniture and equipment were ordered.

In terms of technological infrastructure, there are several computer workstations distributed throughout the building, as well as two multipurpose rooms on the sixth floor and four rooms for small group/collaborative meetings. The multipurpose rooms have carts with laptops for workshops of up to thirty participants. La Veranda, a two-level space that occupies part of the second and most of the third floor, is open 24/7 as a reading room.

Users have wireless access to resources while in the enclosure and validate access with their pre-assigned active directory account. They can also remotely access resources through an EZ Proxy server account that is the same as their pre-assigned institutional email account.

The Reference Section offers workshops on information skills, use of databases, bibliographic searches, preparation of bibliographies, and the use of evidence-based practices, among others. Some librarians' teams teach with faculty in some courses in which information competencies have been integrated as part of the learning experience. On the other hand, remote attention to users is carried out through the Virtual Reference Librarian Service. The library is fully prepared to offer remote assistance and support

hybrid and distance education. In response to the COVID-19 pandemic, the reference section developed a scientific literature page exclusively on COVID-19 and made it available through the library's website for faculty and researchers, as well as an informational page, to reach out to the community and make reliable, quality information available to them.

CFAL affiliations also aid in the provision of some services. As part of the National Library of Medicine (NLM) National Network of Medical Libraries (NLM), the library participates in the network's document delivery program to share resources with other libraries. He is also a member of the Southern Biomedical Libraries Consortium (CONBLS). Through these programs, materials that are not available in the collection are obtained from other health sciences libraries through electronic interlibrary loans. CFAL's Interlibrary Loan service is highly praised by its users and has received several awards for excellence.

The CFA Library is also a member of the Association of Medical Libraries and the Association of Academic Libraries of Health Sciences and has established collaboration agreements with the Veterans Administration, San Juan Medical Center Hospital Library, University of Puerto Rico Natural Sciences Library, Río Piedras Campus, and other libraries and information centers of the University System of Puerto Rico. In addition, the Conrado F. Asenjo Library is the hub of the Virtual Health Library, BIREMEOPS-WHO, an open-access initiative, which represents the ecosystem of health content publications published in Puerto Rico by the public and private sectors. Users must access the VHL of Puerto Rico in https://bvsalud.org/es/.

In addition to the strategic planning framework mentioned above, the campus and library are subject to review by twenty (20) accrediting agencies, which set specific standards for education in the health field. This further ensures that all programs (and the library as a unit that serves them) remain focused on their mission and areas of expertise. Accreditation processes are checkpoints where the institution evaluates the achievement of its mission and objectives and receives input from its peers to improve its performance.

For 2015, librarians conducted a self-assessment of library services using the Association of Academic Health Sciences Libraries (AAHSL) standards, for which they conducted a benchmarking exercise with five other health sciences libraries that report their data to AAHSL. When considering several variables (monograph titles, serial titles, databases, circulation of physical materials, completed interlibrary loan requests, FTE staff, collection expenses, salaries and wages, and total expenses), the library compared favorably, even considering its more modest budget.

The Medical Sciences Campus Library maintains a close relationship with the School of Health Professions Program's, through the designation of a librarian as a liaison between faculty and the library. The assigned librarian participates in the school's curriculum committees, where developments in new courses, changes in courses, and other curricular aspects are discussed, which supplements information on the needs for bibliographic resources to be used by students and teachers during the teaching task. In this way, the librarian assigned to the school is responsible for the development of the

various collections necessary for the different academic programs, in coordination with the faculty, who recommend acquisitions throughout the year. Another mechanism for improving learning resources is the self-study processes for accreditation with the corresponding agencies. Through self-study, direct communication is established with the librarian assigned to the school, to review and update the collection of books, journals, materials, and other sources of information necessary for the academic development of the study program. However, the learning resources available in the library are sufficient and appropriate for the program. The inventory of equipment and materials is reviewed annually with the purpose of replacing them in accordance with the established priorities and the allocation of funds.

Office of Informatics and Educational Resources (OIRE), School of Health Professions

OIRE provides all the technological infrastructure that directly provides services to teaching and non-teaching staff and students at the school's seventeen (17) academic programs. In addition, it coordinates, plans, and develops special projects for the strengthening of academic-administrative processes and oversees administering, guarding, and offering all the technical support of the Network-EPS, the School's website, document portal, student portal, portal of the Academic Senate and Administrative Board, the Distance Education platform (Blackboard) and the digital archive of the UPR Governing Board, among others.

Among its main resources, OIRE manages 5 computer rooms (317, 318, 320, 339 & 423) that are used for different courses, training, or independent use of students. It offers direct services through its Helpdesk and Repair Center. It manages its Server Center to support teaching and other academic-administrative processes. This center has an infrastructure of eleven (11) servers with different services for the entire academic community of the School of Health Professions and other offices in the Medical Sciences Campus, among which are: the Student Portal, Teaching and Non-Teaching Staff Portal, RCM Academic Senate Portal Space for the RCM Administrative Board, Blackboard Ultra, Document Scanning System, Website, Antivirus Console, Operating System Update System, Streaming Media Servers, Printing Servers, among others.

The main administrative facilities of the Office of Informatics and Educational Resources (OIRE) are located on the third floor of the School of Nursing Building. Other facilities are in the main building of the School of Health Professions. In the facilities of the 3rd Floor Nursing Building are the Administrative Offices (328 and 332) Conference Room (335), Video Conference Room (316), Computer Rooms (317, 318 and 320), Services and Repair Area (Helpdesk) (319), Server and Office Room (326), Printed Matter and Graphic Arts Room (327), Classrooms (337 and 338), and Independent Computers Room-339. In the EPS Building, there is a Computer Room (423) and the Auditorium on the eighth floor.

2023 COMPETENCIES COMPARISON TABLE

Curriculum Competencies for Educational Programs in Cytology

CPRC Cytology Entry-Level Competencies

Upon completion of the Cytology program, the student must have successfully completed the following:

cognitive (indicated below as "C"), psychomotor (indicated below as "P"), and affective (indicated below as "A") competencies to enter the profession.

2013 Competencies	2023 Competencies	Changes in Competencies
I. SCREENING AND INTERPRETATION	**I. EVALUATION AND INTERPRETATION**	
I. A. Gynecologic Cytology	**I. A. Screening Tests: Cervicovaginal** The student will demonstrate:	
1. Prior to screening gynecologic cytology specimens, the graduate will review the patient's medical history and gather relevant clinical information.	1. The ability to review the patient's medical history and gather relevant clinical information prior to evaluating **cervicovaginal** cytology specimens (C).	Remain the same.
2. When given conventional and/or liquid-based gynecologic specimens, the graduate will be able to microscopically identify, discriminate and explain the significance of the following entities in the context of a given patient: a. specimen adequacy b. cellular components within the negative for intraepithelial lesion or malignancy category c. non-neoplastic findings including cellular changes associated with infections/organisms, reactive and reparative changes associated with inflammation, effects of therapy, effects of devices/instrumentation and presence of glandular cells in noteworthy circumstances d. epithelial squamous abnormalities, including atypical squamous cells of undetermined significance, atypical squamous cells cannot exclude HSIL, low grade squamous intraepithelial lesion, high grade squamous intraepithelial lesion, and squamous cell carcinoma e. glandular cell abnormalities including atypical glandular cells, endocervical adenocarcinoma in-situ and endocervical and endometrial adenocarcinoma and their differential diagnoses f. other epithelial and non-epithelial malignant neoplasms g. extra-uterine malignant neoplasms	2. The ability to microscopically identify, discriminate, and explain the significance of the following entities in the context of a given patient when given conventional and/or liquid-based cervicovaginal cytology specimens (C): a. specimen adequacy; b. cellular components within the negative for intraepithelial lesion or malignancy category; c. non-neoplastic findings including: i. cellular changes associated with infections/organisms; ii. reactive and reparative changes associated with inflammation; iii. effects of therapy; iv. effects of devices/instrumentation; and v. presence of glandular cells in unexpected clinical circumstances; d. epithelial squamous abnormalities, including: i. atypical squamous cells of undetermined significance; ii. atypical squamous cells cannot exclude HSIL; iii. low grade squamous intraepithelial lesion; iv. high grade squamous intraepithelial lesion; and v. squamous cell carcinoma and the differential diagnoses; e. glandular cell abnormalities including: i. atypical glandular cells; ii. endocervical adenocarcinoma in-situ and endocervical adenocarcinoma and their differential diagnoses; and **iii.** endometrial adenocarcinoma and their differential diagnoses.	Remain the same. Eliminates from 2013 competencies section 2.f. other epithelial and non-epithelial malignant neoplasms and 2.g. Extra-Uterine Malignant Neoplasms.
3. The graduate will be able to demonstrate ability to use Pap test computer-assisted screening system(s).	3. The ability to use Papanicolaou (PAP) test computer-assisted screening system(s) (C).	Remain the same.
4. When given gynecologic cytology specimens, the graduate will be able to detect, select, and appropriately mark the cells most representative of the nature of any pathological process if present.	4. The ability to detect, select, and appropriately mark the cells most representative of the nature of any pathological process, if present, when given cervicovaginal cytology specimens (P).	Remain the same.
5. The graduate will be able to perform a morphologic correlation of cytologic findings with relevant (concurrent/prior) histologic material.	5. The ability to perform a morphologic correlation of cytologic findings with relevant (concurrent/prior) histologic material (C).	Remain the same.

2013 Competencies	2023 Competencies	Changes in Competencies
6. The graduate will be able to prepare a report using a contemporary, reproducible, uniform reporting system of interpretive terminology.	6. The ability to prepare a report using a contemporary, reproducible, uniform reporting system of interpretive terminology (C).	Remain the same.
7. The graduate will be able to independently evaluate gynecologic cytology specimens with sufficient competence to issue the final report for negative gynecologic specimens.	7. The ability to independently evaluate cervicovaginal cytology specimens with competence to issue the final report for negative specimens (C)	Remain the same.
8. The graduate will appropriately triage gynecologic cytology specimens for high-risk HPV testing.	8. The ability to appropriately triage cervicovaginal cytology specimens for companion technologies (C).	Remain the same.
9. The graduate will be able to evaluate gynecologic cytology specimens with a high level of accuracy as defined by the program.	9. The ability to evaluate cervicovaginal cytology specimens with a high level of accuracy (C)	Remain the same.
Although paramount, accuracy should be combined with the realization that timely reporting of results also contributes to patient care. *At minimum, the graduate should be able to manually evaluate an average of 7 non-imaged gynecologic slides per hour (or average of full slide-equivalents per hour for computer-assisted review).*	*Although paramount, accuracy should be combined with the realization that timely reporting of results also contributes to patient care.* *At minimum, the student should manually evaluate an average of 7 cervicovaginal slides per hour (or average of full slide-equivalents per hour for computer-assisted review)*	Remain the same.
I. B. Non-gynecologic Cytology	**I. B. Diagnostic Tests**: specimens to include but not limited to fluids (e.g., urine, body cavity, pericardial, csf), Fine Needle Aspiration (FNA), washes, brushes, cell blocks, small sample diagnostics, touch preparations. The student will demonstrate:	
1. Prior to screening any non-gynecologic cytology specimen, the graduate will review the patient's medical history and gather relevant clinical information.	1. The ability to review the patient's medical history and gather relevant clinical information prior to evaluating any specimen (C)	Remain the same.
2. When given samples from any non-gynecologic cytology specimen, including fine needle aspirations, the graduate will be able to microscopically identify, discriminate and explain the significance of the following entities in the context of a given patient: a. specimen adequacy b. cellular components within normal limits c. microbiologic entities and associated cytomorphology d. cellular features of degeneration e. benign cellular changes f. cellular features of benign neoplasms g. cellular features of malignant neoplasms h. cellular effects of radiation, chemotherapy, and other modalities, when available i. altered cellular morphology due to collection methods	2. The ability to microscopically identify, discriminate, and explain the significance of the following entities in the context of a given patient when given samples from any specimen (C): a. specimen adequacy; b. cellular components within normal limits; c. microbiologic entities and associated cytomorphology; d. cellular features of degeneration; e. benign cellular changes; f. cellular features of benign neoplasms; g. cellular features of malignant neoplasms; h. cellular effects of radiation, chemotherapy, and other modalities, when available; and i. altered cellular morphology due to collection methods	Remain the same.
3. When given any non-gynecologic cytology specimen, the graduate will be able to detect, select, and appropriately mark the cells most representative of the nature of any pathological process if present.	3. The ability to detect, select, and appropriately mark the cells most representative of the nature of any pathological process if present when given any specimen (P).	Remain the same.
4. The graduate will be able to triage non-gynecologic cytology specimens for ancillary studies (to include when appropriate-microbiology, flow cytometry, cytogenetics, and molecular analysis) using appropriate transport media.	4. For non-gynecologic specimens, the student will demonstrate the ability to screen microscopic slides, identify abnormal cells, record their observations using a contemporary, reproducible, uniform terminology, and present their findings to the pathologist for diagnostic interpretation (C).	Remain the same. New wording, with part I.B.6 from 2013 competencies.
5. On detection of cellular features of disease, the graduate will be able to develop a differential diagnosis based on synthesis of appropriate data from: a. corresponding cell block	5. The ability to triage specimens for companion diagnostics as appropriate (pre-analytic) to include but not limited to special stains, immunohistochemistry (IHC), immunocytochemistry (ICC), and molecular diagnostics (C).	Remain the same as I.B.4 from 2013 competencies.

2013 Competencies	2023 Competencies	Changes in Competencies
b. morphologic correlation with relevant (concurrent/prior) histologic material c. routine special stains including interpretation of positive and negative controls d. immunohistochemical stains including interpretation of positive and negative controls, scoring of IHC intensity, and staining pattern (cytoplasmic, nuclear, membranous).		
6. The graduate will be able to prepare a report using a contemporary, reproducible, uniform reporting system of interpretive terminology.	6. The ability to utilize appropriate transport requirements (e.g., transport media, fixative) when triaging pathology/cytology specimens for companion diagnostic studies to include but not limited to (C): a. cell block preparations; b. flow cytometry; c. cytogenetics; d. microbiology; e. tissue banking; and f. molecular diagnostics	They placed separately the selection of appropriate means of transportation that was included in I.B.4 of 2013 competencies.
7. The graduate will be able to evaluate cellular preparations with a high level of accuracy as defined by the program.	7. The ability to assess specimens for further diagnostic studies following morphologic evaluation to include but not limited to companion technologies such as special stains, immunohistochemistry (IHC), immunocytochemistry (ICC), and molecular diagnostics (C).	It was included in I.B.4 of 2013 competencies.
	8. The ability to develop a differential diagnosis based on synthesis of appropriate data after morphologic evaluation from (C): a. corresponding cell block or small diagnostic samples; b. morphologic correlation with relevant (concurrent/prior) histologic material; and c. companion technologies.	Remain the same as I.B.5 from 2013 competencies
	9. The ability to evaluate cellular preparations with a high level of accuracy as defined by the program (C).	Remain the same as I.B.7 from 2013 competencies
	10. The ability to explain the principles of fine needle aspiration biopsy performance, including indications and characteristics of superficial palpable lesions and a variety of image-guided modalities (e.g., transcutaneous, endoscopic ultrasound guided, endobronchial ultrasound guided, and CT guided) (C)	They included everything from FNA that was previously in I.C. in this section. The ROSE aspect, communication with the work team, pathologist, etc., is further defined.
	11. The ability to perform rapid on-site adequacy assessment of fine needle aspiration biopsy specimens (includes touch preparations) and **clearly communicate results of this assessment under the supervision of a pathologist**. The student will understand the principles of patient safety including informed consent and time out and will demonstrate competence in (C): a. slide preparation and rapid staining; b. appropriate communication with the clinical team; c. slide and specimen labeling and maintaining correct patient identification; d. recording requirements for adequacy assessments; and e. specimen triage including choice of appropriate transport media including fixative.	It is more specific to include touch preparations.

2013 Competencies	2023 Competencies	Changes in Competencies
I.C. FNA Cytology (includes touch preparations)	This section has been removed from the new competencies.	Content was incorporated in section I.B.
1. Prior to on-site adequacy assessment and/or cytologic screening of any FNA specimen, the graduate will review the patient's medical history and gather relevant clinical information.		
2. The graduate will be able to explain the principles of FNA performance, including indications and characteristics of different image-guided modalities (e.g., transcutaneous, endoscopic U/S-guided, endobronchial U/S-guided).		
3. The graduate will be able to perform on-site adequacy assessment of FNA specimens and communicate results of this assessment.		
4. The graduate will demonstrate a working knowledge of tele cytology as it applies to on-site adequacy assessment.		
5. The graduate will be able to triage FNA cytology specimens for ancillary studies (to include when appropriate- cell block preparation, microbiology, flow cytometry, cytogenetics, and molecular analysis) using appropriate transport media.		
6. When given any FNA cytology specimen, the graduate will be able to microscopically identify, discriminate and explain the significance of the following entities in the context of a given patient: a. specimen adequacy b. target specific cellular components within normal limits c. microbiologic entities and associated cytomorphology d. cellular features of degeneration e. benign cellular changes f. cellular features of benign neoplasms g. cellular features of malignant neoplasms h. cellular effects of radiation, chemotherapy and other modalities i. altered cellular morphology due to collection methods		
7. When given any FNA specimen, the graduate will be able to detect, select, and appropriately mark the cells/entities most representative of the pathological process if present.		
8. The graduate will have a working knowledge of how to identify FNA cytology specimens for further work up following cytologic screening (to include when appropriate-special stains, IHC, molecular analysis).		
9. On detection of cellular features of disease, the graduate will be able to develop a differential diagnosis based on synthesis of appropriate data from: a. corresponding cell block b. relevant (concurrent/prior) histologic material c. routine special stains including interpretation of positive and negative controls d. immunohistochemical stains including interpretation of positive and negative controls, scoring of IHC intensity, and staining pattern (cytoplasmic, nuclear, membranous).		
10. The graduate will be able to prepare a report using a contemporary, reproducible, uniform reporting system of interpretive terminology.		

2013 Competencies	2023 Competencies	Changes in Competencies
11. The graduate will be able to evaluate cellular preparations with a high level of accuracy as defined by the program.		
II. BASIC LABORATORY TECHNIQUES	**II. LABORATORY TECHNIQUES**	
1. Upon presentation of a cytologic specimen to the laboratory, the graduate will be able to: a. explain and apply the basic principles for specimen acceptance and rejection. b. have knowledge of different preparation and staining techniques, their advantages and disadvantages, and the impact of each on cell morphology c. select and perform the preparation and staining technique(s) that is most appropriate for a given specimen(s) d. identify and apply principles of quality assurance and quality control as they relate to specimen preparation including, but not limited to: • accreditation/regulatory requirements • equipment performance and maintenance • staining methods • stain and technical quality of preparation e. solve problems in staining and preparation methods f. identify errors that can occur during specimen handling and processing including but not limited to, preparation, staining and instrumentation and apply and implement the most effective resolution	a. The ability to explain and apply the basic principles for specimen collection, acceptance, and rejection including (C): 1) the importance of accurate specimen labeling and maintaining patient/specimen identification throughout the accessioning and slide preparation process; 2) pre-analytic variables including specimen transport, fixatives used, and fixation times for selected specimens; 3) patient safety as it applies to specimen collection, accessioning, and slide preparation; 4) safety of laboratory personnel when handling specimens including appropriate use of personal protective equipment (PPE); 5) describe different preparation and staining techniques, their advantages and disadvantages, and distinguish their impact on cell morphology and interpretation; 6) select and perform the preparation and staining technique(s) that is most appropriate for a given specimen(s); 7) identify and apply principles of quality assurance and quality control as they relate to specimen preparation including, but not limited to: a) accreditation/regulatory requirements; b) equipment performance and maintenance; c) staining methods; and d) stain and technical quality of preparation; 8) Identify and resolve staining and preparation issues; and 9) identify errors that can occur during specimen handling and processing including, but not limited to, preparation, staining, and instrumentation and apply and implement the most effective resolution.	It is more specific about pre-analytic variables and patient safety.
b. The graduate will be able to use the microscope or other instruments to properly visualize the specimen for systematic morphologic review and interpretation with knowledge of proper use and care, to include troubleshooting.	b. The ability to utilize the microscope or other technologies to properly visualize the specimen for systematic morphologic review and interpretation with knowledge of proper use and care, to include troubleshooting. The student will understand the basic function of the microscope including Kohler illumination and techniques for polarization (P).	Remain the same, new wording
3. The graduate will be able to use basic laboratory skills and techniques, including universal precautions, aseptic technique, reagent preparation, sample preparation, filtration, centrifugation, and pipetting and micro pipetting.	c. The ability to use basic laboratory skills and techniques, including universal precautions, aseptic technique, reagent preparation, sample preparation, filtration, centrifugation, and pipetting and micro pipetting (P).	Remain the same.
	d. The ability to describe the process of gross examination of small biopsy specimens according to established laboratory protocols under pathologist supervision and submit tissue for preparation of microscopic slides, including (C): 1) Verification of specimen identification; 2) Accurate measurement; 3) Relevant gross description; 4) Fixative selection; and 5) Basic troubleshooting	Includes the concept of gross examination more specific.

2013 Competencies	2023 Competencies	Changes in Competencies
III. LABORATORY OPERATIONS	**III. LABORATORY OPERATIONS**	
a. The graduate will be able to explain quality control and quality assurance requirements of applicable accrediting/regulatory agencies including, but not limited to requirements related to competency assessment and proficiency testing.	a. The ability to explain quality control and quality assurance requirements of applicable accrediting/regulatory agencies including, but not limited to, requirements related to competency assessment and proficiency testing.	Remain the same.
b. The graduate will demonstrate knowledge of the appropriate slide evaluation limits as outlined by regulatory agencies and demonstrate the ability to document daily workload.	b. Knowledge of the appropriate slide evaluation limits as outlined by regulatory agencies and demonstrate the ability to document daily workload.	Remain the same.
c. The graduate will be able to explain the principles and practices defined by HIPAA.	c. The ability to explain the principles and practices defined by HIPAA (Health Insurance Portability and Accountability Act of 1996).	Remain the same.
d. The graduate will be able to explain the requirements and provide documentation that supports maintenance of certification/licensure to practice cytology.	d. The ability to explain the requirements and documentation necessary for maintenance of certification/licensure to practice cytology	Remain the same.
e. The graduate will have a basic understanding of informatics and demonstrate the ability to effectively use the laboratory information system (LIS) including but not limited to viewing patient history, entering results, and signing out cases.	e. The ability to describe and recognize the application of Information Systems (e.g., Electronic Health Record, Laboratory Information System) including, but not limited to, viewing patient history, entering results, and signing out cases.	Remain the same.
f. The graduate will be able to comply with laboratory safety measures and regulations.	f. Competence in written communication by recording accurate and complete results that are clear and concise.	It is more specific in establish written competency.
g. The graduate will have a basic awareness of emergency preparedness as a member of the healthcare workforce	g. Compliance with laboratory safety measures and regulations.	Remain the same as III. f.
h. The graduate will be able to explain and use applicable contemporary ICD and CPT codes for cytologic specimens.	h. A basic awareness of emergency preparedness as a member of the healthcare workforce.	Remain the same as III. g
	i. The ability to explain and use applicable contemporary billing and coding systems including, but not limited to, ICD (International Statistical Classification of Diseases and Related Health Problems) and CPT (Current Procedural Terminology) codes	Remain the same as III. h, more specific to include billing & coding.
	j. The ability to define and explain the theory, principles, and indications for test development, validation, and implementation	More specific to include the concepts of test development, validation, and implementation in courses.
IV. APPLICATION OF COMPANION TECHNOLOGIES	**IV. COMPANION TECHNOLOGIES**	
1. The graduate will be able to explain the theory, principles, and indications of: a. flow cytometry b. molecular signal detection (GC/CT, PCR) c. molecular diagnostic oncology (e.g., EGFR, ALK, BRAF, KRAS) d. computer-based image-analysis and its applications in ancillary tests applied to diagnostic cytopathology.	a. The ability **to explain the theory, principles, and indications** for tests in cytology / pathology for (C): 1. Flow cytometry; 2. Molecular Diagnostics (e.g., Polymerase chain reaction (PCR), Next-Gene Sequencing (NGS), microarrays); 3. In situ hybridization (e.g., FISH, CISH, ISH); 4. Immunochemistry (e.g., IHC/ICC); 5. Special stains (e.g., AFB, GMS, Fite, mucicarmine, Congo red); and 6. Digital image-analysis (e.g., Quantitative IHC/ICC)	It goes into more detail about the techniques such as: Next-Gene Sequencing (NGS), microarrays, In situ hybridization (e.g., FISH, CISH, ISH); Immunochemistry (e.g., IHC/ICC); Special stains (e.g., AFB, GMS, Fite, mucicarmine, Congo red); and Digital image-analysis (e.g., Quantitative IHC/ICC).
2. The graduate will be able to explain the theory, principles, indications, technical aspects and troubleshooting of*: a. HPV DNA testing b. immunocyto-histochemistry (IHC/ICC)	b. The ability to incorporate the findings and clinical significance of results in cytology / pathology reports under the supervision of the pathologist for (C): 1. Flow cytometry;	Specifies the ability to incorporate important findings into cytological or pathologic reports under the supervision of the pathologist.

2013 Competencies	2023 Competencies	Changes in Competencies
c. FISH/CISH (fluorescent and chromogenic in-situ hybridization) d. standard laboratory digital pathology equipment and procedures, such as, but not limited to digital cameras and photography, digital whole slide imaging scanners, image management, web-screen sharing, and slide viewing. e. *Does not require performance or proficiency	2. Molecular Diagnostics (e.g., Polymerase chain reaction (PCR), Next-Gene Sequencing (NGS), microarrays); 3. In situ hybridization (e.g., FISH, CISH, ISH); 4. Immunochemistry (e.g., IHC/ICC); 5. Special stains (e.g., AFB, GMS, Fite, mucicarmine, Congo red); and 6. Digital image-analysis (e.g., Quantitative IHC/ICC)	
	c. The ability to define and explain the theory, principles, and indications for techniques in cytology / pathology for (C): 1. Telepathology/tele cytology; 2. Digital image acquisition, management (storage, retrieval, and sharing pathology information); 3. Image capture via static photography, dynamic telepathology (viewing real-time images and virtual slides/whole slide imaging); 4. Quantification of specific image features (DNA analysis, morphometric analysis, FISH); and 5. Video conferencing and presentation techniques	Competency IV.2 is more detailed. The concept of image capture is expanded as the concepts of: quantification of specific image features (DNA analysis, morphometric analysis, FISH); and video conferencing and presentation techniques.
	d. The ability to utilize clinical digital cytology/pathology to assist the pathologist as part of a health care team, including, but not limited to, rapid on-site adequacy assessment, intraoperative consultation, and second opinion consultation (P).	More specific in the use of digital assistance.
	e. The ability to indicate areas with adequate morphologic material suitable for companion testing on cytology slides and/or tissue blocks (C).	More specific in the adequacy evaluation.
V. EVIDENCED-BASED MEDICINE	**V. EVIDENCED-BASED MEDICINE**	
1. The graduate will be able to demonstrate the ability to critically evaluate medical literature for its pertinence and reliability.	1. The student will demonstrate (C): a. The ability to critically evaluate medical literature for its pertinence and reliability.	Remain the same.
VI. PROFESSIONAL DEVELOPMENT /PROFESSIONALISM	**VI. PROFESSIONAL DEVELOPMENT /PROFESSIONALISM**	
1. The graduate will be able to explain the importance of continuing education for maintenance of on-going competence.	a. The ability to explain the importance of continuing education for maintenance of ongoing competence	Remain the same.
2. The graduate will be able to demonstrate knowledge of the consequences of specimen evaluation on patient management.	b. Knowledge of the consequences of specimen evaluation on patient management	Remain the same.
3. The graduate will be aware of cytotechnologist opportunities within professional societies and the cytology community at-large (e.g., patient advocacy, volunteerism, education, research).	c. Knowledge of the ethical role and responsibilities of the Cytologist by practicing honesty and integrity in professional duties and the principles of good professional relationships with patients, peers, staff, faculty, and the public.	Remain the same as VI. 4.
4. The graduate will be able to demonstrate knowledge of the ethical role and responsibilities of the cytotechnologist by practicing honesty and integrity in professional duties.	d. The ability to explain their role within the multidisciplinary patient care team and demonstrate communication skills that facilitate effective interactions to enhance patient management and safety.	New wording.
5. The graduate will be able to demonstrate knowledge of the ethical role and responsibilities of the cytotechnologist by practicing the principles of good professional relationships with patients, peers, staff, faculty, and the public.	e. The ability to recognize their impact on the care of the total patient and the consequences of their interpretations.	More specific in the patient care.
	f. The ability to respect patient confidentiality and follow HIPAA regulations	More specific in HIPAA regulations.
	g. Awareness of opportunities within professional societies and the cytology community at-large (e.g., patient advocacy, volunteerism, education, research)	Remain the same as VI. 3.

2013 Competencies	2023 Competencies	Changes in Competencies
This competency is not included in 2013 version.	The student will demonstrate (A): a. The ability to recognize and mitigate the public health crisis of racism and health inequity related to race, gender, age, culture, religion, disabilities, national origin, socioeconomic status, and sexual orientation. b. The ability to respect this diversity when interacting with patients, co-workers, and the entire healthcare team. c. The ability to understand and respect diversity, equity, and inclusion in the workplace and the impact it has on team function. d. The ability to work effectively as a member of a healthcare team by communicating effectively with physicians, other health professionals, and health related agencies	More specific in their role within the heath care team ant patient interaction. Incorporates the concepts of diversity, equity and inclusion.

University of Puerto Rico
Medical Sciences Campus
School of Health Professions
Department of Graduate Programs

Master in Diagnostic Cytology

Program Evaluation Plan

Dr. Alma Camacho, Program Director

February 2025

Program Evaluation Plan

Mission The master's level Cytology Program prepares professionals in the field of cytology through didactic courses and clinical experiences for the development of competencies in the management and diagnosis of cytology tests for the early detection of malignant cells. Through the curriculum, the student develops critical thinking by collaborating with the pathologist and teamwork in an interdisciplinary way in the decision-making process for appropriate management and diagnosis. The student will show human sensitivity and ethical values in the performance of their duties and roles throughout lifelong learning. (*Revised February 2025*)

Minimum Expectations

To prepare competent entry-level cytologists in the domains of cognitive (knowledge), psychomotor (skills), and affective (behavioral) learning.

Program Goals

Program Goal 1 *Recruit students who demonstrate both the academic background and personal qualities necessary to become a competent cytologist.*

Objective	Indicator	Criteria	Source of Information
1.1 Implement an ongoing recruitment mechanism, which ensures the recruitment of highly qualified students.	Interview scores	90% of admitted students will obtain a score of 9 points or above on admission interviews.	Admission report.
1.2 Provide academic counseling by the faculty.	Student Advising	Number of advised students.	Annual achievement report Emails Attendance to recruitment activities

Program Goal 2 *To offer the students the didactic content and appropriate clinical experiences that promote the optimal development of their professional competencies.*

Objective	Indicator	Criteria	Source of Information
2.1 Maintain a diverse program of clinical and didactic education.	The percent of graduates who strongly agree with the program's academic and clinical experience. Updated and	80 % of graduates consider being strongly agree with the program's academic and clinical experiences.	Graduates Survey Courses evaluations

Objective	Indicator	Criteria	Source of Information
2.2 Update and incorporate new clinical and didactic components to enhance the learning experiences of our students.	developed didactic and clinical components.	At least two courses should be evaluated and updated annually.	Faculty meeting minutes Graduates Survey Courses evaluations
2.3 Maintain adequate physical facilities, equipment, and educational/clinical materials.	The percent of students and faculty who strongly agree with the program's facilities, equipment, and educational/ clinical materials.	80 % of graduates and faculty strongly agree with the program's academic and clinical experience.	Program Resources Assessment by Students and faculty
2.4 All clinical practice centers comply with the requirements set forth by the CPRC.	Number of clinical practicum sites in compliance.	100% of the clinical practicum sites in compliance with CPRC requirements.	Student evaluations for clinical sites Program Director direct evaluation

Program Goal 3 *Develop students as cytologists who can contribute with the pathologist and other health professionals to improve the public health through the processing and diagnosis of cytology for the prevention and early treatment of neoplasms and other conditions. (Student Learning Outcomes)*

Objective	Indicator	Criteria	Source of Information
3.1 Graduates will demonstrate professional conduct and provide highly qualified services to the community.	The percentage of employers strongly agrees with employees' professional conduct.	90% of employers strongly agree with graduate's professional conduct.	Employers Surveys
3.2 Graduates will demonstrate proficiency in laboratory techniques for cytology specimens.	The percentage of graduates passing the BOC.	80% of graduates taking the BOC approve of it.	BOC Scores
	The percentage of graduates who strongly agree that the program provides them with the competencies required in laboratory techniques.	90% of graduates strongly agree with acquired competencies in laboratory techniques.	Graduates Surveys
	The percentage of employers strongly agrees with employee's competencies in laboratory techniques.	90% of employers strongly agree with graduate's competencies.	Employers Surveys

Objective	Indicator	Criteria	Source of Information
3.3 Graduates will demonstrate proficiency in the evaluation of cytological specimens.	The percentage of graduates passing the BOC.	80% of graduates taking the BOC approve of it.	BOC Scores
	The percentage of graduates strongly agree that the program provides them with the competencies required in laboratory techniques.	90% of graduates strongly agree with acquired competencies.	Graduates Surveys
	The percentage of employers strongly agrees with employee's competencies in area.	90% of employers strongly agree with graduates' competencies.	Employers Surveys
3.4 Graduates will demonstrate the ability to work in a healthcare team	Percent of employers strongly agrees with employee's ability to work with a health care team.	90% of employers and graduates strongly agree with graduates' ability to work in the health team.	Employers Surveys Graduate Survey
3.5 Graduates will be able to develop a differential diagnosis based on clinical data, diagnostic tests and treatments and their effect on cytological interpretation.	The percentage of employers and graduates strongly agrees with	90% of employers and graduates strongly agree with curriculum content.	Employers Surveys Graduates Surveys

Objective	Indicator	Criteria	Source of Information
	employee's competencies. The percentage of employers and graduates strongly agree with the employee's competencies in area.	90% of employers and graduates strongly agree with curriculum content.	Employers Surveys Graduates Surveys

Program Goal 4 *Prepare the students with the necessary skills and experiences for the satisfactory management of the Cytology Laboratory in coordination with the pathologist and other health professionals in an integrated manner. (Student Learning Outcomes)*

Objective	Indicator	Criteria	Source of Information
4.1 Graduates will demonstrate knowledge of management skills.	The percentage of employers strongly agrees with employee's competencies in management skills.	90% of employers strongly agree with employee's management skills.	Employers Surveys
4.2 Graduates will demonstrate knowledge of quality control and quality assurance skills.	The percentage of employers strongly agrees with employee's	90% of employers strongly agree with the graduates QC and QA knowledge.	Employers Surveys

Objective	Indicator	Criteria	Source of Information
	knowledge in QC and QA.		
	The percentage of graduates strongly agree that the program provides them with the skills required in QC and QA.	90% of graduates strongly agree with their QC and QA knowledge.	Graduates Surveys
4.3 Graduates will anticipate, respond and resolve issues or problems in the laboratory.	The percentage of employers strongly agrees with employee's competency to resolve laboratory issues.	90% of employers strongly agree with the graduate's competency to resolve laboratory issues.	Employers Surveys
	The percentage of graduates strongly agree that the program provides them with the knowledge and skills to resolve laboratory issues.	90% of graduates strongly agree with knowledge and skills to resolve laboratory issues.	Graduates Surveys

Objective	Indicator	Criteria	Source of Information
4.4 Graduates will work collaboratively and effectively with team members to accomplish laboratory goals.	The percentage of employers strongly agrees with employee's collaborative work.	90% of employers strongly agree with the graduate's competency for collaborative work.	Employers Surveys
	The percentage of graduates strongly agree that the program provides them with the knowledge and skills to work collaboratively.	90% of graduates strongly agree with their knowledge and skills for collaborative work.	Graduates Surveys

Program Goal 5 *Provide the community with a highly competent professional in cytology diagnosis.*

Objective	Indicator	Criteria	Source of Information
5.1 Recruit students who possess the academic background and aptitude, as well as the skills necessary to practice the profession of Cytology.	Retention Rate.	80% of admitted students graduated.	Graduation lists.
5.2 Provide graduates with what they need to meet the needs of the employer.	Employment Rate	80 % of graduates are employed between one and six months after graduation date.	Employers Surveys Graduates Surveys

Program Goal 6 *Develop the skills of critical thinking and problem-solving in the students so that they can evaluate and take decisions in the context of their roles throughout their long-life. (Student Learning Outcomes)*

Objective	Indicator	Criteria	Source of Information
6.1 Encourage critical and reflective thinking in the student in their intervention with other professionals in diagnosing patients.	The percentage of employers strongly agrees with the employee's competencies. At the end of each semester, the student submits a Reflection.	90% of employers strongly agree with employees' competencies. 100% of students comply with the reflection and rubric submission.	Employers Surveys Reflective Essay

Objective	Indicator	Criteria	Source of Information
6.2 Critically evaluate medical literature, its pertinence and reliability to consider in the decision-making process.	The percentage of students who approve of the Capstone Project.	100% of students approving the Capstone Project	Capstone Project

Program Goal 7 *Promote self-learning throughout long-life as responsibility in its academic/professional and personal development. (Student Learning Outcomes)*

Objective	Indicator	Criteria	Source of Information
7.1 Encourage the student to assume responsibility by identifying academic/professional and personal improvement.	The Percentage of students identified as at risk of failure due to academic or personal situation who are referred to the counseling program and manage to complete the degree.	100% of referred students complete the degree.	Report of Referral to Counseling
7.2 Raise students' awareness of the importance of continuing education in excellence in professional practice.	The Percentage of graduates that participate in continuing educations.	90 % of graduates demonstrate interest in participating of continuing education.	Program Exit Survey

Program Goal 8 *Train professionals sensitive to the human and ethical values that promote social responsibility and justice on a personal level, interprofessional and the community that serves.* The questionnaire (Employer Survey) used for measuring the criteria is provided by the accrediting agency of the Program: Cytotechnology Programs Review Committee (CPRC). *(Student Learning Outcomes)*

Objective	Indicator	Criteria	Source of Information
8.1 Provide students with the foundations and principles of professional ethics.	The percentage of students that present its community project.	100% of students approve of their community project.	Community project
8.2 Graduates must show ethical conduct in the professional practice.	The percentage of employers strongly agrees with the employee's competencies.	90% of employers are strongly agree with employees' competencies.	Graduates Surveys