UNIVERSIDAD CENTRAL DEL CARIBE
MEDICAL IMAGES TECHNOLOGY PROGRAM
BAYAMON, PUERTO RICO

STUDENTS' HANDBOOK

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UNIVERSIDAD CENTRAL DEL CARIBE
MEDICAL IMAGES TECHNOLOGY PROGRAM

STUDENT MANUAL

Universidad Central del Caribe recognizes the right of all persons to work and to advance on the basis of merit, ability and potential, and is therefore committed to taking any and all steps necessary to identify and alter policies, practices or any institutional barriers which cause or perpetuate inequality. It is the policy of this University to recruit, employ and promote staff and to admit and serve students without regard to race, religion, gender, age, national origin, or disability status.

This Manual is published by the Medical Imaging Technology Program, Universidad Central del Caribe, Bayamón, Puerto Rico for the use of its students. This Manual is a summary of the rules and regulations related to Admission of Students, Evaluation and Promotion of Students and Clinical Practice Rotations. Full documents are available at the Medical Images Technology Program offices and in the Reserve area of our Library for review by all those interested.

Information in this Manual is subject to change without previous notice; and/or the University reserves its right to make changes in calendars, positions, rules, academic requirements, programs and any other aspects after publication date. In that same order, documents mentioned in this Manual could have change without previous notice.

This English version of the ‘Manual de Estudiantes” is prepared by the MITP Program Faculty for accreditation purposes. In case of misinterpretation, the Spanish Version will prevailed and hold final.

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HISTORICAL BACKGROUND OF UNIVERSIDAD CENTRAL DEL CARIBE

Universidad Central del Caribe's School of Medicine was registered under the Commonwealth of Puerto Rico laws on March 18, 1976. Universidad Central del Caribe was established to develop different educational programs on the health sciences. It began operations as the first private school of medicine in Puerto Rico on September 8, 1976. It's very first class graduated on May 31, 1980. It is licensed by the Council on Education of the Commonwealth of Puerto Rico since 1976 and by the Liaison Committee on Medical Education (LCME) of the American Medical Association and the American Association of Medical Colleges since 1979.

Renovation of the License of Authorization by the Council on Education of the commonwealth of Puerto Rico was attained in 2017 after a site visit, which included institutional and programmatic evaluation. Middle State Commission on Higher Education (MSCHE) accreditation was obtained in 2003 and after various renovation processes is valid until 2025.

In 1991, the School of Medicine began offering degrees of Masters in Science and Master in Arts in Biomedical Science with majors in Anatomy, Physiology, Biochemistry, Pharmacology and Cellular biology. This offering is geared towards offering theoretical and research experiences within these fields to persons interested in following academic, research or educational careers.

Concurrently, in 1993 Universidad Central del Caribe develops the Center for Studies in Addition, ascribed to the Family Medicine and Community Health Department of the School of Medicine. This Center's goals are to offer support services and education to health professionals working with persons subjected to substance abuse. In 1996, two offerings were added to the University Catalog in the field of Substance Abuse counseling: a post-Bachelor Certificate and a Master in Science. This was the first such program in Puerto Rico and one of the few established in the United States of America.

The Radiologic Technology Program began its educational work in August 1977, with an enrollment of 30 students, and three full time instructors and six part time teachers. Its first class graduated in May 1979. It was the very first Radiologic Technology program in Puerto Rico to offer a University level Associate Degree on this area and the first to be created in a private non for profit institution.

Our Program was awarded a License of Authorization from the Puerto Rico Higher Education Council since its inception. Program's Curriculum was designed following the curriculum guides of the American Society of Radiologic Technologists (ASRT) and the Joint Review Committee on Education in Radiologic Technology (JRC-ERT), this last agency is the accrediting organization of Radiologic Technologist and Radiation therapy programs in the United States of America as recognized by the United States Department of Education. Necessary adjustments were introduced to the curriculum to the requisites of the above organizations to adapt it to the needs of the Puerto Rican professional practices.

During 1993, the Radiologic Technology Program started its development process with the authorization of a post-Associate Certificate in Diagnostic Medical Ultrasound. This was the first of such specialization certificates that allow graduates from an Associate degree in Radiologic Technology program to acquire the necessary theoretical and practical knowledge to pursue a career in the other medical diagnostic imaging modalities. The academic offering for this Certificate has duration of one year divided into two semester (15 weeks) periods.

The Radiologic Technology Program continued growing when in January 2000 started a new post-Associate Certificate in Mammography. This is the first academic program of its type in Puerto Rico and one of only a few in the United States of America. This specialization certificates allows graduates from an Associate degree in Radiologic Technology program to acquire the necessary theoretical and practical knowledge to pursue a career in the area of breast health, both in female and male. Because of the growth of the combine tools of Mammography and Ultrasonography, Sonomammography was included as part of this offering to better prepares this specialization professional so to offer a more deep service to his patient. This academic offering has duration of one semester (15 weeks).

In 2003, two additional certificates were added to our offering, the post-associate certificates in Computerized Tomography and in Magnetic Resonance. These certificates offer students a deep grasp of these two modalities by providing knowledge in the: operational fundaments of the modalities, the protocols utilized in each of these modalities to enhance diagnosis and the recognition of normal anatomy, pathology and normal variations findings in the images produced with them. These two certificates last for one semester and are offered: CT in the fall session and MRI in the spring session.

In August 2006, we started a new Bachelor in Science in Diagnostic Images. This Bachelor in Science degree provide graduates from a Radiologic Technology Associate Degree the opportunity to combine 42 general education credits, the Associate degree, two of the specialization certificates offered by Universidad Central del Caribe and five capstone courses to complete the Bachelor degree. Capstone courses include: Administration and Supervision of a Medical Images Center; Pplanning and Evaluating Medical Images services; Pharmacology in the Medical Images field, and a Sociology of Health and Disease course. A professional reading seminar is also part of the requirements of this program.

As a complement to all this changes, in 2004, the Institution officials accepted a recommendation from the Program's Faculty for a change in the name of the program to better reflect our field of work and incorporate our growing tendency in the medical images field. As of 2005, we are the: **"Medical Images Technology Program"**

In its strive to further the development of medical and health options for its constituents, Universidad Central del Caribe commenced the first Chiropractic School in Puerto Rico in 2018. This school will provide a much needed, Chiropractic is one of the fast growing specialties in health services attending spine and musculo-skeletal conditions and their effects on the nervous system and overall health.

ORGANIZATION OF THE UNIVERSIDAD CENTRAL DEL CARIBE

BOARD OF TRUSTEES

The Board of Trustees is composed of 9 members. Board officials are: President, Vice-President, Secretary and a Treasurer. The Board of Trustees establishes policies, reviews, approves general rules, and oversees University operations.

Sr. Adolfo Krans; Presidente
Dr. Francisco de Torres, M.D.; Vice-Presidente
Lcdo. Oscar González Badillo, JD; Secretario de Actas
Dr. Rafael Campos
Sr. Jorge Colón Gerena
Sr. Edgardo Fabregas
Lcdo. Alfredo Volckers
Lcdo. David Rivé Power
CPA Eduardo J. Ramos
Sr. José R. Rivera Barrera

ADMINISTRATION OF THE UNIVERSIDAD CENTRAL DEL CARIBE

Waleska Crespo Rivera, Dr PH, MPH; President
The President is named by the Board of Trustees and is the Chief Executive Officer of the Universidad Central del Caribe.

Universidad Central del Caribe has four Deanships, which look upon the different operation areas academic and administration wise.

Nereida Diaz Rodríguez, Ph.D.; Dean of Academic Affairs
The **Dean for Academic Affairs** oversees the following areas:

1. Registrar's Office
2. Curriculum and Faculty Development Office
3. Institutional Effectiveness Office
4. Academic Resources Center (ACR)
5. Continued Education Office

Omar Pérez, Ph.D.; Dean of Admissions and Students Affairs
The **Dean of Admissions and Student Affairs** oversees the following areas:

1. Admissions Office
2. Orientation and Counseling Office
3. Financial Aid Office
4. Student Medical Services

Emilia Soto, M.H.S.A.; Dean of Administration
The **Dean of Administration** is in charge of the following areas:

1. Human Resources Office
2. General Services and Operations Division

3. Fiscal Resources Office
4. Purchasing Office

José Ginel Rodríguez, MD; Dean of Medicine

The **Dean of Medicine** has under his responsibility the following areas:

1. Medical Education and Curriculum Office
2. Graduate Medical Education Office
3. Office for Medical Electives
4. Biomedical Research Development Office

Mildred Rivera Marrero, MPH; Dean for Institutional Development

The Dean for Institutional Development has responsabiliity for the following areas:

1. Graduate Reach Office

MEDICAL IMAGES TECHNOLOGY PROGRAM

MISSION AND GOALS

The Medical Images Technology Program of the Universidad Central del Caribe has been developed with the purpose of educating and training qualified personnel to provide direct service to patients producing images for medical diagnosis through the use of sophisticate equipment and in a multidisciplinary environment, covering the need for this health professional in Puerto Rico. Our vision is to prepare students for entry-level positions in the medical imaging field with pride for their profession; compassion and empathy for their patients and enthusiasm for lifelong learning.

Mission Statement:

> "To educate and train qualified personnel in the field of medical imaging technology, to provide direct service to patients using the latest in medical imaging modalities, with pride for the profession, compassion and empathy for patients and enthusiasm for lifelong learning."

Program Goals are defined as:

- To provide the opportunity to every qualified individual, regardless of race, creed, national origin and gender to seek the experiences, competencies, challenges, and knowledge that is required of an entry level professional in the medical images field.
- To provide students with broad experiences and academic support in the didactic and clinical aspects to allow them to develop and integrate knowledge, and develop competencies and attitudes needed for the optimum performance of his/her skills.
- To contribute to the students' development in the personal, professional and humanistic aspects through academic counseling support services and complementary activities.
- To support Puerto Rico's Radiography professionals through the development of continued education activities.

All of our offerings are based on the same professional principles providing its students with a comprehensive education comprised of structured and meaningful learning experiences through a didactic and clinical competency based education. All our courses, both didactic and clinical, encompass the required context and experiences deemed appropriated for the education of competent, knowledgeable and compassionate professional.

Our Program is regularly submitted to evaluations with the purpose of obtaining certification from the accreditation agencies that assess academic excellence.

MEDICAL IMAGING TECHNOLOGY PROGRAM ORGANIZATION

Our program is under the direct supervision of the Dean of Health Professions of the University who is responsible of in the execution of goals and objectives. The President names the Program's director by recommendation of the Dean of Academic Affairs, after faculty consultation. He is the academic officer in charge of the curriculum, evaluation, student's promotion and admission to the Medical Imaging Technology Program. In addition, he is responsible for the operative and administrative areas of the Program.

The program regular faculty is composed of five (5) full time educators. They are responsible for teaching technical courses and evaluate the students in the clinic phase of their training. Each one of the regular Faculty members is in charge of the coordination of at least one of the post-Associate certificates.

Our Program Faculty includes part time faculty in the Medical Imaging area, also with instructors on other different medical, biological and psycho-socials content areas. Faculty members strive to give a complete education to the students, by enabling him/her to offer a better service to patients, viewing them as complete human beings and not just a condition.

As of 1993, with the establishment of the post-Associate Certificate in Diagnostic Medical Ultrasound, we started our horizontal development. The posterior addition of the post-Associate Certificate in Mammography (2000), in Computerized Tomography and in Magnetic Resonance (2003) and the Bachelor in Science in Diagnostic Images in 2006 required changes in the Program's organization. Each of these certificates has a Coordinator in charge of the academic and clinical aspects of each corresponding Certificate. The Program Director carries the final responsibility for all administrative and academic aspects of all offerings within the Medical Imaging Technology Program.

RADIOLOGIC TECHNOLOGY PROGRAM FACULTY

REGULAR FACULTY

José Rafael Moscoso-Álvarez, TR, BSc, MPH, EdD, FAEIRS
Professor and Program' Director

Doctor in Education, 2005
Major in Education Administration and Supervision
Río Piedras Campus, University of Puerto Rico
Master degree in Public Health, 1985
Interest area in Public Health Administration
Public Health School, Medical Sciences Campus, University of Puerto Rico
Bachelor's degree in Natural Sciences, 1979
Minor in Environmental Sciences, Río Piedras Campus, University of Puerto Rico
Radiologic Technology Certificate, 1978 (Convalidated to an Associate Degree in Radiologic Technology in 2006)
College of Health Allied Professions, Medical Sciences Campus, University of Puerto Rico

Elaine Ruiz Izcoa, RT (R), MPH, BSc,
Assistant Professor; Radiology Coordinator

Master in Public Health, 1999
Interest area in Health Services Administration and Environmental Sciences
Public Health School, Medical Sciences Campus, University of Puerto Rico
Associate degree in Radiologic Technology, 1993
Radiologic Technology Program
Universidad Central del Caribe, Bayamón, Puerto Rico
Bachelor's degree in General Sciences, 1991
Faculty of Natural Sciences, Río Piedras Campus, University of Puerto Rico

María Enid González Méndez, RT (R)(M), BSc, MPH
Assistant Professor; Mammography Coordinator

Juris Doctor, 2014
Law School, Rio Piedras Campus
Universidad of Puerto Rico,
Master in Public Health, 2001
Mayor in Mother and Child Health
Public Health School, Medical Sciences Campus, University of Puerto Rico
Bachelors in Health Sciences, Mayor in Education, 1996
College of Allied Health Professions, Medical Sciences Campus, University of Puerto Rico
Associate degree in Radiologic Technology, 1989
Radiologic Technology Program, Universidad Central del Caribe, Bayamón, Puerto Rico

Miriam E. Rodríguez, BSMS, ARDMS
Instructor; Medical Diagnostic Ultrasound Coordinator

Bachelor in Science in Medical Sonography, 2009
Universidad del Este, Carolina
Associate degree in Medical Ultrasound, 1996
Universidad del Este, Carolina

Juan Pérez-Ocasio, RT (R), MPH
Auxiliary Professor; CT and MRI Coordinator

Master in Public Health, mayor in Environmental Health, 2003
Public Health School, Medical Sciences Campus, University of Puerto Rico
Associate degree in Radiologic Technology, 1992, Magna Cum Laude
Radiologic Technology Program, Universidad Central del Caribe, Puerto Rico
Bachelor in Science in Natural Science, Major in Biology;1990
Faculty of Natural Sciences, Río Piedras Campus, University of Puerto Rico

ADJUNCT FACULTY

Roberto López-Rodríguez, Ma.E.
Computer Literacy Instructor

Master in Arts in Education, Educational Technology; 1994
Sacred Heart University; Santurce, Puerto Rico
Bachelor in Arts in Education; Major in Educational technology; 1991
Bayamón Central University; Bayamón, Puerto Rico

Mildred I. Rivera-Vazquez, CIS,
Lecture Seminar Instructor

Computerized Information Systems Manager, 2003
Universidad de Puerto Rico, Rio Piedras Campus
Master in Arts in Library Sciences, 1986
Universidad de Puerto Rico, Rio Piedras Campus
MA Hispanic Civilization, 1982
University of California at Santa Barbara
Bachelor in Arts in Economy, 1977
Universidad de Puerto Rico, Rio Piedras Campus,

José Luis Torres, Ph.D.
Sectional Anatomy Instructor
Doctor in Philosophy in Pharmacology; 2011
Department of Pharmacology
University of Puerto Rico, Medical Science Campus, Puerto Rico
Master in Science in Anatomy, 1976
Department of Anatomy
University of Puerto Rico, Medical Science Campus, Puerto Rico
Bachelor in Science in Biology; 1971
University of Puerto Rico, Mayagüez, Puerto Rico

Natalia Valentín Caro, MS
Anatomy and Physiology Instructor
Master in Biomedical Sciences, 2011
Major in Anatomy
Universidad Central del Caribe, Bayamón, Puerto Rico
Bachelor in Science in Biology; 2005
University of Puerto Rico, Río Piedras, Puerto Rico

Michael Vélez, MsD
Sociology Instructor
Master in Science in Demography; 1995
Medical Sciences Campus, School of Public Health, University of Puerto Rico
Bachelor in Arts in Education, Major in Mathematics; 1989
Río Piedras Campus, University of Puerto Rico
Bachelor in Science, Major in Computerized Mathematics; 1986

PART TIME FACULTY

Jessica Aguayo-Rosario, BSDI
Mammography Anatomy, Physiology and Pathology Instructor
Bachelor in Science in Diagnostic Images, 2011
Majors in Mammography and Computerized Tomography
Universidad Central del Caribe, Bayamón, Puerto Rico
Associate Degree in Radiologic Technology, 1998, Magna Cum Laude
Medical Images Technology Program
Universidad Central del Caribe, Bayamón, Puerto Rico

Carlos Bermúdez-Sánchez, M.S.
Spanish Language Instructor

Master degree in Humanities, Major in Hispanic Linguistics; 1978
Río Piedras Campus, University of Puerto Rico
Bachelor degree in Humanities, Major in Hispanic Studies; 1973
Río Piedras Campus, University of Puerto Rico

Edgar Colón-Lancara, RT (R), PhD.
Operational Fundaments in CT and MRI and Pharmacology in the Bachelor
Ph.D. in Health Service Administration; 2004, Summa cum laude Atlantic International University, FL.
Master in Public Health; Major in Epidemiology; 1998
Medical Sciences Campus, School of Public Health, University of Puerto Rico
Bachelors in Health Sciences, Mayor in Administration, 1992
College of Allied Health Professions, Medical Sciences Campus, University of Puerto Rico
Associate Degree in Radiologic Technology, 1989
College of Health Allied Professions, Medical Sciences Campus, University of Puerto Rico

Anibal Díaz-Morales, MPH.
Administration and Supervision Instructor
Master in Public Health; 1986
Medical Sciences Campus, School of Public Health, University of Puerto Rico
Bachelors in Health Sciences, Mayor in Administration, 1984
College of Allied Health Professions, Medical Sciences Campus, University of Puerto Rico
Radiologic Technology Diploma, 1973
District Hospital School of Radiologic Technology

Rosa M. Fernández Mora, M.P.H.
Ultrasonography Small Parts, Obstetrics and Research
Master in Public Health; Major in Epidemiology; 1986, Summa Cum Laude and Dean's List
Medical Sciences Campus, School of Public Health, University of Puerto Rico
Bachelors in Health Sciences, Mayor in Education, 1984, Magna Cum Laude
College of Allied Health Professions, Medical Sciences Campus, University of Puerto Rico
Associate Degree in Radiologic Technology, 1983, Magna Cum Laude
College of Health Allied Professions, Medical Sciences Campus, University of Puerto Rico

Juan Fontanez, M.D.
Anatomy, Physiology and Pathology Instructor for Computerized Tomography and Magnetic Resonance certificates.
Medicine Doctor,
School of Medicine, Universidad Autonoma de Santo Domingo
Santo Domingo, Dominican Republic
Bachelor in Natural Science, General Major,
Natural Science Faculty, Río Piedras Campus, University of Puerto Rico

Crucita Orama-Feliciano, Ph.D.
English Language Instructor
Ph.D in Curriculum and Teaching: Language, Literacy and Learning; 1995
Fordham University, Lincoln Center, NY
Master in Arts, Major in English; 1974
Interamerican University of Puerto Rico, Hato Rey Campus

Bachelor in Arts, Major in English, minor in Sociology; 1968
Río Piedras Campus, University of Puerto Rico

Sylvia Pérez-Sierra, Bs.H.S.
Mammography Anatomy and QA Instructor
Bachelor in Science in Health Professions, Major in Education, 1999
Medical Science Campus, University of Puerto Rico
Associate Degree in Radiologic Technology, 1986
Puerto Rico Junior College, Río Piedras, Puerto Rico

Ana Ivette Rodríguez-Martínez, BSc, MEd, ARDMS
Ultrasound Physics and QA Instructor
Master in Education, 2005
Major in Education Technology
Sacred Heart University, Santurce, Puerto Rico
Associate degree in Diagnostic Ultrasound, 1996
Science and Technology Department, Colegio Universitario del Este, Puerto Rico
Bachelor in Sciences in Natural Sciences, Major in Biology; 1988
University College of Cayey, University of Puerto Rico

Jorge I. Rodríguez Múñiz, BSID
Physics and Positioning Laboratory Instructor
Bachelor in Science in Diagnostic Images, 2015
Mayor in Computerized Tomography and in Magnetic Resonance
Universidad Central del Caribe, Bayamón, Puerto Rico
Associate Degree in Radiologic Technology, 2012
Universidad Central del Caribe, Bayamón, Puerto Rico

Gladys Rodríguez, M.S., R.N.
Patient Care and Health Integral Concepts Instructor
Master in Arts in Education, Major In Biology Curriculum; 2003
University of Phoenix, Puerto Rico
Bachelor in Science in Nursing; 1976
Universidad Central del Caribe, Puerto Rico
Nursing Diploma; 1971
District Hospital's Nursing School, Puerto Rico

AFFILIATED INSTITUTIONS

The Medical Imaging Technology Program counts with over forty-two (42) clinical affiliates which serve as clinical training areas for students registered in its academic offerings. Each Clinical Affiliation center designates a Clinical Supervisor. Radiologic technologists of the affiliated institution participating in the students' training are designate as Clinical Instructors of the Program. This Clinical Supervisor and Instructors have ad-honorem appointment. For a list of current affiliates see Clinical Practice Rules and Regulations.

MEDICAL IMAGING TECHNOLOGY PROGRAM STANDING COMMITTEES

To fulfill responsibilities in the selection and admission of applicants, evaluating the academic performance of students for corresponding promotion and the periodic revision of the

curriculum, the Director has three permanent Program committees: Admission of Students, Evaluation and Promotion of Students and the Curriculum Committee. These Committees respond to the Program Director and submit to him their recommendations.

Admissions Committee

This Committee is responsible for the evaluation and selection of candidates for admission to the program. Candidates are to be evaluated exclusively based on established criteria without any consideration as to social origin, religion or political creed, race, gender, age, national origin, physical disability or other element subject to discrimination.

The functions of the Admissions Committee are:

A. Develop promotional strategies of the Program and assure that the information reaches most of the high schools, and institutions of higher education in Puerto Rico.
B. Evaluate applications for admission received and complying with the established requirements.
C. Evaluate applications for readmission and transfer and make recommendation about student's allocation.
D. Select applicants to be admitted based on established criteria; academic work, interest and academic potential.
E. Revise and update the Admission Rules and Regulations.

Evaluation and Promotion of Student Committee

This Committee is responsible for the evaluation and promotion of the students in the Program, basing their decisions exclusively on the established requirements as established in the Evaluation and Promotion Rules and regulations without the consideration of issues which could constitute discrimination of any kind.

The functions of the Evaluation and Promotion of Student Committee are:

A. Develop the necessary criteria to evaluate and promote, in an adequate way, the students in the Program.
B. Evaluate the performance of the students in each academic period in order to recommend students promotion according to merits and academic progress and identify those students to be considered for academic probation or suspension.
C. To recommend allocation for readmission student's.
D. Revise and update the Evaluation and Promotion Regulations

Curriculum Committee

This committee is responsible of evaluating and recommending changes on the course offerings in relation to contents, evaluation, prerequisites and continuum. It is also responsible of recommending a course program in accordance with the realities and necessities of the Medical Imaging Technology profession.

AD-HOC Committees

The Director of the Program in accordance with the established regulations and with the approval of the faculty of the Program can name special committees of limited duration for specific purposes.

Student Participation

As been established in the Student's Rules and Regulation of the University (Chapter 2, Article 5), students can develop and participate in different organizations created by them. The

General Students Council is the official representative structure by means of which they participate in the different committees of the University.

In the Medical Imaging Technology Program, the students elect representatives to the Curriculum, Admissions and Evaluation and Promotions of students Committees. In order to guarantee the confidentiality of the student's records, students are excused form meetings where other student's issues are in discussion.

RULES AND REGULATIONS OF THE MEDICAL IMAGING TECHNOLOGY PROGRAM

The Medical Imaging Technology Program is ruled by Regulations that define the way and means in which its operations are conducted in terms of: Admissions, Evaluation and Promotion of students, Clinical Area Rotation.

Information included in this Manual related to Admissions, Evaluation and Promotion of Students and with Clinical Area Practice, is a summary of the Rules and Regulations of these areas. Final determination of specific cases is going to be held based on said Regulations.

Copies of the mentioned documents are available in the Program's office and at the Library's Reserve Area of the University for evaluation and consultation of interested persons.

OFFERINGS OF THE MEDICAL IMAGES TECHNOLOGY PROGRAM
EDUCATIONAL PROGRAMS

ASSOCIATE DEGREE IN RADIOLOGIC TECHNOLOGY

Description of Radiologic Technology

Since its discovery in 1895, X-rays has been an indispensable tool in the diagnosis and treatment of diseases. Radiology has continued to be used in all levels and environments of the medical field to help people maintain and acquire health. Ionizing radiation is also utilized in animal health and industrial settings to visualize things that otherwise would be obscure to the bare eye. Radiation has long proved its value in the treatment of disease by destroying abnormal cells.

The utilization and research in the area of the health images has given way to many new modalities which provide to the health care providers additional tools in their quest for helping others. Nuclear Medicine, Thermography Computerized Tomography, Ultrasound and Magnetic Resonance are just some of the tools of the trade which complement the basic conventional radiology image. Even though the existence of many different technologies the basic x-ray mage continues to be a must in the evaluation and diagnosis of disease.

Description of a Radiologic Technologist

A Radiologic Technologist is the Health professional that produces diagnostic images through the utilization of specialized equipment working with ionizing radiation and other electronic means. He/she is responsible for producing quality images, gather patient history/information and submit his findings to a certified physician for analysis and diagnosis. The Radiologic Technologist will provide services to patient/clients in the most variable of settings, ranging from Hospital, Diagnostic and Treatment Centers and stand-alone offices, being these public or private.

The Radiologic Technologist is responsible of assuring the safety and well-being of the patient /client under his charge and as a member of the health professional team has the additional responsibility of educating, supporting and serving his/her patient/client.

Profile of a Radiologic Technologist

A Radiologic Technologist is capable of:

- Performing radiographic procedures to achieve quality images that include unequivocal diagnostic information of the anatomic structure and of possible pathologic conditions.
- Facilitating the diagnosis by integrating medical information, clinical history and the images produced.
- Integrating quality assurance procedures to his/her professional duties as to maintain a consistent excellency level in his work.
- Performing his/her duties in such a way that due respect and empathy for the human being prevails.
- Practicing radiation protection and radiation safety techniques in way that minimizes radiation exposure to patients, self and others.
- Providing patient care and comfort as well as recognizes emergency patient conditions and initiate emergency lifesaving first aid and basic life support.
- Thinking critically to act appropriately in solving problems of non-routine and emergency situations.

- Assisting the Radiologist in those invasive procedures requested or needed to fully evaluate functional conditions.
- Participating in professional activities and continuing education.
- Utilizing insights gained in general education courses to promote continued professional and personal growth and lifelong learning.
- Demonstrating an understanding of advanced imaging modalities.
- Communicating effectively and professionally in the medical environment and function as a team member in the radiography department.
- Assisting all patients with consideration and respect to their personal beliefs and without any sign of discrimination.
- Operating the diagnostic equipment according to recommended security requirements.

ACADEMIC CONTENTS ASSOCIATE DEGREE IN RADIOLOGIC TECHNOLOGY

This program comprises three academic years comprise of six semesters. This academic program is divided into closely related periods of didactic and clinical practice. All students enrolled in the Radiologic Technology Program must comply with all academic requisites, didactic and clinical, established in the Program's curriculum.

At the moment a student begins his academic instruction, he/she is assigned to clinical rotations in the Affiliated institutions. The Program's Curriculum is designed in such a way that the balance between didactic and clinical requisites changes as the student progress in their training, increasing clinical responsibilities as the student approaches completion of the program. This system allows the student to adapt to professional life and at the same time achieve a more ordered transition towards work entry level once he/she finishes training.

After the student completes all academic and administrative requirements he/she receives the Associate Degree in Radiologic Technology and will be eligible to sit at the Puerto Rico's Radiology and Radiotherapy Technologists Examination Board and at the American Registry of Radiologic Technologists tests.

COURSE CONTINUUM

CÓDE	COURSE TITLE	CR	HORAS
First year; First Semester			
EN-101	Basic English I	3	45
SP-101	Basic Spanish I	3	45
CN-101	Science Fundaments	3	45
MT-101	Fundaments of Mathematics I	3	45
CP-101	University Life	N/C	15
RT-110A	Introduction to Computerized Systems	3	45
Semester Credit Totals / Hours		15	225
First year, Second Semester			
EN-102	Basic English II	3	45
SP-102	Basic Spanish II	3	45
RT-101	Introduction to Radiologic Technology (includes clinical hours)	3	120
RT-103	Human Anatomy I (c/lab.)	3	60

RT-216	Patient Care in Radiology (c/lab.)	3	60
Semester Credit Totals / Hours		15	225
YEAR Credit Totals / Hours		**30**	**450**
Second Year, First Semester			
RT-104	Human Anatomy and Physiology II (c/lab.)	3	60
RT-107	Principles of Radiographic Exposure (c/lab)	2	30
RT-111	Radiographic Physics	3	45
RT-113	Radiographic Procedures and Evaluation I (c/lab.)	3	60
RT-202B	Clinical Practice I	2	220
Semester Credit Totals / Hours		**13**	**535**
Second Year, Second Semester			
RT-108	Principles of Image Acquisition and Evaluation	3	45
RT-211	Radiobiology	3	45
RT-213	Radiographic Procedures and Evaluation II (c/lab.)	3	60
RT-203B	Clinical Practice II	2	220
RT-303	Sectional Anatomy (c/lab.)	3	60
Semester Credit Totals / Hours		13	430
YEAR Credit Totals / Hours		**26**	**985**
Third Year, First Semester			
RT-115B	Radiologic Pathology	3	45
RT-204	Clinical Practice III	3	330
RT-314*	Radiographic Procedures and Evaluation III (c/lab.)	2	45
RT-316	Advance Patient Care	3	45
RT-315A	Legal Aspects Seminar	1	15
Semester Credit Totals / Hours		12	480
Third Year, Second Semester			
RT-320	Radiographic Quality Assurance	4	60
RT-350*	Professional Examination Review (c/Lab)	1	45
RT-414	Introduction to Imagenology	3	45
RT-205	Clinical Practice IV	4	440
Semester Credit Totals / Hours		12	590
YEAR Credit Totals / Hours		**24**	**1070**
Total General Education Credit / Hours		***21***	***315***
Total Professional Education Credits / Hours		***49***	***1,090***
Total Clinical Education Credits / Hours		***10***	***1,110***
TOTAL ASSOCIATE DEGREE CREDITS / HOURS		***80***	***2,505***

Course Description

First Year, First Semester

CP-101: University Life (0 credits)
The University Life course provides students with the skills needed to achieve a successful academic life: study habits, problem solving and critical thinking, time management, among others. Course deals with self-consciousness, recognition of strengths and weaknesses, and teamwork in the process of developing professional skills.

CN-101: Fundaments of Science: Chemistry and Physics (3 credits)
This course is designed to introduce topics in chemistry and physics at an entry level leading to a conceptual understanding of how these principles relate to everyday life. The topics in Physics in this course include Newton's laws, properties of matter, heat and thermodynamics, electricity and magnetism, and waves. The topics covered in Chemistry are measurements, nomenclature, atomic bonding, states of matter, solutions, equilibria, acids, bases, and pH. Students will apply these principles using practical examples, facilitated discussions, and experiments conducted through a virtual laboratory.

EN-101: English I (3 credits)
Deals with the basic structures of the language emphasizing their functional use and application aimed toward guiding students in attaining a greater mastery of such basic skills as: listening, reading, writing as a mean of improving their oral and written expression. Teaching strategies includes lectures, workshops and integration exercises and assignments. Students will be evaluated through tests, quizzes, special assignments, individual and group presentations, attendance and participation in programmed activities.

MT-101: Fundaments in Mathematics (3 credits)
This course comprises a review of the basic mathematical skills: integer number properties and operations, exponential notation, algebraic properties, calculations with polynomials and factorization. Lineal equations with integers and fractions and the formulation and resolution of problems with variables. Mathematical problems focused in science will be discussed.

RT-110: Introduction to Computer Systems (3 credits)
Introductory course dealing with concepts of the operations and programming of computerized system. Appropriate terminology and foundations on the use and operations of computers in the health field are discussed. Student acquires a functional knowledge of general use applications: Word, PowerPoint, Excel and Windows.

SP 101: Basic Spanish I (3 credits)
Introduction to the Spanish language as a technical expression vehicle. Basic skills and concepts of written and oral communication in Spanish focused in the professional field are covered.

First Year, Second Semester

EN-102: Basic English II (3 credits) / Pre-requisite EN-101
Continues the development of English language communication skills with applications to the professional life.

RT-101: Introduction to Radiologic Technology (3 credits)

Introductory course which presents Radiologic Technology as a science and other aspects related to this profession. The course covers basic medical terminology relevant to the Medical Images field. Includes first clinical practice period (60 hours) with exposure to the operation of the imaging center.

RT-103: Human Anatomy and Physiology I (3 credits)
Course oriented to introducing students to the basic anatomic and physiologic principles of the human body throughout descriptive Anatomy by regions and systems. Emphasis is given to the chemical, cellular, skeletal and muscular components of the human body. Course is complemented with laboratory experiences.

RT-216: Basic Patient Care (3 credits)
Comprises basic nursing procedures required for the care of the patient in the radiology department. Principles of human communication, precautionary and safety considerations, first aid, cardiopulmonary resuscitation, vital signs assessment, medication and contrast media administration, medical sepsis, and infection control procedures are discussed and demonstrated.

SP-102: Spanish II (3 credits) / Pre-requisite SP-101
Comprises the development of skills in oral and written communication in the Spanish language. Basic concepts on correct editing are presented. Different literary styles are discussed and analyzed.

Second Year, First Semester

RT-104: Human Anatomy and Physiology II (3 credits) / Pre-requisite RT-103
Course oriented to familiarizing students with the basic anatomical and physiological concepts of the nervous, circulatory, urinary, endocrine, respiratory, reproductive systems and their application in radiology. This course is complemented with laboratory experiences.

RT-107: Principles of Radiographic Exposure (2 credits)
Comprises the study of all concepts associated with the production of X-rays; equipment operation, exposure factors and interactions. Factors influencing image quality are presented and discussed. Practical demonstrations are used to facilitate comprehension of the course content.

RT-111: Radiologic Physics (3 credits)
This course offers students the opportunity of knowing the fundamental physics properties associated with the production and effects of X-Rays. As part of the course the basic components of an X-ray production equipment, operation and maintenance will be covered. Basic electrical schemes as applied to the X-ray circuit will be covered and discussed.

RT-113: Radiographic Procedures and Evaluation I: Extremities and Body Trunk (3 credits)
This course includes the study of the radiographic procedures as they relate to the skeletal system. Includes positioning, exposure techniques, film evaluation and related anatomy of superior and inferior extremities and skeletal trunk.

RT-202B: Clinical Practice I (2 credits) / Pre-requisite RT-102
Students participate and develop skills in performing radiographic procedures pertaining to the skeletal system (superior and inferior extremities and skeletal trunk). They observe basic radiographic procedures requiring administration of contrast mediums for the visualization of the gastrointestinal and urinary systems.

Second Year, Second Semester

RT-108: Principles of Image Acquisition and Processing (2 credits)
Comprises the study of all concepts associated with the image formation and development in conventional and digital radiology. Factors influencing image quality are presented and discussed. Practical demonstrations are used to facilitate comprehension of the course content.

RT-211: Radiation Biology (3 credits) / Pre-requisite RT-111
Comprises the information and knowledge of the interaction of radiation energy and matter. Units and manners of measuring X-rays and other radiation and its effects on living organisms, in particular its effects over long and short periods of exposure on patients.

RT-213: Radiographic Procedures and Evaluations II: Abdomen and Thorax (3 credits) / Pre-requisite RT-113
The study of radiographic procedures related to pathological conditions occurring in abdomen and thorax. Includes discussion of exposure techniques, positioning skills, medical indications and counter-indications for special studies pertaining to this anatomical region. Use of contrast media is discussed.

RT-203B: Clinical Practice II (2 credits) / Pre-requisite RT-202B
Students participate and develop skills in the realization of special radiographic procedures of the gastrointestinal and genitourinary systems requiring the administration of contrast media.

RT-303: Sectional Anatomy (3 credits) / Pre-requisite RT-104
Course oriented to familiarizing students with the anatomical regions and planes as required for the application of advanced imaging modalities, such as Computerized Tomography, Magnetic Resonance Imaging and Ultrasound. Course is complemented with laboratory experiences.

Third Year, First Semester

RT-115B: Radiologic Pathology (3 credits) / Pre-requisite RT-104
Study of the most common conditions and lesions affecting the human being and its relation to the changes observed in the radiographic image. Etiology, epidemiology and prognosis of these conditions are discussed.

RT-204: Clinical Practice III (3 credits) / Pre-requisite RT-203
Students participate and develop skills in the application of special radiographic procedures requiring the administration of contrast media and assisting the radiologist in interventional procedures.

RT-314: Radiographic Procedures and Evaluation III: Skull and Neck (2 credits) / Pre-requisite RT-213
Study of the radiographic procedures related to cranial structures, facial bones and neck. Includes discussion of exposure techniques, positioning skills, medical indications and indications for special and optional projections to be performed in traumatized patients and special studies pertaining to this anatomical region. Use of contrast media is discussed.

RT-315A: Legal Concepts Seminar (1 credit)
Medical-legal considerations of the health professionals in Puerto Rico with emphasis on the radiologic technologist. Comprises current aspects on ethics, responsibilities, obligations and rights of the health professionals relative to patients and colleagues, including case presentation and discussion.

RT-316: Advance Patient Care (3 credits)

Advance course in Patient care, which presents an Emphasis is given to infection control, handling and disposal of hazardous materials and pharmacology as applied to the medical imaging field. . Also, an introductory vision of different content matters, considered basic in the health field: public health concepts, epidemiology, statistics, and administration of health services is included.

Third Year, Second Semester

RT-205: Clinical Practice IV (4 credits) / Pre-requisite RT-204
Students participate and develop skills in radiographic critique and quality assurance. The students acquire proficiency in the application of all radiographic procedures (extremities, trunk, skull and facial bones, and special procedures and administration of contrast media) under indirect supervision. Students are exposed to new imaging modalities.

RT-320: Radiographic Quality Assurance (4 credits)
The course offers students basic knowledge on the importance and implementation of a quality assurance program in a radiological facility. Emphasis will be given to the quality control tests performed on radiographic exposure and film development equipment. Evaluation and analysis of radiographs performed during clinical practice. Course provides students with the opportunity to apply knowledge, acquired during their study/work time to a research project.

RT-350: Review for Professional Credentialing Exam (1 credit)
This course summarizes and reviews the five content areas included in the American Registry of Radiologist Technologist (ARRT) examination: Radiographic Protection, Acquisition and Evaluation of Radiographic Images, Operation and Maintenance of Radiographic Equipment, Radiographic Procedures and Patient Care. Course content is offered through presentations, guided studies and simulated tests. At the end of the course, students will be required to approve a comprehensive test similar in content to the Registry exam.

RT-414: Introduction to Imaging Modalities (3 credits) / Pre-requisite RT-211
Introductory course dealing with new modalities of medical diagnosis imaging. Includes basic concepts of principles and operational procedures of lineal tomography, digital and computerized radiology, computerized tomography, digital subtraction arteriography, magnetic resonance, nuclear medicine and radiotherapy.

RT-206: Elective Clinical Practice: (1 creedit)
Student requiring to complete clinical competencies will register in this course to reacquire and show proficiency in the realization of all procedures related to diagnostic imaging. The student may select an elective appointment in a non-regular clinical site.

POST-ASSOCIATE CERTIFICATE IN DIAGNOSTIC MEDICAL ULTRASOUND

DESCRIPTION OF THE POST-ASSOCIATE CERTIFICATE

Among the new trends in Medical diagnostic, Ultrasound or Sonography has become one of the most common. This new technique of producing images by means of sound waves because of its low cost and its wide use in prohibited areas to ionizing radiation (the reproduction organs) is used every day more in the specialty of obstetrics, gynecology, urology, internal medicine, pediatrics, cardiology and pediatric neurology.

Ultrasound is a different technique than that of conventional radiology because here the operator determines the diagnostic information that he/she needs and the techniques he will use to gather said information according to the specific necessities, situations and conditions of the patient. This form of acquiring information requires of specialized professionals capable in the interpretation of anatomic signs, physiology, pathological changes and normal variations of the anatomic structures.

DESCRIPTION OF THE SONOGRAPHER

The Sonographer is the health professional that produces images for diagnosis by means of specialized equipment that use sound waves of high frequency. He is responsible of gathering images and information using electronic means and submitting them to a physician for analysis and diagnosis. This technologist makes a preliminary assessment of the case while making the study and then discusses the case and findings with the Radiologist or other specialized physician. The Sonographer is responsible for preserving the integrity of the patient/client under his/her charge and as a Health Professional has the responsibility of educating, supporting and serving his patient/client.

PROFILE OF THE SONOGRAPHER:

The Sonographer is a health professional capable of:

- Evaluating medical and clinical information of the patient to determine the procedure to follow.
- Performing sonographical procedures using specialized electronic equipment to gather anatomic information that facilitates the interpretation of findings and the diagnostic of pathological conditions.
- Assisting the physician in gathering sonographic information by means of the integration of medical information, clinic background and the images obtained.
- Using discretion and valorative judgment in the use of procedures and operation of the equipment.
- Providing orientation to the patient about the procedures made and as a health professional collaborates in the promotion of good and healthy life styles.

ACADEMIC CONTENTS

The academic-didactical-practical program seeks to develop, in the graduated of a Radiologic Technology program, theoretical knowledge and practical training in the modalities of medical diagnoses by means of the Ultrasound. The academic content is balanced in order to offer the student other opportunities to comprehend theoretical processes related to this trend and develop practical skills in the equipment operation and patient's management.

After a one-year period of participation in didactic activities related with the Ultrasound techniques and working directly with patients, the student will receive the post-Associate Certificate in Diagnostic Medical Ultrasound Degree, accrediting his/her training in this area.

The participant will be able to take and approve any professional evaluation required to practice the imaging modality selected, in Puerto Rico as well as in the continental United States.

COURSE CONTINUUM

Course Title	***Credits***	***Contact hrs***
First Semester		
Ultrasound Physics	4	60
Pelvic Sonography	2	30
Abdominal Sonography	3	45
Superficial organs and special procedures in Sonography	3	45
Integration Laboratory I	2	30
Clinical Practice I	3	330
Semester Total	17	510
Second Semester		
Instrumentation and Quality Assurance	4	60
Obstetric Sonography	3	45
Basic Ultrasound Studies Seminar	3	45
Integration Laboratory II	2	30
Research Project	3	45
Clinical Practice II	3	330
Semester Total	18	555
Program Total	35	1065

Course Description

Ultrasound Physics: This course will provide the student with the basic knowledge on the Physics of sound. Course content includes mathematical operations as they apply to Sonography and the physical concepts involved in the operation of ultrasound equipment. Teaching techniques include assigned readings, lectures, and group discussion.

Pelvic Sonography: The imaging and diagnosis of conditions related to the female and male pelvis comprise the basis of this course. Contents will include scanning protocols, terminology, complementary studies, and sonographic appearance of normal organs and pathologic conditions diagnose by means of Ultrasound. Diverse teaching techniques will be employed: assigned readings, lectures, group discussion, and image and case critique.

Abdominal Sonography: This course will emphasize in the study of the structures included in the human abdomen. Contents will include protocol, terminology, complementary studies, and sonographic appearance of normal organs and pathologic conditions diagnose by means of Ultrasound. Diverse teaching techniques will be employed: readings, lectures, group discussion, and image and case critique.

Superficial Organs Sonography and Special Procedures: This course will included scanning protocols and techniques for the sonographic evaluation of the thyroid, breasts, testicles, penis, popliteal region and neonatal neuro-sonography. Special procedures performed in an Ultrasound unit will be presented including needle placement for biopsies and/or aspirations. Teaching techniques include assigned readings, lectures, and group discussion.

Integration Laboratory I: In this laboratory, under the direct supervision of a Faculty member the student practices the necessary competencies and protocols to perform basic sonography studies on simulated patients and peers. In this laboratory, the student integrates didactic knowledge and practices dexterity for the performance of sonographic studies. Clinical and practical teaching techniques will be employed in addition to the discussion of assigned reviewed articles regarding scanning protocols of abdominal and pelvis sonograms.

Clinical Practice I: This course comprises a supervised clinical experience, in which the student will have the opportunity to recognize the protocol and techniques of the basic ultrasonographic studies. Student will develop competencies in medical request interpretation, patient briefing and management, scanning protocols, and the sonographic appearance of normal and pathologic organs and tissues.
Obstetric Sonography: Obstetric Sonography course will be divided into two sections. First part will provide the student with the basic knowledge of normal and pathological tissues present during pregnancy. This section also includes scanning protocols and techniques to visualize the embryo and the second and third trimester normal fetus. The second part of this course will increase student knowledge on fetal pathology and medical complications and disorders related to pregnancy. Teaching techniques include assigned readings, lectures, and group discussion.
Basic Ultrasound Studies Seminar: This course is designed to integrate didactic knowledge and clinical experiences. During the course of this seminar cases done by the student in his clinical rotations will be discussed. Additionally, students will be required to read, synthesize and react critically and constructively to professional articles related to Sonography found on journals and other electronic media.
Instrumentation and Quality Assurance: This course will expand on the previous Ultrasound Physics course content and include concepts related to equipment operation, calibration and maintenance and the implementation of a quality assurance plan within a Sonography unit. Basic Doppler concepts will be introduced. Teaching techniques include assigned readings, lectures, and group discussion.
Research Project; By agreement: As part of this course requisites, the student will plan and develop a special project addressing research concepts and techniques, and the analysis of a problem or situation occurring in a Medical Diagnostic Ultrasound clinical area. Emphasis will be given to the techniques of gathering, organizing and analyzing research data. Student projects will be evaluated through the completeness and integration of all aspects of a research in an oral and written report.
Integration Laboratory II; 36 contact hours (2 credits)
In this laboratory, under the direct supervision of a Faculty member the student practices the necessary competencies and protocols to perform basic sonography studies on simulated patients and peers. In this laboratory, the student integrates didactic knowledge and practices dexterity for the performance of sonographic studies of abdominal and pelvis organs. Clinical and practical teaching techniques will be employed in addition to the discussion of assigned reviewed articles regarding scanning protocols of abdominal and pelvis sonograms.
Clinical Practice II; 360 clinical hours (3 credits)
In this second clinical practice experience, the student will have the opportunity to integrate didactic knowledge with practical competencies. Student will develop advanced competencies for the correct performance of sonographic procedures and will develop new competencies in special sonographic procedures.

POST-ASSOCIATE CERTIFICATE IN MAMMOGRAPHY

DESCRIPTION OF MAMMOGRAPHY

Mammography is the medical imaging procedure used to produce diagnostic imaging of the human breast. It has been proved its valuable contribution in the early detection of medical conditions related to breast and its associated tissues. Because of the special characteristics of the procedure and its importance of this modality in the war against breast cancer, condition that has widespread in the female population in the recent years, it is considered as a specialty in the medical diagnosis images.

DESCRIPTION OF THE MAMMOGRAPHER

The mammographer is the health professional who produces images of the human (female or male) breast. This procedure can be a screening or follow–up procedure of medical conditions related to this anatomical region. The mammographer other functions require him/her to effectively interact with the patient in such a way as to offer support and orientation regarding the importance of the procedure to be performed, the need to compress the breast during the procedure and the ongoing breast screening procedures. Another important responsibility of the mammographer is the quality assessment of the films. The mammographer is a fundamental part to the effectiveness of the mammography quality assurance program implementation in his/her workplace.

PROFILE OF THE MAMMOGRAPHER

The mammographer is a health professional capable of:

- Evaluating medical and clinical information to determine which of the established protocols.
- Producing quality mammography with the maximum anatomical information, which integrated with the medical and clinical information facilitates diagnosis.
- Performing any requested mammography procedure without regards to patient's health, mental, social, racial and/or cultural condition.
- Providing adequate support and answer any doubts the patient might have regarding the equipment, the importance of the procedure, and the need for the compression of the breast for the early detection of pathological conditions.
- Explaining patient FDA and ACR recommendations regarding base and follow-up mammography, breast self-examination and the need to safeguard previous images for comparison.
- Providing a quality service in a timely and prudent manner.
- Discussing with the diagnosing radiologists his/her impressions about the patient's conditions and about the resulting images.
- Assisting the radiologist in special invasive procedure of this anatomical region.
- Noting in the patient's medical record and/or any pertinent document any incident, that might occur during the procedure.
- Performing routine quality assurance procedures to assess darkroom, automatic film processor, mammography equipment, and film viewing equipment as recommended by the FDA and ACR.
- Carrying out his/her duties with discretion and judgment towards his/her responsibilities.
- Keeping his/her knowledge and competencies updated through continuing education.

ACADEMIC CONTENTS OF THE MAMMOGRAPHY CERTIFICATE

This academic-didactical-practical program seeks to develop, in the graduated of a Radiologic Technology program, the theoretical knowledge and the practical competencies required for the

production of supreme quality images needed for the diagnosis of different conditions of the breast. The academic content is balanced in order to offer the student the opportunities to comprehend theoretical processes related to this trend and develop practical skills in the equipment operation and patient's management.

This degree is composed of 14 academic credits, offered in one semester. The requisites are distributed into didactic courses and clinical experiences. The participant will be able to take and approve any professional evaluation required to practice the imaging modality selected, in Puerto Rico as well as in the continental United States.

COURSE CONTINUUM

	Credits	Contact Hours
Mammography Physics and Quality Assurance	3	45
Positioning and Procedures in Mammography	2	30
Breast Anatomy, Physiology and Pathology	3	45
Operational and Clinic Fundamentals of Sonomammography	3	45
Clinical Practice and Research	3	330 (p/a)*
Certificate Total	**14**	**465**

COURSE DESCRIPTION

Mammography Physics and Quality Assurance: This course provides the student with the opportunity to develop knowledge on the fundamental concepts related to the physics employed mammography. Contents include exposure factors, collimation, equipment and accessories operation and assessment, automatic film processing, and mammography quality assurance processes. Students will be able to develop and implement a mammography quality assurance plan following the FDA and ACR guidelines.
Positioning and Procedures in Mammography: During this course the student will be provided the opportunity to develop skills in the performance of basic mammography procedures. Student will acquire knowledge about patient's positioning and equipment adjustment used in the basic procedures used to diagnose breast conditions. Patient and breast position regarding equipment adjustments, modifications and/or variations to these procedures in the presence of normal anatomical variations, reconstructed breast, prosthesis, magnifications, cone downs and others are discussed. Course contents include terminology, positioning criteria and evaluation and film critique.
Breast Anatomy, Physiology and Pathology: This course provides the student with the opportunity of developing concepts on normal anatomy and composition of the female and male breast anatomy during the different development stages. Physiology and pathology of the normal, augmented, irradiated and reconstructed breast will be included. The course includes fundamental knowledge on pathologies founded on the human breast, either benign or malign, so the student can identify radiological changes, classification, normal variants, development and staging.
Operational and Clinic Fundamentals in Sonomammography: This course provides the student with the opportunity to develop knowledge in the performance of sonomamography. Sonography physics, terminology, operational concepts and instrumentation, and scanning protocols are discussed as part of this course. Student will acquire knowledge about patient's preparedness, positioning, equipment, accessories and materials used in sonomammography procedures. Teaching strategies included: presentations, demonstrations, laboratory exercises and case discussions.
Clinical Practice: Clinical supervised experiences in which the student will apply acquire knowledge and skills to develop psychomotor and affective competencies in the performance of breast imaging procedures. The practice will require the student to interpret medical orders, analyze patient's medical history and record, patient care, patient education and the correct use of the equipment. Emphasis will be given to image quality and film critique.

POST-ASSOCIATE CERTIFICATE IN COMPUTERIZED TOMOGRAPHY

DESCRIPTION OF THE CERTIFICATE

Computerized Tomography, develop in 1972 by Engineer Geoffrey Hounsdfield, uses ionizing radiation (X-rays) and radiation detectors to provide a computer with information about the density of the human tissues, which the computer then turns into a digital image of the body volumes. Resulting images are similar to a radiograph in its density, but the image is oriented perpendicular to the body axis. Computerized Tomography is used primarily to evaluate gastrointestinal, nervous and musculo-squeletal systems.

The academic program of the Certificate in Computerized Tomography is designed to develop, in graduates of a radiologic technology program, the theoretical knowledge and the practical skills to produce medical diagnostic images by means of the Computerized Tomography equipment. This certificate comprises 13 academic credits, which are offered in a one semester long (15 weeks) period.

DESCRIPTION OF THE COMPUTERIZED TOMOGRAPHY TECHNOLOGIST

The Imaging Technologist specialized in Computerized Tomography, is the health professional which operates very complex and sophisticate equipment which combines electronic elements with ionizing radiation producing equipment to produce images of the human body with the purpose of making or defining a medical diagnosis.

Because of the impression the equipment produces on patients, a Computerized Tomography technologist first task, before doing the procedure, it's the responsibility of the technologist to interact with the patient in an effective way to orient him on the procedure to be performed and lower the patient anxieties. Before the procedure, the technologist explains to the patient the importance of following the instructions he will receive during the procedure; of maintaining the proper positioning and the proper way of breathing so as to acquire optimum quality images.

CERTIFICATE IN COMPUTERIZED TOMOGRAPHY GRADUATE PROFILE

A graduate from the Post-Associate Certificate in Computerized Tomography of the Medical Images Technology Program of the Universidad Central del Caribe, will be able to:

1. Evaluate patient's medical and clinical information to determine the procedure to perform, following the protocols established by his/her workplace and according to the medical and physical condition of the patient.
2. Perform Computerized Tomography procedures acquiring the anatomic information, and integrating patient medical information and clinical to facilitate the patient diagnosis.
3. Assume full responsibility for his/her patient's and accompanying person's safety during the procedure, avoiding unnecessary radiation exposures to them.
4. Accurately manipulate the Computerized Tomography equipment to produce optimum quality images.
5. Demonstrate his/her knowledge about the operation and physical principles related to the Computerized Tomography equipment.
6. Perform any Computerize Tomography procedure that it's required from him/her, regardless of the level of physical and/or mental condition of the patient and without any evidence of social, racial and cultural prejudice.

7. Educate patient and clarify any doubt the patient might have regarding the equipment; the need to use contrast media when indicated, and the importance of performing an optimum quality procedure to enhance diagnosis.
8. Support patient, before, during and after the procedure.
9. Offer optimum quality services in a prudent and reasonable lapse of time.
10. Document any incident that might occur before, during and after the procedure, in the patient's record and/or any form designed for this purpose.
11. Evaluate the quality of the services, keeping control on the quality of the operations and functioning of the equipment and its accessories; image printing and post-processing routines and image viewing conditions, among others.
12. Acquire optimum quality images in all procedures performed.
13. Apply discretion and critical thinking to the performance of all procedures and the operation of the equipment.
14. Collaborated with the Radiologist in the performance of interventional procedures using Computerize Tomography.
15. Assume responsibilities for his/her own personal and professional development and enhancement through his/her participation in continued education activities and in new procedures capacitating workshops.

COURSE CONTINUUM FOR THE COMPUTERIZED TOMOGRAPHY CERTIFICATE

Course	Credits	Contact hours
Operational Concepts of Computerized Tomography	3	45
Computerized Tomography Imaging Procedures and Protocols	3	45
Anatomy and Pathology in Computerized Tomography Images	3	45
Clinical Practice in Computerized Tomography	4	330* (p/a)
Total	**13**	**410**

COURSE DESCRIPTION

Operational Concepts in Computerized Tomography

This course comprises the discussion of: CT history; applications and terminology related to this modality; ionizing radiation physics concepts review; safety issues regarding the use of ionizing radiation in computerized tomography; policies and regulations in CT imaging centers, and quality assurance in computerized tomography images. Teaching strategies to be used, include: lectures, presentations, case discussion, and literature review. Students will be assessed through: quizzes, practical exercises, partial tests, papers submitted and a final test.

Computerized Tomography Imaging Procedures and Protocols

In this course students will review the procedures and protocols used in the production of images in Computerized Tomography of the different parts of the human body. Special procedures performed in this modality are also discussed. Emphasis is given to: imaging planes; patient position; protocol variations and exposure factors related to quality images. For the purposes of this course, the human body is divided in: head and spine; neck and thorax; abdomen and pelvis, and extremities. Teaching strategies to be used, include: lectures, presentations, case discussion, and literature review. Students will be assessed through: quizzes, practical exercises, partial tests, papers submitted and a final test.

Anatomy and Pathology in Computerized Tomography Images

This course Hill give the student a specific view of the human anatomy as it is presented in computerized tomography images and the discussion of diverse conditions and lesions which affects human body. Normal variations, etiology and natural history of these conditions are included in the presentation of how this affects the CT image. Teaching strategies include: lectures, case presentations and discussion.

Students will be assessed through: quizzes, practical exercises, partial tests, papers submitted and a final test.

Clinical Practice in Computerized Tomography

Each student will complete a clinical practice period in a recognized clinical affiliation Ander the supervision of a clinical instructor. This practice will permit the student to apply to his clinical work the theories and didactic content of the courses. Student will complete clinical requirements in a practice portfolio showing the development of skills in: patient care and security; patient's medical history and images correlation; procedure and protocol application to different situations; image selection and processing, and patient and companions' education and counseling. Student progress in the clinical practice will be assessed by a clinical portfolio and a reflexive diary. Student will complete a clinical research paper related to Computerized Tomography, based on literature review; clinical data acquisition; data analysis, and problem solving alternatives to the problem proposed.

POST-ASSOCIATE CERTIFICATE IN MAGNETIC RESONANCE

DESCRIPTION OF THE CERTIFICATE

Magnetic Resonance images have revolutionized the medical diagnostic imaging field with the superb resolution of tissues of its images. Magnetic Resonance utilizes a strong magnetic field (several times stronger than gravity force) to alienate free protons (hydrogen ions), then these protons are stimulated with a radiofrequency and pushed out of alignment. When the protons return to the magnetized state, they resonate (they resend the energy used to dealigned them), during which process they emit a signal captured by a radio antenna and passed to a computer. The computer then processes the information and produces an image based on the density and volume of the tissue being imaged. Images produced with Magnetic Resonance differ from Computerized Tomography in that there are various ways to analyze tissue density based on their magnetic properties.

The academic-practical program of the Post-Associate Certificate in Magnetic Resonance is designed to develop in graduates from a Radiologic Technology program, the theoretical knowledge and practical skills need to produce optimum quality images to be used in medical diagnosis through the use of highly sophisticate equipment using magnetic and radiofrequency energy. This certificate comprises 13 academic credits, which are offered in a one semester long (15 weeks) period.

DESCRIPTION OF THE MAGNETIC RESONANCE TECHNOLOGIST

The Imaging Technologist specialized in Computerized Tomography, is the health professional which operates very complex and sophisticate equipment which combines electronic elements with ionizing radiation producing equipment to produce images of the human body with the purpose of making or defining a medical diagnosis.

Because of the impression the equipment produces on patients, a Magnetic Resonance technologist first task, before doing the procedure, it's the responsibility of the technologist to interact with the patient in an effective way to orient him on the procedure to be performed and lower the patient anxieties. Before the procedure, the technologist explains to the patient the importance of following the instructions he will receive during the procedure; of maintaining the proper positioning and the proper way of breathing so as to acquire optimum quality images.

CERTIFICATE IN MAGNETIC RESONANCE GRADUATE PROFILE

A graduate from the Post-Associate Certificate in Magnetic Resonance of the Medical Images Technology Program of the Universidad Central del Caribe, will be able to:

1. Evaluate patient's medical and clinical information to determine the procedure to perform, following the protocols established by his/her workplace and according to the medical and physical condition of the patient.
2. Perform Magnetic Resonance procedures acquiring the anatomic information, and integrating patient medical information and clinical to facilitate the patient diagnosis.
3. Assume full responsibility for his/her patient's and accompanying person's safety during the procedure, indicating the precautions to be taken around a strong magnetic field.
4. Interview patient to assess the possible risk of metal magnetization.
5. Accurately manipulate the Magnetic Resonance equipment to produce optimum quality images.
6. Demonstrate his/her knowledge about the operation and physical principles related to the Magnetic Resonance equipment.

7. Perform any Magnetic Resonance procedure that it's required from him/her, regardless of the level of physical and/or mental condition of the patient and without any evidence of social, racial and cultural prejudice.
8. Educate patient and clarify any doubt the patient might have regarding the equipment; the need to use contrast media when indicated, and the importance of performing an optimum quality procedure to enhance diagnosis.
9. Support patient, before, during and after the procedure.
10. Offer optimum quality services in a timely and reasonable time and manner.
11. Document any incident that might occur before, during and after the procedure, in the patient's record and/or any form designed for this purpose.
12. Evaluate the quality of the services, keeping control on the quality of the operations and functioning of the equipment and its accessories; image printing and post-processing routines and image viewing conditions, among others.
13. Acquire optimum quality images in all procedures performed.
14. Apply discretion and critical thinking to the performance of all procedures and the operation of the equipment.
15. Collaborated with the Radiologist in the performance of interventional procedures using Magnetic Resonance.
16. Assume responsibilities for his/her own personal and professional development and enhancement through his/her participation in continued education activities and in new procedures capacitating workshops.

COURSE CONTINUUM FOR THE MAGNETIC RESONANCE CERTIFICATE

Course	Credits	Contact hours
Operational Concepts of Magnetic Resonance	3	45
Magnetic Resonance Imaging Procedures and Protocols	3	45
Anatomy and Pathology in Magnetic Resonance Images	3	45
Clinical Practice in Magnetic Resonance	4	330* (p/a)
Total	**13**	**410**

COURSE DESCRIPTION

Operational Concepts in Magnetic Resonance

This course comprises the discussion of: MRI history; applications and terminology related to this modality; radiofrequency and magnetic physics concepts review; safety issues regarding the use of energies in magnetic resonance; policies and regulations in MRI imaging centers, and quality assurance in magnetic resonance images. Teaching strategies to be used, include: lectures, presentations, case discussion, and literature review. Students will be assessed through: quizzes, practical exercises, partial tests, papers submitted and a final test.

Magnetic Resonance Imaging Procedures and Protocols

In this course students will review the procedures and protocols used in the production of images in Magnetic Resonance of the different parts of the human body. Special procedures performed in this modality are also discussed. Emphasis is given to: imaging planes; patient position; protocol variations and image acquisition factors related to quality images. For the purposes of this course, the human body is divided in: head and spine; neck and thorax; abdomen and pelvis, and extremities. Teaching strategies to be used, include: lectures, presentations, case discussion, and literature review. Students will be assessed through: quizzes, practical exercises, partial tests, papers submitted and a final test.

Anatomy and Pathology in Magnetic Resonance Images

This course Hill give the student a specific view of the human anatomy as it is presented in magnetic resonance images and the discussion of diverse conditions and lesions which affects human body. Normal variations, etiology and natural history of these conditions are included in the presentation of how this affects the MRI image. Teaching strategies include: lectures, case presentations and discussion. Students will be assessed through: quizzes, practical exercises, partial tests, papers submitted and a final test.

Clinical Practice in Magnetic Resonance

Each student will complete a clinical practice period in a recognized clinical affiliation Ander the supervision of a clinical instructor. This practice will permit the student to apply to his clinical work the theories and didactic content of the courses. Student will complete clinical requirements in a practice portfolio showing the development of skills in: patient care and security; patient's medical history and images correlation; procedure and protocol application to different situations; image selection and processing, and patient and companions' education and counseling. Student progress in the clinical practice will be assessed by a clinical portfolio and a reflexive diary. Student will complete a clinical research paper related to Magnetic Resonance, based on literature review; clinical data acquisition; data analysis, and problem solving alternatives to the problem proposed.

BACHELOR IN SCIENCE IN DIAGNOSTIC IMAGES

DESCRIPTION OF THE BACHELOR IN SCIENCE DEGREE

The Bachelor of Science in Diagnostic Images offer graduates with an Associate Degree in Radiologic Technology from an accredited or recognized program in Puerto Rico or the United States, the opportunity to acquire a higher academic degree in their professional field. Through this program, graduates from Radiologic Technology Associate degree programs will continue their training by choosing two or more specialization certificates and increase their direct patient attention competencies and organizational skills.

Baccalaureate students will complete additional general education courses beyond the Associate degree curricula and take courses in basic managerial skills to be better prepared to face additional professional responsibilities. The graduate of the Bachelor of Science in Diagnostic Images will possess the competencies in at least three medical imaging modalities: conventional radiology and two other modalities of his/her choice; a rounded general education and managerial training in medical imaging services skills.

UCC has designed this offering based upon the premise that almost all the radiologic technologists in Puerto Rico have attained an Associate degree. The Bachelor of Sciences in Diagnostic Images, will integrate admitted students' academic experiences through the incorporation of credits approved in courses in: (1) general education; (2) an associate degree in Radiologic Technology; (3) specialization certification (a minimum of two out of this four certificates: US, Mammo, CT, MRI), and (5) Bachelor's degree higher courses.

COURSE REQUIEREMENTS FOR THE BACHELOR IN SCIENCE IN DIAGNOSTIC IMAGES

COMPONENT	COURSES	CRD.	CURSOS	CRD
General Education Courses (42 credits min.)	Spanish Language	9	Mathematics	6
	English Language	9	Socials Sciences	3
	Computer Science	3	Humanities	3
	Natural Sciences (Physics, Chemistry)	6	Electives	3
Associate Degree in Radiologic Technology (taken in Universidad Central del Caribe or equivalent (62 credits)	Anatomy and Physiology	6	Sectional Anatomy c/lab	3
	Introduction to Rad. Technology	3	Radiobiology	3
	Principles Radiographic Exposure	2	Radiographic Pathology	3
	Radiologic Physics	3	Advance Patient Care	3
	Patient Care	3	Radiographic Quality Assurance	3
	Radiographic Procedures and Evaluation (Extremities and Trunk)	3	Introduction to Imageneology	1
	Radiographic Procedures and Evaluation II (Invasive studies)	3	Legal Aspects Seminar	1
	Radiographic Procedures and Evaluation III (Skull)	2	Clinical Practice (I, II, III y IV)	11
Specialized Professional Certificates (a minimum of two of the following are required)	o Diagnostic Ultrasound (35c) o Mammography (14c) o Computerized Tomography (13c) o Magnetic Resonance (13c)	**Bachelor capstone courses (14 credits)**	• **Administration and Supervision** • **Planning and Evaluation** • **Pharmacology in Radiology** • **Sociology of Health and Disease** • **Professional Readings Seminar**	**3** **3** **3** **3** **2**
Total de Créditos		**144 a 163[1]**		

[1]Total credits will depend n the combination of professional certificates selected by the Student.

DESCRIPTION OF THE BACHELOR LEVEL TECHNOLOGIST

The Medical Images professional possessing a Bachelor of Science degree is the health professional with the necessary competencies to produce images of the human body used in the diagnosis and treatment of disease. This professional is responsible for maintaining a level of excellence in the performance of the basic competencies of his/her discipline. Trained imaging professionals must also adapt to multiple technological advances and computerized systems and demonstrate consistent competence in the performance of professional duties in the process of assisting physicians and other healthcare professionals.

Professional responsibility at this level requires the ability to maintain patient integrity and teach, support and serve with the highest standards of service. A specialist in the diagnostic modalities must perform with a maximum level of efficiency and effectiveness in any of the imaging modalities in which he/she is trained.

BACHELOR IN SCIENCE IN DIAGNOSTIC IMAGES GRADUATE PROFILE

A graduate from the Bachelor in Science in Diagnostic Images of the Medical Images Program of the Universidad Central del Caribe, will be able to:

1. Evaluating the referral and the patient's medical information and performing the required procedure in any of the selected modalities.
2. Recognizing medical terms, applying his knowledge of human topographic and sectional anatomy, pathology, and physiology to determine the most adequate protocols in the selected modality.
3. Performing diagnostic procedures that collect, through the use of electronic and sophisticated equipment, information to facilitate a diagnostic interpretation of the results of the procedure.
4. Offering patients appropriate information about the risks, secondary effects, indications and counter indications to the procedures, before, during and after performing the same.
5. Offering patients information about healthy life styles.
6. Presenting to the specialized physician, any information obtained during the procedures which facilitates the diagnosis through the integration of patient record information, clinical history and images obtained by means of the available modalities.
7. Participating in case discussion to determine any need for follow up or complementary procedures and perform the necessary procedures if requested.
8. Applying universal protection measures against infections during the performance of the requested procedures and in any emergency situation which may arise.
9. Using effective communication skills, in Spanish and English, written or verbal, with patients, patients' families, peers and community members.
10. Demonstrating a high level of respect for individuals, taking into consideration cultural and social diversity.
11. Integrating management concepts and strategies into the work, and participating in the development of coherent policies in risk management for the work area.
12. Continuously improving personal and professional knowledge and application of information systems and its applications to the medical images and diagnosis.
13. Applying problem solving, critical thinking and decision-making skills to improve services to patients while in the workplace.
14. Promptly identifying problems with the equipment used in the workplace and relating any such problems to those responsible for maintenance and repairs.

15. Developing assessment programs in order to continuously improve quality of services and recommended corrective measures as they are required.
16. Assuming leadership positions in the institutions where he/she is employed.
17. Acting as role models to those interested in continuing formal studies in the medical images field.

BACHELOR OF SCIENCE COURSE CONTINUUM

Course	Credits	Contact Hours
Diagnostic Images Service Administration and Supervision	3	45
Diagnostic Images Service Planning and Evaluation	3	45
Diagnostic Images Pharmacology	3	45
Sociology of Health and Disease	3	45
Professional Lectures Seminar (lasts for two semesters)	2	30
Totals	**14**	**262**

BACHELOR OF SCIENCES COURSE DESCRIPTION

Diagnostic Images Services Administration

Students will have the opportunity to develop basic skills in the organization and supervision of a diagnostic imaging center or service. This course offer students basic concepts of health service administration with an emphasis on the quality of the services offered to the community in diagnostic imaging centers. They will differentiate between the roles of the Medical Director, Administrator, Manager, and Supervisor in these types of service. Students will develop team work skills, dealing with issues such as: risk management; radiation protection and dosimetry; continuous quality improvement; service accreditation procedures and interpersonal relations. At the same time, this knowledge will help the student: design, implement, analyze and evaluate diagnostic images services, complying with state and federal policies, rules and regulations. Teaching strategies include: conferences, case presentations and discussion. Students will be evaluated through: written exams, short tests, assignments, and participation in programmed activities.

Diagnostic Images Services Planning and Evaluation

This course will present students with the basic concepts and skills in use for the planning and evaluation of diagnostic images services. Planning and evaluation of health services will be presented as a continuous process emphasizing problem identification, developing effective answers to problems, and implementing and evaluating the program or service proposed. Course content also includes: general aspects of a health service organization; how to develop goals and objectives to fulfill an organization mission through a Strategic Plan. Students will participate in conferences, will discuss simulated models and will present an operational model for a diagnostic images center. Students will be evaluated through: practice exercises, short texts, application projects and literature review reports.

Pharmacology for Diagnostic Imaging Services

This course will offer students' knowledge and skills necessary for the management and administration of imaging contrast media agents and other medications used in the medical diagnostic field. Course content includes: general pharmacology concepts; patient assessment skills; strategies for the safe and responsible management of contrast media agents, and administration techniques. Teaching strategies include: conferences, case discussion, electronic reference reviews, and medication administration competencies laboratories. ACLS training content is included as part of this course.

Sociology of Health and Disease

This course will offer students the knowledge and skills necessary to provide support to patients of all types. Content is designed to offer students a review of the physiologic and anatomical changes related to diverse pathologies that affect the human being in different stages of life. As part of this course, the following issues will be discussed: responsible and safe patient management; rules and regulations related to patient's medical information confidentiality; community health concepts, and communication

skills. Course content will be offered through conferences, case discussion, literature review, content related assignments.

Professional Lectures Seminar

This course will develop the student's ability to conduct critical reading of professional articles. As part of the course, emphasis will be given to the discussion of issues related to: new developments and research in the medical diagnostic images field. This course will be conducted mainly through on-line strategies where students will complete course requirements in a virtual environment. As part of this course, the following skills will be evaluated: knowledge and skills in informatics; search, validity, analysis and application of the information, and Spanish and English written communication skills. During the course, students will present five critical analyses of professional articles and will participate in the discussion of articles presented by fellow students.

ADMISSIONS TO THE PROGRAM

APPLICATION FOR ADMISSION

Admission's application to the Associate Degree in Radiologic Technology and to the post-Associate certificates in: Diagnostic Medical Ultrasound, Mammography, Computerized Tomography, Magnetic Resonance, and to the Bachelor in Science in Diagnostic Imaging programs can be obtained through the School Counselors or Vocational Orientations of the different schools and post-secondary education institutions in Puerto Rico and/or by means of written communication addressed to:

Admission Office
Universidad Central del Caribe
Call Box 60-327
Bayamón, PR 00960-6032

With the application, detailed information about the admissions procedures of the University is send.

ADMISSION PERIOD

May 1st of each year is the deadline for receiving applications for admissions to the Associate Degree and to the post-Associate certificates in Diagnostic Medical Ultrasound, Mammography and Computerized Tomography the Bachelor in Science. The Admission Committee begins the interview process of candidates by this date. Final evaluation will be finished by May 30 of each year.

For the Certificate in Magnetic Resonance, the deadline for submittal of the admission application is November 1st on each academic year for the next academic period.

The Admission Committee, after evaluating each candidate, forwards its recommendations to the Program Director who submits a final report to the President of UCC. It is the President who communicates the final determination regarding the status of admittance, alternate, or nonaccepted students.

REQUIREMENTS FOR ADMISSION

ASSOCIATE DEGREE IN RADIOLOGIC TECHNOLOGY

Our Program admits students from:

A. High School

To be considered for admissions as a high school student, candidates must have completed 12th grade in an institution accredited or recognized by the Department of Education with an average CQPI of 2.50 or more. Students can also provide evidence of the approval of the equivalency test provided by the Puerto Rico General Education Council.

They must have satisfactorily completed (with an average of "C" or over) two mathematics courses and two out of three courses in science, which may include Biology, Chemistry and/or Physics.

When a high school students has been out of school for more than a year after his graduation date he will have to present an employment certification or evidence of the activities developed in that period.

In these cases, students will be evaluated through:

1. High School Academic average (CQPI)
2. Results of the College Entrance Examination Board Test[1]
3. Results of a personal interview with the Admissions Committee representative.

B. Transfer students:

Transfer students are those students coming from higher education institutions accredited or recognized by the Puerto Rico's Higher Education Council. All transfer students have to present a minimum CQPI of 2.00 and will have to submit a Clarification Certificate from the Institution of precedence.

Transfer students will be evaluated according to the following criteria.

1. High-School academic average (must comply with the same requirements of high school students for the science courses, they can be taken at a University level or be combined).
2. University academic score.
3. Results of a personal interview with members of the Admissions Committee.

C. Advanced Standing Transfer students

In the cases of Advance Standing transfer students from other Radiologic Technology Programs; candidates will come from an institution accredited by the Middle States Commission on Higher Education or the Joint Review Committee on Education in Radiology Technology in order to validate professional courses credits. The Admissions and Evaluation and Promotion of Student Committee members will evaluate these cases on an individual case by case. Courses will be

Every student must accompany the following documents with his/her admission application:

High School Students

1. Official credit transcripts or equivalent
2. Results of the College Entrance Examination Board test
3. Two recommendations letter from high school teachers.

Transfer students

1. Official credits transcript of high school courses
2. Official credit transcripts of University courses including those approved and in progress.
3. Clarification Certificate from the University of precedence
4. Letters of recommendations from two professors from institution of precedence.

Every candidate to admission would have to demonstrate mastery in both Spanish and English language.

[1] College Entrance Examination Board has five-year period duration. It is not adjusted for student over 25 a year old.

The following will apply to all applicants.

1. A 2"X2" recent photo signed at the back
2. A Good Conduct certificate from the police Department.
3. An original, one page essay, expressing the reasons why he/ she wants to be admitted to the Program.
4. Check or money order payable to the Universidad Central del Caribe (not reimbursable) for the amount of: $25.00.

A maximum of 35 students will be admitted per year. The distribution of High School and transfer student will be determined by the equivalent percentage of applications submitted by each group. This number is determined by the clinical affiliate capacity to accept students for a valid and effective experience.

POST-ASSOCIATE CERTIFICATES IN DIAGNOSTIC MEDICAL ULTRASOUND, MAMMOGRAPHY, COMPUTERIZED TOMOGRAPHY AND MAGNETIC RESONANCE
Students wishing to apply to the post-Associate certificates shall complete the following requisites:

- Official evidence (transcript) of having satisfactorily completed with a CQPI of 2.5 or more an Associate Degree in Radiologic Technology in an institution accredited or recognized by the Puerto Rico's Council on Higher Education, Middle States Commission on Higher Education and/or the JRC-ERT. This degree must be fully convalidable with the Associate degree of the Universidad Central del Caribe.
- Two letters of recommendation from Faculty members from the proceeding institution or from Clinical Instructors related to clinical experiences in the modality to which he/she is applying.
- Interview with the Admissions Committee and Faculty members from the corresponding certificate.
- Comply with all other admissions requirements established by the Program.

BACHELOR IN SCIENCE IN DIAGNOSTIC IMAGES
Interested students should meet the following requirements:

- Satisfactorily completed, with a CQPI of 2.5 or above, an Associate degree in Radiologic Technology in a program authorized by the Puerto Rico Council on Higher Education and/or the Middle State Commission on Higher Education, and/or accredited by the Joint Review Committee on Education in Radiologic Technology or any other programmatic accrediting agency recognized by the United States Department of Education. The Associate degree must be compatible with that offered by UCC.
- A minimum of 42 general education credit hours, with a minimum CQPI of 2.0, taken in a higher education institution accredited or recognized by the Puerto Rico Council on Higher Education or equivalent. These credits will be divided in: Spanish Language (9); English Language (9); Computer literacy (3); Natural Sciences (6); Mathematics (6); Social Sciences (3); Humanities (3) and electives (3).
- Complete and submit an official Admission Application.
- Present two letters of recommendation from faculty members or clinical instructors.
- Personal interview with a Bachelor program faculty member.

- Comply with any other admission requirements established by UCC.
- Present a copy of professional license and register if more than five years has elapsed since completion of the Associate degree or certification program.

RECLASSIFICATION / TRANSFER BETWEEN MITP's OFFERINGS

Every active student in the MITP, in any of its academic offerings can apply to continue studying in another of the offerings. Students enrolled in the BSID are required to complete two of the specialized certificates so they do not have to process a transfer request but notify of their intent to the certificate's coordinator. Registered Reclassification / Transfer will be process through the corresponding application.

1. Application form is to be completed by the student and deposit in the Registrar Office with evidence of having cover the corresponding fee.
2. Due date for the Reclassification/Transfer form Hill be the same as the dateline for regular Admissions. Late applications will be accepted, subject to the payment of late submission fee, up to the last day of classes of the semester prior to which reclassification/transfer is requested. The consideration of these late submissions is subject to available space after considering those applications submitted on time.
3. Registrar Office will forward the reclassification/transfer applications and a copy of the last transcript to the Coordinator of the program the students is applying to.
4. The Coordinator of the offering the student is applying to will review the application and recommends the approval or disapproval to the Program Director. Program Director will authorize reclassification/transfer and return the applications to the Registrar for the corresponding action.

READMISSION TO THE PROGRAM:

Readmission will be considered for those students with more than a year out of a study program in the Institution. Every student that discontinues studies and applies for readmission will be admitted under the academic progress conditions that he had at the moment of withdrawal.

Each re-admission case would be considered individually. The students will be evaluated according to the following:

1. Academic performance at the moment of studies discontinuation
2. Grades in each course in progress at the moment of withdrawal
3. Interview by an Admission sub-committee

To be considered for readmission, the student will have to present:

1. Readmission Application
2. UCC academic record copy
3. Credit transcript of any studies performed the period he/she was out of the Program.
4. Letter exposing the reasons why he/she should be, considered for readmission to the Program.
5. Certificate check or money order for $25 (not reimbursable).

ENROLLMENT TO THE PROGRAM

The University's Registrar takes care of the academic documentation of the students and establishes the enrollment procedure. No studies program is valid without his/her approval.

The students will enroll in the days and hours appointed by the University. The enrollment procedures will be established by the Registrar's office and will be informed to the students with enough time. No student will be enrolled after the sixth day of classes in each semester of the regular course.

The student admitted to the Radiologic Technology Program will have to present the results of a medical examination including a reading of a Chest radiography, Urinalysis, VDRL, CBC, and evidence of vaccination against Hepatitis B. By disposition of the Health Department, the students less than 21 years old will present an updated certificate of vaccination. This evidence must be delivered during the enrollment process.

ENROLLMENT COSTS

Enrollment cost for the all offerings in the Radiologic Technology Program is dependent on the student's year of entrance. Reimbursement dates are published by the Registrar's Office in the Academic Calendar as approved by the Dean of Administration.

In addition to the cost for enrolled credits, the student must pay for:

- Academic Resource Services fee – $250.00 per semester
- Development fee - $100.00 per semester
- Extracurricular Activities fees- 50.00 per semester
- ID card - $10.00 on admission
- University badges for gowns- $10.00 on admission
- Graduation Cost - $100.00 (to be paid in the last semester of studies)
- Parking allowance - $20.00 on admission
- Dosimeter Service - $50.00 (for those students in Radiography Clinical Courses)
- Health Plan (subject to annual revision). All students must be subscnribed to a health plan. If he/she does not provide evidence of a subscription the University will provide one at established rates.

FINANCIAL AID

The following economic assistance programs are available to the Program's students.

A. Pell Grant
B. Guaranteed Student Loan (Stanford)
C. Veteran's Administration (GI. Bill)
D. Vocational Rehabilitation
E. Puerto Rico Council of Higher Education Grant

For any information about additional and/or available assistance or regarding the process to apply for them, please contact with the Financial Aid Office of the University.

STUDENTS EVALUATION AND PROMOTION

Performance of all student ascribe to the Radiologic Technology Program's offerings (Associate Degree in Radiologic Technology, post-Associate certificates in Diagnostic Medical Ultrasound, Mammography, Computerized Tomography, Magnetic Resonance and Bachelor in Science in Diagnostic Images) will be determined applying academic norms and process a described in the Evaluation and Promotion of Student's Rules and Regulations and non-discriminatory policies.

INDIVIDUAL PERFORMANCE ON COURSES

On the first week of each course the Faculty or Coordinator in charge of the course must give to each student a Course Syllabus which will include the objectives of the course, thematic content, educative strategy, and the individual evaluation criteria to be applied.

The performance of the individual students in each course is the responsibility of the facultative offering it. Final grade on the course will be the product of:

1. Student academic performance based on the objectives, requirements, and evaluation methods.
2. The attendance and participation in class, clinical labs or other programmed educational activities as described in each syllabus.

Student's opinions and behavior not related to the academic labor or requisites will not affect the evaluation and grade.

REVISION OF GRADE

All students has the right to revise his/her tests, quizzes, or any other evaluation activity related to the assessment in each course in a period of time not longer than two (2) weeks after being offered. In addition, the student has the right to revise the exams or any other academic evaluation strategy, after been evaluated, corrected and graded by the professor in a period not longer than three (3) weeks after been taken.

Final grades of any course cannot be changed once they had been officially submitted to the Programs Director office. In the case of error in the grade assigned to any student, the professor or coordinator of the course must submit a written justification to the Office of the Director of the Program for the grade change. Datelines for changes in grades will be the same as the dates for removal of Incompletes Faculty member will justify the need for the change in grades to the Program Director and to the Dean of Academic Affairs.

GRADE SCALE

By the end of each course each student officially enrolled will received a grade (letter) based on the following criteria:

Grade	Description	Honor Points
A	Excellent	4
B	Good	3
C	Average	2
F	Failure	0

MINIMUM GRADE TO APPROVE COURSES

All courses established in the curriculum of the Program must be approved with the minimum grade of "C" (Average) or higher. It is a prerogative of the Faculty member in charge of the course to establish the minimum percentage, equivalent to the minimum passing grade. This scale will be posted in the course syllabus.

Any student receiving an "F" in a course must repeat it next time the Program offers it. In case of a student being assigned an academic probation, the Evaluation and Promotion of Student Committee can recommend repetition of courses previously approved with a "C" to raise student's academic index.

OPTIONAL GRADE NOTIFICATION

Incomplete (I):

All course work must be completed no later than the date of the final exam period. If this is not possible for reason of illness or any other justifiable cause, the students will receive a temporary incomplete (I) qualification with an "F" as cumulative grade in the course. This qualification must be removed before the third week of the next academic period as stated in the UCC official academic calendar by the Registrar Office. If the incomplete classification is not removed by the posted date, an "F" will be registered as the final grade in the course.
In clinical courses, the removal dateline will be the last day of classes of the next academic period.

Withdrawal (W): In some case the student can withdraw from a course or the entire Program so he/she will not have to submit to a final evaluation. These cases are:

A. Partial or total Authorized withdrawal (W): a complete or partial separation of a student from the University, at the student's request, which would require readmission and registration for future enrollment.
B. Unauthorized withdrawal (UW): Absence without authorization to a course or non-enrollment in next academic semester. The UW can be initiated by the University for failure to meet University registration requirements.

Leave of Absence (LOA): In some cases a student can request (Authorized) or be prescribe (Required) a separation from the University and its facilities to attend personal or medical issues. LOA's will be effective for a maximum of 180 days in any twelve-months (12) period.

ASSESSMENT OF STUDENT PERFORMANCE

The following terms will be used to compute the performance or the student's progress. They are taken from the Operations Manual of the Registrar's Office of the University.

A. Credit-hours:
This term is used to calculate total value in credits of each course and will be in relation to the total period assigned to the course.
In semester long courses (15 weeks), one (1) credit equals:
- One (1) contact hour per week
- Two (2) supervised laboratory hours per week
- Four (4) non-supervised laboratory or self-study hours per week
- One hundred ten (110) clinical practice hours per semester

B. "Quality Points" (QP):

Total of credit hours of the course multiply by the honor points of the final grade value obtained in the course.

C. "Quality Point Index" (QPI):
This index is calculated dividing the total of "quality points" received during each semester by the total of credit hours taken during the semester.

D. "Cumulative Quality Point Index" (CQPI):
The "CQPI" is the total of "Quality Points" accumulated by the students during his entire academic experience divided by the total credit hours.

ACADEMIC CLASSIFICATIONS

Student academic progress will be evaluated at the end of each Evaluative Period. Evaluative period is defined, as an academic period corresponding to the 50% of the time limit required to complete the courses of the selected program. The Evaluative Period corresponds to every one (1) academic year in the Associate Degree, every one (1) semester in the post-Associate Certificate in Ultrasound, and every trimester for quarter-long programs.

At the end of each evaluative period, the Registrar will send to the Evaluation and Promotion of Students Committee the courses approved qualifications and "CQPI" obtained by each student. The Committee will review the academic performance of all students in all courses. When the evaluation has been completed for each case the Committee submits the recommendations to the Program Director.

The Committee can recommend the promotion of the student who meets all minimal promotion requirements.

A. Graduation Candidate:
At the end of the prescribe academic period the student can be recommended to receive the correspondent degree if he/she:
1. Has completed the academic requirements with a "CQPI" of 2.00 or more.
2. Satisfactorily approved all courses required in the Program's continuum.
3. Comply with other institutional requirements as indicated at the beginning of the academic program.

B. Unconditional Promotion (UP)
Finishing each evaluative period, the student will be promoted to next period after having completed all courses in the study program with a "CQPI" of 2.00 or more and no failures in any course.

C. Conditional Promotion (CP):
This classification will be assigned when a student fails ii a maximum of 25% of the credits/courses registered in any evaluative period but maintains a CQPI of 2.00 or more. This implies that the student must repeat the failed courses in the next session the Program offers them. The course can be repeated in other institutions, with appropriate authorizations from the Program Director and the Registrar's Office.

The Evaluation and Promotion Committee can recommend academic probation, suspension and expulsion in the cases of students not complying with minimum requirements as follows:

A. Academic Probation (AP):
The Academic Probation classification corresponds to a period in which the student's performance will be continuously evaluated. This classification will be given when:

Probation will last for the next evaluation period of the program the student is enrolled. Evaluation and Promotion Committee can recommend limits to the credits the student can enroll during this period and/or the repetition of courses approved with the minimal approval grade.

1. The student "CQPI" is less than 2.00
2. The student receives a final grade of failure in more than 33%, but no more than 50% of the credits/courses registered in the evaluative period.

In order to get out of the academic probation the student must:

1. Maintain a "CQPI" of 2.00 or more in next academic year.
2. Repeat and satisfactorily approve all courses with previous grades of "F".

Academic Probation status can be held for a maximum of two (2) evaluative periods, after which the student will be suspended.

B. Academic Suspension (AS):

Academic suspension is for a limited period of time. The student can apply for readmission to the Program after the established period, as determine by the Program's Evaluation and Promotion of Student Committee. Upon readmission the student will be assigned to Academic Probation classification. The student must comply with probation conditions to continue a regular course program.

The academic suspension of a student can be recommended under the following conditions:

1. A student who has received an academic probation and on the next academic period fails in getting over the minimum CQPI of 2.00.
2. Suspension after course repetition: any student who has been asked to repeat any courses and fails it for a second time.
3. Student who receives a final grade of failure in more than 50%, but no more than 66% of the credits/courses registered in the evaluative period.

C. Academic Dismissal (AD):

Academic dismissal is a definitive action: the student can no longer be allowed to enroll in the Radiologic Technology Program.

The academic dismissal of a student can be recommended under the following conditions:

1. A student who has received an Academic Suspension and on the next academic period fails in getting over the minimum CQPI of 2.00 or fails in any one course for a third time.
2. Any student which fails in two third's plus one (66% + 1) of the enrolled credits/courses in any evaluative period.

Honors:

Academic honor will be given to those students who have obtained the following cumulative averages, after completing the Program's requirements.

"CQPI"	HONOR
4.00-3.75	SUMMA CUM LAUDE
3.74-3.50	MAGNA CUM LAUDE
3.49-3.25	CUM LAUDE

MAXIMUM TIME PERIOD TO OBTAIN A DEGREE

The time to complete the Associated Degree in Radiologic Technology is two years (24 months), while the maximum period allowed for degree completion is three (3) years. The student can require additional time to complete degree for academic or personal reasons. In this cases the Evaluation and Promotion of Student Committee can establish a special schedule in order to allow student complete the requirements.

The maximum time to complete the post-Associate Certificate in Diagnostic Medical Ultrasound is twelve (18) months. Students can take an additional year to complete Certificate's requisites for academic or personal reasons following approval by the Evaluation and Promotion of Students Committee.

The maximum time to complete the post-Associate Certificate in Mammography is twelve (12) months. Students can take an additional semester to complete Certificate's requisites for academic or personal reasons following approval by the Evaluation and Promotion of Students Committee.

Leave of Absence (LOA): Permission asked by the student for not continuing studies on the next academic semester. In special cases, the University can give leave of absence permission so the student can retire from the Program without losing rights as a University student. This permission should be for a period not longer than 180 days in any twelve-month period.

A student with Leave of Absence (LOA) can continue the course continuum at the final of the withdrawal period following the normal enrollment procedure. After this period the student must apply for readmission to the Program following the established procedures.

REGULATIONS FOR THE CLINICAL AREA ROTATION

All students enrolled in the Medical Images Technology Program of the Universidad Central del Caribe must strictly comply with all the requirements established in the Curriculum. All offerings of this Program are designed in such a way that the student receives knowledge in both didactic and clinical phases. Is it required that all students attend to different clinical affiliation sites in order to obtain a wide and different experience on their training. They will be no repetition of assignments and rotations in the clinical practice centers.

Clinical practice hours are established in the curriculum of each of the offerings.

GENERAL OBJECTIVES

Clinical Practice has the following objectives:

A. To acquire and develop clinical skills in the field of diagnostic medical image procedures applying knowledge acquired in the didactic courses.
B. Acquire and develop professional work habits.
C. Acquire and develop skills in personal and professional relationship with patients, and with the other members of the health team.
D. Acquire and develop knowledge in the new developments and research in the field of medical images.

CLINICAL AFFILIATIONS

The Clinical affiliations are varied and distributed around the Island. The selection of these affiliate institutions is based on service quality, volume and variety of the procedures performed, and the number and availability of professionals willing to participate in student training. These affiliations are reviewed frequently to assure quality and effectiveness of the clinical experience.

The institutions affiliated to the program reserve their right of denying practice to any student implied in any activity considered as non-professional or conducting to risk in the patient's treatment

CLINICAL ROTATIONS

The Coordinator of each of the Program's offerings will assign students to clinical affiliates. This Coordinator is a full time faculty member in the Medical Images Technology Program responsible for the fulfillment of the academic objectives of the offering under his coordination.

Students will rotate in a different affiliate site during each academic period to guarantee a broad diversity of experiences. In exceptional cases, the Coordinator can authorize the repetition of a clinical rotation if a new or different experience is offered in any of the affiliates.

Once assigned to the Affiliate institution, the student will be under the responsibility of the Clinical Supervisor. This Clinical Supervisor is designated by the Affiliate as the person responsible for the clinical training, supervision and evaluation of students. In each affiliate site students will be assigned to work under direct or indirect supervision with a Clinical Instructor, this is the person who will be on a one-to-one daily basis with the student.

Students will be assigned to rotate in the different diagnostic modalities in the affiliate institution. This rotation will include routine and special procedures, portable, emergency and surgery room procedures (where available), quality assurance, file keeping, and patient scheduling. These

rotations will be concurrent with the relevant didactic contents and will be progressively more demanding as the student demonstrates and achieve the established competencies for each clinical course.

Student applying for the post-Associate certificates offered in a evening schedule (6:00PM to 9:00PM) will be require to secure his/her own clinical rotation space by submitting to the Radiology Clinical Coordinator of the Radiologic Technology Program a Letter of Authorization from the Clinical Supervisor or Medical Director of the Clinical Education Setting where he/she is expected to complete the clinical portion of the selected program. This is due to the wide variety of individual arrangements students required. This Letter of Authorization is an admission requirement and any student's admission can be cancelled if he/she hasn't been able to secure a clinical rotation by the enrollment date.

DIRECT AND INDIRECT SUPERVISION

The Clinical Supervisor in each Affiliate will determine the type of supervision each student will be subjected to. This determination will be based in the capabilities, development of competencies and student disposition to accept responsibilities and face new professional's goal.

Direct Supervision is defined as that in which the student performs procedures under the continuous observation of a Clinical Instructor who collaborates with the student in history assessment, patient positioning, exposure factor selection, clarifying doubts, correcting student's work and assisting in any other pertinent form to assure patient well-being.

Indirect Supervision occurs when the student performs procedures by himself without the presence of a Clinical Instructor. A Clinical Instructor or Supervisor will be immediately accessible in case the student requires assistance or consultation. The Clinical Instructor or Supervisor will regularly assess student performance. Clinical Supervisor and Instructors will sign a certification that attests to student qualification to work under indirect supervision after assessing student competencies.

In any case of Supervision, final determination on image quality and patient disposition is to be taken by a qualified technologist. No procedure will be finished until approval is given and the Clinical Instructor or Supervisor gives authorization for discharging the patient/client. In the event that a radiograph must be repeated, the Clinical Instructor or Supervisor will closely supervise the procedure (direct supervision) to assure patient is not expose unnecessarily and no further repetitions are required. Students will log their repeated films in their Clinical Manuals including Clinical Instructor /Supervisor signature. This disposition applies to all students, regardless of level or competencies.

Under no circumstance will a student assume responsibility for a patient in the absence of qualified personnel. The Clinical Affiliate is solely responsible for the well-being of its patients and students are personnel in training.

Students will record all procedures completed during his clinical rotation in the manner establish by the Clinical Coordinator. Repeat procedures will be register with the reason for repetition and will be signed by the Clinical Instructor.

ATTENDANCE TO CLINICAL AREA:

The time periods of clinical practice are from 8:00 AM to 4:30 PM on regular calendar days (Monday to Friday) as established in the academic calendar by the UCC Registrar. Clinical practice schedule can be modified when special arrangements are made between the student, the Clinical Coordinator and the Clinical Supervisor. All arrangements are to be submitted in written to the Clinical Coordinator and keep on the student file.

The students of the Program are required to attend regularly to all assignments in the clinical area. Attendance will be recorded and maintained by appropriate methods. This attendance must be certified daily by the Clinical Instructor in charge of students and at the end of the week by the Clinical Supervisor designated on each institution.

In justifiable circumstances, lateness or absences to the clinical area must be notified to the Clinical Supervisors of the assigned institution and to the Clinical Coordinator as soon as possible. Students are responsible of notifying their absence during the morning of the absence and provide written acceptable justification within 4 working days. All absences require a medical or other legal certificate in order to be considered justifiable. What is considered acceptable evidence will be determine by the Clinical Coordinator at the beginning of each academic period. Incompliance with this rule will result in the absence being declared as unjustifiable.

In the case of the student recording three or less unjustifiable absences, student will have to redo double the time and receive a 10 points decrease in the course total points. In the case of three or more unjustifiable absences an "F" will be awarded and the student will have to repeat the course when and where the Clinical Coordinator specifies.

Habitual lateness will result in final grade lowering, or in total course failure. For each three lateness of (15) fifteen minutes or more, the Supervisor will notify the Clinical Coordinator and will be recorded as a full unjustifiable absence.

If a student is removed from the Clinical Area for the reasons of unjustifiable absences and or lateness or for the reason of any significant incident, he/she will receive an "F" as final grade. All students failing in clinical courses will have to repeat the rotation in the next academic period in the affiliated institution as determined by the Clinical Coordinator.

REPOSITION OF CLINICAL HOURS

In those cases where the students justify his/her absences or lateness to the clinical area with adequate evidence, he/she must compensate them before next academic period. The total hours to be compensated will be determined only by the Clinical Coordinator and this will be made at the end of the practice period in the same affiliated institution where the student was assigned.

The student in need of compensating for hours of clinical practice due to justifiable absences will ask for an appointment with the Clinical Coordinator for authorization. Unjustifiable absences will be penalized with a reposition equivalent to two times the time of absences. No student, without distinction, can compensate extra hours without the authorization of the Program; in this case he/she would not receive credit for them and will not count as reposition.

ABSENCES TO PRACTICAL EXAMS

Regular Faculty of the Program in coordination with the Clinical Supervisor offers the practical evaluations in each of the clinical rotations. They will not be announced. Any student absent from the Clinical Area when a practical exam is offered will receive 0 points or "F" in the practical test. If during the next five working days, the student justifies the absence, the Clinical Coordinator can reprogram the test for another date.

CLINICAL PRACTICE GRADING

The final grade in each clinical course will be a note corresponding to the participation and clinical development of the student. Student competencies will be assessed through clinical evaluations; clinical competencies tests, assistance, case presentations and a reflexive diary as describe in the Clinical Handbook.

In the case a student does not complete clinical hours at the moment of reporting grades to the Registrar, an Incomplete (I) will be awarded. Incomplete removal will be done in the timetable establish in the academic calendar established by the Registrar. If the student does not remove this qualification in the scheduled time a final grade of "F" will be awarded.

If the student is removed from clinical practice for multiple unjustifiable absences or lateness, or because of any significant incident, an "F" will be awarded as final grade. Student will have to repeat clinical practice during the next academic period.

PREGNANT STUDENTS

In case a student suspects or has evidence that she is pregnant, the student must report it immediately to the Clinical Coordinator. Students are to withdraw from clinical practice until a final determination in her case is made. The notification of pregnancy is a totally voluntarily action to be taken by the student. No action will be taken in the case a student doesn't show interest to notify her pregnancy.

In the event that the student wishes to notify her status, the pregnancy policy states that the following procedure will be followed:

- Suspected pregnant student is required to present the following documents to the Clinical Coordinator:
    - Pregnancy test report,
    - Medical certificate signed by an obstetrician stating the capability of the student to continue in clinical work
    - Certification by the student and her partner (or parents in the case no partner is identified) stating interest in continuing clinical practice and holding harmless the University in case of any problem with the pregnancy.
    - These documents are referred to the Radiation Physicist who must prepare a work plan and recommendations to be followed by the student under the Clinical Coordinator, Clinical Supervisor and Instructor surveillance.
    - All pregnant students will return to Clinical practice at sites with the best radiation protected area and exposure controls.
    - Any pregnant student who presents any problem or condition that can jeopardize her pregnancy, or in the case no safe clinical practice can be guaranteed, will be retired from clinical practice until after giving birth and a clearance is submitted by her obstetrician.

Any determination in these cases will be taken with the recommendations of the Obstetrician, the Physics Advisor and the Clinical Coordinator and giving special consideration to the well-being of the pregnancy.

Any pregnant student will have a one-year period, from the moment she is retired, to complete all didactic and clinical requirements.

STUDENT ACCIDENT PLAN OF ACTION

Any accident that occurs while the student is in the Clinical Area, no matter if it is a personal injury or equipment damage, must be informed immediately to the Clinical Supervisor and to the Program Director and/or Clinical Coordinator.

If the student suffers an accident of any kind, and gets hurt, he/she must go immediately to the Personnel Physician or to the Emergency room of the institution where he/she is assigned and receive first assistance or treatment. Student can be required to present medical insurance evidence. Once the student is taken care of, an incident report will be forwarded to the Program Director to be filed in the student's personal file.

If the student has the suspicion of having been in contact with a patient with a contagious illness, no matter if the contact was direct or indirect, he/she will go immediately to the Personnel Physician or the Emergency Room of the Institution for the necessary evaluation and treatment. Also he/she it will notify the incident to the Epidemiological Nurse and/or to the Nurse Supervisor of the Institution as soon as possible.

The Institution will take the necessary measures for the adequate care of the patients with contagious illness for the protection not only of the students, but also of the Institution's personnel.

The student will ask for a copy of the incidents sheet or sheets that specify the incident, and the evaluation and treatment received. This copy will be delivered to the Clinical Coordinator and will form part of the student's record.

UNIFORM

All students, without distinction, are required to be in complete uniform in the Clinical Area and his/her personal appearance must reflect neatness. The students of the Medical Images Technology Program will use their uniforms only for programmed activities in the clinical area or whenever they officially represent the Institution.

In specific cases, the Clinical Coordinator can authorize the student to use another type of clothes. If authorized, the Clinical Coordinator will send written communication to the Clinical Supervisor notifying the change. Under no circumstance will the student be allowed not to use the white laboratory coat. The lab gown is considered an occupational precaution measure and its use is indispensable and compulsory in the clinical practice work.

Any student that presents himself to the Affiliated Centers without complete uniform, either stained or untidy, will be sent away by the Clinical Supervisor or by the Clinical Coordinator of the Program and lost time will be considered as unjustifiable absence.

Uniform to be use in the Clinical Area (strict compliance is required and will be access)

1. Scrub type uniform
2. Close Black or white shoes (no tennis allowed)
4. White lab gown
5. 'Universidad Central del Caribe' badge
6. Dosimeter (current)
7. ID card

Student general appearance is an integral part of the uniform. It is required that all students present themselves with a personal appearance in accord with the work he/she is to perform. Male students should be shaved or, in case of wearing a beard, it will be clean and groomed. Male students will not be allowed with earrings. Female students will not be allowed at the clinical sites with long and dangling earrings. Long hair must be kept gathered and nails should be short and clean. No student will use dark glasses, hats or excessive make-up.

Identification

The students at all times during the clinical work will show the ID Card of the University or any other special ID Card required by the affiliated Institution. In addition they will use a nametag with their name, the Universidad Central del Caribe coat badge. All identifications will be kept at a visible angle in the lab gown. The incorrect or inadequate use of the identification methods could be reason enough to apply incomplete uniform rules.

Radiographic Makers

The students will acquire and use in all moment their own lateral markers ("R" and "L") to identify the radiographic procedures they are doing.

Dosimeters

The dosimeter is a personal indicator of exposition to radiation. Each person in the radiology area must use one. The Program offers this service to the students. Students are responsible for wearing dosimeters in the correct way (refer to the Radiation Protection Policy) and changing the film element as stated in the schedule (before day 10 of each month). Students not keeping their dosimeter current will be considered as having an incomplete uniform. No student will be admitted to the clinical area without the dosimeter or with an expired film element.

Dosimeter readings over 100 mrems per any dosimeter period will be referred to the Medical Physics Advisor for revision. The Physics advisor will call in the student and review causes for the high reading. A report will be submitted to the Program Director with a copy to the Clinical Supervisor of the Clinical Affiliation to which the student is assigned. Dosimeter readings are available at the Program's Office for student revision during regular office hours. Due to confidentiality issues reports will not be posted. Appointments with the Physic Advisor can be arranged so the student can discuss his/her readings.

Meal Hours

Students will benefit from a one-hour lunch break and two fifteen minutes coffee breaks in the morning and afternoon respectively, except when an authorization from the Clinical Coordinator allows for different arrangements. The Clinical Supervisor will assign the coffee breaks, lunch, and meal hours when the student is in the clinical labors.

Transportation and Lodging

The students of the Program will be responsible to provide themselves transportation and lodging to attend their clinical area labors, no matter where they are assigned.

Confidential Information

All information of the hospital and patients is confidential. All information related to a patient for educational purposes will be referred to patient's doctor in order to maintain the necessary confidentiality. Patient authorization will be required when films are to be identified.

RULES TO FOLLOW IN THE CLINICAL AREA

All students of the Radiological Technologic Program:

1. Will present to clinical area labors in an alert condition.
2. Will not be in possession, nor have used drug or alcohol, while being in clinical practice. Clinical Affiliate must comply with federal and state laws regarding drug and alcohol abuse in its premises.
3. Strictly observe the Policies, Rules and Regulations of the Affiliate site to which they are assigned.
4. Will not engage in immoral conduct, according to the legal definitions, University and Program's Rules and Regulations or the affiliated Institutions.
5. Will not smoke or chew gum while in the clinical practice, nor in those areas where it is prohibited.
6. Will not eat in any area of the affiliate premises, unless they are expressly designed for that purpose.
7. Talk in a correct and low tone.
8. Will not use the Affiliate's telephone for personal calls.
9. Will not abandon their assigned clinical areas without the authorization of the Institution's Clinical Supervisor.
10. Will not accept any type of gratitude or tip from the patient's or family.
11. Use their best judgment to avoid accidents or any incident that could jeopardize patient/client well-being, equipment functioning or structural safety of the affiliates

Violation of any of these rules will mean dismissal of the student from clinical practice for a term no less than one day, which will have to be rescheduling according to regulations. In case of repeated violations the Clinical Area Supervisor will inform the Clinical Coordinator who will meet with the student and find a way of resolving the situation applying the present rules and regulations.

In case of ethical or acts of violence by the student or any other felony, the student would be suspended from the clinic practice while the situation is evaluated. In case that the evaluation is favorable to the student and he/she will be authorize to return to clinical practice, and must compensate for lost time according to rules and regulations.

It is a responsibility of the Clinical Supervisor of each Affiliated Institution to notify the Clinical Coordinator and/or the Program's Director of any incident or situation involving a student immediately after occurrence. Said notification can be by telephone, but this is to be followed by a written report to evidence the incident or the corresponding annotation in the Student's Clinical Manual.

VIOLATIONS TO THE RULES OF THE UNIVERSIDAD CENTRAL DEL CARIBE

The following behavior constitutes violations to the basic rules of institutional order, and disciplinary measures will be enforced:

1. Violations to the Institution's Regulations including General Student's Rules and Regulations, Program's Rules and Regulations regarding Clinical Practice.
2. Lack of honesty in academic labor.
3. Alteration or falsification of enrollment books, attendance sheets or any other official documents.
4. Alteration to peace, participation and/or incitement to acts of violence in the University campus, or Program's Clinical Affiliates.
5. Interruption, obstaculization or disturbance of the University or the Clinical Affiliates regular tasks.
6. Damage to the property of the University or the Clinical Affiliates.
7. Violations to the confidentiality of patient's information or of the Institutions

It is the responsibility of the Faculty and the Clinical Instructors of each affiliated institution to notify the Program Director of any incident or situation in which a student is involved. Notification can be by telephone, but has to be immediately evidenced in writing.

Penalties:

It the student incurs in any of the above disciplinary violations the Program's Director will notify him/her in writing about the violation and the penalties that apply. If the student cannot provide satisfactory excuses, applicable penalties will be enforced. In case of recurrence the student will be submitted to the Discipline Board of the University which will determine which disciplinary actions apply, following applicable Universidad Central del Caribe Rules and Regulations.

RIGHT TO APPEAL / DUE PROCESS

All students have the right to differ and to express their concerns or disagreement about any academic evaluation or disciplinary action taken against him/her. This resource must be made in agreement with the rules and regulations of conduct and in accordance with an academic styles and in such a way that it will not affect the order and/or not damage in any manner the development of the University activities or disrupts the Clinical Areas.

The students can request a re-evaluation of the decisions that affect them writing a letter to the Program Director. The Program Director will revise the decision taken in consultation with the Faculty, Clinical Area Coordinator and/or with the corresponding Clinical Supervisor or any other implied person.

If it is necessary, the student can take the appeal to the Dean of Academic Affairs and to President of the University or his representative. Final appeal is to the Board of Trustees, directly or by way of the Student's General Council as authorized on the General Student's Rules and Regulations and the Policy for Addressing Student Abuse and Mistreatment.

Each and every one of the processes mentioned here are to be completed within a period not to exceed 14 working days (Monday to Friday).

STUDENTS SERVICES OFFER BY THE UNIVERSITY

Tutorial Program for Students
The Counseling Office of the Deanship for Student's Affairs offers tutoring to students who have been identified as academically deficient in one or more courses on their program of studies.

Counseling Services
Counseling Services are available through the Counseling Office of the Deanship for Student's Affairs of the University. These services can be applied for directly by the student or referred by the faculty of the Program.

Learning and Information Resources Center
The Learning and Information Resources Center (LIRC) occupies the first floor of the Basic Sciences Building of the University. It is divided in different services: Reserve and Circulation, Reference, "Journals", Abstracts and Indices, Computer Center, Electronic Data Processing Center. Other services available include photocopy, Table of Contents report service, Internet connection with services such as "Micromedex", "Medline", "Current Contents".

The quantity of volumes at present is over 12,000 for the use of students and faculty. The Library regularly receives approximately 400 journals in addition to 167 inactive titles for a total of 567 titles that cover pre-clinical fields in medicine and allied professions. Complete sets of the most important journals are available. Students can request additional publications through interlibrary loans.

The Computer center has as its primary objective to assist Faculty, students and administrative personnel in the selection, use, and evaluation of educational audiovisual means and of self-instruction. In order that the students can assimilate the materials and concepts; the audiovisual center counts with a variety of learning resources. These include computer software, Internet access, videotapes, and film and slides presentations.

Socio-cultural activities Program
The Dean of Admissions and Students Affairs in coordination with the other institutional officers develop and coordinate Socio-cultural activities for the students. These are notified in the many Bulletins Boards around the main building.

Medical Services
The University requires of all students the subscription to a health insurance plan. If the student doesn't count with this service, the University will provide one at minimal cost for the student. Clinical Affiliations have the compromise to give emergency services to the students while they are in their facilities. Emergency services while at the University premises are given at the Ramón Ruiz Arnau Hospital.

ID Cards
Each student enrolled has to have an ID Card that includes photo, name, Social Security number, signature and the assigned student number. It is extremely necessary to use and have this identification to have access to Hospital and University, Library, official activities and others.

Lodging Facilities

The University doesn't provide lodging facilities, however these services are available in the near area through individual arrangement between the student and the proprietor. A list of available services is available in a directory published by the Dean for Admissions and Student's Affairs.

Lost articles Claim

All lost articles found must be delivered to and/or will be claimed at the Deanship for Admission and Student's Affair Office or to the Academic Resource Center front desk.

GENERAL INFORMATION

This Manual is published by the Medical Images Technology Program, Universidad Central del Caribe, Bayamón, Puerto Rico. The information contained within is a summary of the rules and regulations related with Admissions, Evaluation and Promotion of Students and Clinical Practice Rotations. Full documents are available at the Program offices and in the Reserve area of our Library for review by all those interested.

The information in this catalog is subject to changes without previous notice; and the University reserves its right to make changes in calendars, positions, rules, academic requirements, programs and any other aspects after publication date to attend to arising situations.

Any proposed change to this document can be submitted in writing to the Program Director. This Manual is to be revised bi-annually to keep it updated with changes in Policies, Rules and Regulations.

In the event that any part of this document is found to be null and void by any qualified authority this will not deem the rest of the document invalid.

This English version of the 'Manual de Estudiantes" is prepared by the MITP Program Faculty for accreditation purposes. In case of misinterpretation, the Spanish Version will prevailed and hold final.

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