

## **Radiological Technology (AAS, BS)**

### **Radiological Technology (AAS)**

The Associate Degree in Applied Sciences in Radiological Technology (AAS) seeks the training and preparation of a health professional responsible for administering doses of ionizing radiation for diagnostic, treatment or research purposes. The development of a radiological technologist with the highest level of clinical competence and responsibility regarding the acquisition of radiographic image, quality control and patient care in a radiological center is promoted. It promotes the development of skills to solve problems and think critically. Promotes oral and written communication skills according to the needs of different types of patients. Integrates and applies the principles of radiological and occupational safety in the Radiology department.

The mission of the Associate Degree in Applied Science Program in Radiological Technology has its roots in the mission of Inter American University of Puerto Rico.

This mission is achieved through the following goals:

1. To develop an academic program that responds to student needs and those of the society the Program serves.
2. To develop a curriculum in harmony with the practice standards established by the regulating agencies of the discipline.
3. To provide students with the knowledge and necessary educational experiences that will permit them to pass the revalidation examination.
4. To prepare professionals to be members of an interdisciplinary health team that will carry out its functions in a safe, effective and competent manner.
5. To promote learning as a continuous process so that these professionals keep updated in their field of specialty once they enter the world of work.

#### **Program objectives**

1. Develop critical thinking and problem-solving skills in your practice as clinically competent radiologic technologists.
2. Establish an assessment plan to ensure compliance with the goals and objectives of the program.
3. Maintain an academic curriculum in line with the current demands of the discipline.
4. Develop the necessary skills to perform their duties and responsibilities within the standards of practice established for their profession.
5. Develop in students the ability to perform as an active member within the interdisciplinary health team attending the needs of the patient.
6. Promote professional values and attributes to maintain a high level of ethical behavior with patients, employees, colleagues and other members of the interdisciplinary health team.
7. Develop competent professionals in the realization and evaluation of radiographic diagnostic images.
8. Foster in the student the commitment to continuous professional development.

Several institutions providing health services in Puerto Rico participate as affiliates in clinical instruction. In keeping with the availability of physical facilities and resources to serve students, each campus authorized to offer the program determines the maximum number of students to be admitted per year.

## Competencies Profile of Graduates

The Program is designed to develop the skills that allow the student:

### Knowledge:

Demonstrate knowledge and understanding of:

1. the evaluation criteria and radiographic quality for all procedures related to the different anatomical parts of the body according to radiography.
2. radiation safety and security measures while executing radiographic procedures.
3. the appropriate medical terminology when communicating any type of information related to the status or condition of the patients.
4. the fundamentals and standards of the profession.

### Skills:

1. Demonstrate critical thinking skills and problem solving within the professional performance.
2. Demonstrate effective oral and written communication skills with the patient, family, colleagues and other members of the health team.
3. Employ effective skills in the management and care of outpatients and hospitalized before, during and at the end of the radiographic intervention.
4. Perform radiographic procedures in accordance with the standards of practice established by the profession.
5. Effectively use emerging technology in the discipline and work area.
6. Interpret medical orders when executing any intervention with patients.

### Attitudes:

1. Show cordial and professional relationships with members of the interdisciplinary health team, patients and family members.
2. Demonstrate professional, empathic and ethical conduct with patients, radiology staff, the interdisciplinary health team and the general public.
3. Exhibit responsibility for the professional and personal growth through continuing education, participation in professional organizations and the study of all literature related to their specialty.

## Admission Requirements

Students aspiring to the Associate Degree in Applied Science in Radiological Technology must meet the following specific requirements for admission to the Program:

1. Be admitted to Inter-American University of Puerto Rico, in a campus authorized to offer the Program.
2. Submit a completed admission application on or before the date stipulated by the Program.
3. Present an official and updated transcript of recent studies.
4. Have a general grade point average of at least 2.50.

## Admission Procedure

1. The transcript of courses taken and credits will be evaluated.
2. The absolute value of the general grade index (GPA) will be considered from 2.50 in a scale of 4.0.
3. Each course taken will be assigned a value in accordance with its credit value. The assigned value will be multiplied by the numerical value of the grade obtained (A = 4 points, B = 3 points, C = 2 points)
4. High school students:  
The scores of the completed courses will be added (Biology, Chemistry, Physics and Introduction to Computers), the total is divided by the total of credits taken and this total is multiplied by the number of courses for a total of from 0 to 16 points. (Total points ÷ total of credits = \_\_\_\_ total x of taken courses (maximum 4) = \_\_\_\_)
  - a. Present evidence of the results of the PAA test. Points will be awarded in the sections of Mathematics and English based on the score obtained in each part, as described below:

- English: 440-540 = 2 points; 541-640 = 3 points; 641 and higher = 4 points
- Mathematics: 440-520 = 2 points; 521-600 = 3 points; 601 and higher = 4 points

University students:

The scores of the completed courses or their equivalent will be added (Basic Concepts of Biology, Human Anatomy and Physiology, Intermediate Algebra, Psychology, Introduction to Computers and English) and divided by the total of credits taken and multiplied by the total number of courses (maximum of 6) up to a total of 24 points (Total points ÷ total credits = \_\_ total x of courses taken (maximum of 6) = \_\_\_\_)

5. One point (1) will be granted for attendance at the Program orientation.
6. One point (1) will be granted if the applicant has experience in health related professions.
7. A two point (2) bonus will be granted if it is second-time application.  
The total of points will be added for the final maximum score of 30 points.  
The applicants will be ordered in descending order from the highest to the lowest score and those with the highest scores will be selected. The maximum number of students per year will be determined based on the facilities and resources available to take care of them.
8. The candidates will be informed of the decision of the Admissions Committee.

After admission, students must present:

- Two (2) photos 2 x 2
- A health certificate
- Evidence of vaccination against Hepatitis B, Chickenpox and Influenza
- A certificate of no criminal record
- Up-to-date evidence of CPR.
- Negative Certificate of No Sex Offender.
- Particle Aspiration Test (N95).
- HIPAA Law Certificate.
- Negative doping (5 tests)

Each of these evidences must be presented before starting the second semester of the first year of the program and must be valid for 6 months at the beginning of each semester. This applies to every student assigned to the program.

The student is responsible for complying with any other requirement so requested or required by the agencies or clinical affiliations that serve as practice centers for the Program.

Similarly, the student must comply with those requirements, not academic, related to the fulfillment of the essential functions of the discipline. These appear in section 504 of the Vocational Rehabilitation Act of 1973. Therefore, given the work requirements and functions of the radiologic technologist, the student should know that he will occasionally have to lift and move heavy objects. All students with a history of physical limitations are advised to consult their physician before enrolling in the Program courses.

### **List of Essential Functions of the Radiological Technologist**

Radiological Technology is a profession that requires students to demonstrate the ability to perform the functions listed below in a safe, reliable and efficient manner.

1. Ability to stand and walk for 80% of the clinical time.
2. Ability to help, lift and position patients for at least 80% of the clinical time.
3. Verbal and written skills sufficient to respond promptly in communications with patients, co-workers and doctors.
4. Enough vision to observe the patient's condition while behind the control panel and to evaluate the images. Verbal skills to instruct the patient while performing the tasks of a radiologic technologist.

5. Enough hearing to respond to the patient's needs and interact with the patient, as well as to respond to the audible sound of the equipment.
6. Enough motor skills to respond to medical emergencies and manipulate the equipment. These motor skills may include, among others, the following:
  - a. extend your hands and arms in any direction.
  - b. grab, hold, turn, and work with both hands.
  - c. choose, pinch or work with fingers.
  - d. move hand and foot in a coordinated manner with each other according to visual stimuli.
  - e. lift, load, pull and / or frequently push objects weighing 50 lbs. or more.
7. Intellectual, ethical and emotional skills to exercise discretion.
8. Cognitive ability to perceive threats and environmental tensions and ability to handle these situations:
  - a. continue to function safely and effectively during periods of high stress.
  - b. ability to protect yourself and others from potential dangers in the health care environment; infectious diseases, contaminated equipment, sharp objects (especially needles), chemical gases and radiation.

Disability Law Statement: The Inter American University of Puerto Rico complies with all provisions of the Americans with Disabilities Act and makes reasonable accommodations at the request of qualified individuals.

### **Retention Requirements**

1. Meet the academic progress norms established in Inter American University's General Catalog.
2. Approve GEMA 1200 from the General Education Program and all major courses with a minimum grade of C.
3. The student will attend the clinical affiliation as programmed by the Program Office.
4. All students who do not satisfactorily approve one major course in a semester will be placed on a probationary period in the program. If a student fails the same course during the probationary period, he will be dropped from the Program.
5. The student who is suspended for academic deficiency and/or punishable conduct may not be re-admitted to the Program. This applies to both the academic and clinical components.
6. Three (3) or more days of absence during the semester in a course of clinical practice, without a reasonable justification, will result in the student being dropped from the course.

### **Internal and External Transfer Requirements**

1. Comply with all admission norms for transfer students established in the General Catalog and in that of the corresponding Campus.
2. The Director of the Program or the Director's authorized representative will evaluate the file and determine the equivalences.
3. Students, who fail, obtain UW in major courses or withdraw from the Program before completing the degree, have a maximum of two academic semesters to register in the current study program, in harmony with its capacity to receive more students. Those students, who do not take major courses during this period, must apply again for admission to the Program.
4. Direct internal or external transfers to courses RATE are not permitted. For this, an application for space or admission to the program must be made. Major courses will not be authorized in combined registration.

### **Graduation Requirements**

1. Meet all the graduation norms and requirements for the Associate in Applied Science Degree established in the General Catalog.
2. To obtain the Associate of Applied Sciences Degree in Radiological Technology, the student must complete the degree with a minimum academic grade point index of 2.50.

The Aguadilla, Barranquitas, Fajardo, Guayama (Inter Humacao Center), Ponce, and San Germán campuses are authorized to offer this Program.

The programs of the Ponce and San Germán campuses are accredited and certified by the national accrediting board, Joint Review Committee on Education in Radiologic Technology (JRCERT).

The Aguadilla, Barranquitas, Ponce and San Germán programs are recognized by the American Registry of Radiologic Technology (ARRT), which allows the student to aspire to the revalidation of the United States.

## REQUIREMENTS FOR THE ASSOCIATE OF APPLIED SCIENCE DEGREE IN RADIOLOGIC TECHNOLOGY

General Education Requirements	24 credits
Major Requirements	51 credits
Related Course Requirements	<u>3 credits</u>
Total	78 credits

### General Education Requirements - 24 credits

GESP	Literature and Communication	6
GEEN	English as a Second Language	6
GECF 1010	Introduction to the Christian Faith	3
GEIC 1010	Information and Computing Technologies	3
GEMA 1200	Fundamentals of Algebra	3
GEHS 2010	Historical Process of Contemporary Puerto Rico	3
	or	
GEEC 2000	Entrepreneurial Culture	3

### Major Requirements - 51 credits

RATE 1110	Patient Care	2
RATE 1125	Introduction to Radiological Technology and Ethical Concepts	2
RATE 1130	Radiologic Protection	3
RATE 1141	Biology and Radiographic Anatomy I	3
RATE 1142	Biology and Radiographic Anatomy II	3
RATE 1221	Radiographic Procedure and Evaluation I	2
RATE 1230	Principles of Radiographic Exposure and Processing	3
RATE 2090	Pharmacology and Venipuncture	3
RATE 2210	Critique and Radiographic Quality Control	3
RATE 2222	Radiographic Procedures and Evaluation II	2
RATE 2223	Radiographic Procedures and Evaluation III	2
RATE 2231	Radiological Physics I	3
RATE 2232	Radiological Physics II	3
RATE 2240	Radiographic Pathology and Medical Terminology	3
RATE 2260	Radiobiology	2
RATE 2270	Diagnostic Image Modalities and Equipment	2
RATE 2911	Clinical Practice I	1
RATE 2912	Clinical Practice II	3
RATE 2913	Clinical Practice III	3
RATE 2917	Clinical Practice IV	3

### Related Course Requirements - 3 credits

GEHS 3050	Human Formation, Society and Culture	3
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## **Radiological Science in Computerized Tomography and Magnetic Resonance (BS)**

The Bachelor of Science in Radiological Sciences offers a comprehensive educational program for students who have an Associate Degree in Radiological Technology and for certified radiological technologists. The main purpose of the Program is the development of clinical competence in advanced modalities of diagnostic images: Computerized Tomography and Magnetic Resonance.

The Program is designed to allow the student to develop personally and professionally through participation in a variety of didactic and clinical learning experiences. These include cognitive, psychomotor and affective components with scientific knowledge based on concepts and principles of the natural and social sciences, and the humanities; in addition to other sciences related to the discipline.

As a health related science, radiological science is deals with patient health and well-being through diagnosis and treatment of diseases by means of the creation of medical images using X-rays, ultrasound and nuclear magnetic resonance. The specialists in diagnostic images work in collaboration with radiologists and other medical specialists.

It is expected that graduates of this Program be prepared to work in different scenarios such as: general and specialized hospitals, medical, offices, specialized clinics, educational institutions, public health institutions, companies dealing in medical equipment, in industry, and others.

### **Admission Requirements**

1. Submit evidence of having completed the graduation requirements for the Associate Degree in Radiological Technology in a properly certified institution.
2. Have a minimum average of 2.50
3. Meet the established norms of admission in the General Catalog of Inter American University of Puerto Rico.
4. Present an effective copy of the following documents:
  - a. Certificate of Health
  - b. Certificate of Immunization against Hepatitis B and Chickenpox
  - c. Negative Certificate of Criminal Records submitted by the Police of Puerto Rico (not more than six months old)
  - d. Certificate of Cardiovascular Resuscitation (CPR)
  - e. Evidence of a HIPPA course
5. In addition to the indicated admission requirements, the candidates who come from other institutions will be evaluated in relation to the curricular program of origin to determine the courses they must take.

### **Retention Requirements**

1. Meet the satisfactory academic progress norms established in the General Catalog of Inter American University.
2. Pass all major courses with minimum grade of C. The courses of clinical practice must be approved with a minimum grade of B.
3. Students who attempt and fail the same major course in two occasions will be put under a probationary period in the Bachelor's program of X-ray Sciences with a major in Computerized Tomography and Magnetic Resonance. If the student fails during the probationary period in the same course, he will be dropped from the program, but he may choose to request admission to another major.
4. Once the student is assigned to a clinical center, he must attend this as programmed by the professor and the coordinator of the Program.

## Graduation Requirements

1. Meet the graduation requirements established in Inter American University's General Catalog.
2. Pass all major courses with a minimum grade of C. The clinical practice courses must be approved with a minimum grade of B.
3. To obtain the Bachelor's degree in Radiological Sciences with a major in Computerized Tomography and Magnetic Resonance, the student must complete the degree with a minimum general academic index of 2.50.

The Aguadilla, Barranquitas, Ponce and San Germán campuses are authorized to offer this Program.

## REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE IN RADIOLOGICAL SCIENCES WITH A MAJOR IN COMPUTERIZED TOMOGRAPHY AND MAGNETIC RESONANCE

Associate Degree Requirements in Radiological Technology	84 credits
General Education Requirements at the Bachelor's Level	18 credits
Major Requirements	<u>30 credits</u>
Total	132 credits

### General Education Requirements - 18 credits

In order to receive the Bachelor of Science Degree in Radiological Sciences, students must take 18 credits in General Education in addition to the 24 credits approved for the Associate Degree. These 18 credits will be taken as follows: in the Philosophical and Esthetic Thought category, course GEPE 4040 and a course from among 3010, 3020 and 3030; in the Basic Skills in Spanish category, course GESP 2203; in the Basic Skills in English category, course GEEN 1103; in the Scientific and Technological Context category, either course GEST 2020 or 2030; in the Historical and Social Context category a course from among GEHS 3020, 3050, 4020 and 4030.

### Major Requirements - 30 credits

CTMR	3020	Physics of Computerized Tomography	3
CTMR	3025	Physics of Magnetic Resonance	3
CTMR	3000	Introduction to Computerized Tomography and Magnetic Resonance	2
CTMR	3010	Sectional Anatomy and Pathophysiology	4
CTMR	3050	Procedures and Pathology in the Images of Computerized Tomography	4
CTMR	3060	Procedures and Pathology in the Images of Magnetic Resonance	4
CTMR	4910	Practice in Computerized Tomography	4
CTMR	4920	Practice in Magnetic Resonance	4
CTMR	4030	Integration Seminar	2

## ~~Minor in Science in Skeletal Muscle Sonography~~

### ~~Requirements of the Minor in Science in Skeletal Muscle Sonography - 18 credits~~

~~This minor requires that students be admitted to the Bachelor of Science in Radiological Sciences with a major in Computerized Tomography and Magnetic Resonance of the Ponce Campus. The Ponce Campus is authorized to offer this Minor.~~

SONO	3005	Anatomy and Pathophysiology MSK	3
SONO	3010	Physics and Instrumentation of Ultrasound	3
SONO	3011	Sonography MSK in the Upper Extremities	3
SONO	3012	Sonography MSK in the Lower Extremities	3
CTMR	4010	Computerized Tomography MSK	3
CTMR	4011	Magnetic Resonance MSK	3