RADIATION THERAPY (RAT)

RAT1001 INTRODUCTION TO RADIATION THERAPY (3.00 Credits)
Content is designed to provide the student with overview of the foundations in radiation therapy and the practitioner's role in the health care delivery system. Principles, practices and policies of the educational program, health care organizations, principles of radiation, health safety, and professional responsibilities. In addition, ethics and law of the radiation therapist will be discussed and examined.
Total Contact Hrs: 48.00
Lecture Hrs: 48.00

RAT1002 INTRODUCTION TO RADIATION THERAPY CLINICAL APPLICATIONS (3.00 Credits)
A course designed to provide knowledge and instruction in the application of radiation therapy procedures with a detailed study of instrumentation, radiation therapy equipment, patient charting and radiation procedures during the early phases of patient contact. This course will also cover radiation safety, treatment tolerance doses of critical structures, treatment procedures, basic patient positioning, operation of the equipment and patient accessories.
Total Contact Hrs: 48.00
Lecture Hrs: 48.00
Complete all the courses in the following option:
- Corequisite: RAT1002L (minimum grade: C)

RAT1002L INTRODUCTION TO RADIATION THERAPY CLINICAL APPLICATIONS LAB (1.00 Credits)
A course designed to provide knowledge and hands-on instruction in the application of radiation therapy procedures with a detailed study of instrumentation. This lab corresponds to the information and objectives of RAT 1002 Specific radiation therapy terminology, basic procedures, specific patient positioning and accessories will also be covered.
Total Contact Hrs: 32.00
Lecture Hrs: 32.00
Fees: LABORATORY FEE $25.00, LABORATORY FEE $25.00
Complete all the courses in the following option:
- Pre or Corequisite: RAT1002 (minimum grade: C)

RAT1123 RADIATION THERAPY PATIENT CARE (1.00 Credits)
An introduction to the principles and practices of patient care during radiation therapy procedures and treatment. Topics that will be covered include communication, patient safety, patient transfers, immobilization of patient and body parts, infection control, vital signs, caring for patient who have special needs, pharmacology, drug administration, universal precautions, isolation techniques, and introduction to medical ethics and law.
Total Contact Hrs: 16.00
Lecture Hrs: 16.00
Complete all the courses in the following option:
- Option 1 - Prerequisite: RAT1614 (minimum grade: C), Corequisite: RAT1123L and RAT1212 and RAT1615

RAT1123L RADIATION THERAPY PATIENT CARE LAB (1.00 Credits)
This course is a practical application of the theory taught in RAT1123, Radiation Patient Care. Topics include patient interaction skills, safety procedures, basic patient care needs, patient movement and handling, infection control, taking vital signs, administering oxygen, aseptic techniques, non-aseptic techniques, and medical emergencies.
Total Contact Hrs: 32.00
Lab Hrs: 32.00
Fees: LABORATORY FEE $25.00
Complete all the courses in the following option:
- Option 1 - Prerequisite: RAT1614 (minimum grade: C), Corequisite: RAT1123 and RAT1212 and RAT1615

RAT1210 INTRODUCTION TO RADIATION THERAPY ANATOMY (1.00 Credits)
This course is designed to present anatomy and its importance to the radiation therapist. A survey of the structure of human body as it pertains to radiation therapy will consider the following: the cell, tissues, glands, skeletal system, the spine, pelvis, lower limb, abdomen, thorax, upper limb, the neck, and the head.
Total Contact Hrs: 16.00
Lecture Hrs: 16.00
Complete all the courses in the following option:
- Pre or Corequisite: RAT1614 (minimum grade: C)

RAT1212 RADIATION THERAPY IMAGING ANATOMY (2.00 Credits)
A study of radiographic human anatomy as it pertains to identifying organs at risk and treatment considerations for radiation therapy. Students will study the anatomy of the human skeleton and organ systems in both two dimensional and three-dimensional views.
Total Contact Hrs: 32.00
Lecture Hrs: 32.00
Complete all the courses in the following option:
- Pre or Corequisite: RAT1614 (minimum grade: C)

RAT1614 INTRO TO RADIATION THERAPY PHYSICS (2.00 Credits)
An introductory study of radiation therapy physics to include mathematical principles & measurement, atomic structure, electromagnetic radiation, magnetism, electrostatics, electrodynamics, electromagnetism, x-ray production & interactions. Admission to program required.
Total Contact Hrs: 32.00
Lecture Hrs: 32.00

RAT1615 RADIATION THERAPY MEDICAL IMAGING (1.00 Credits)
An introductory study to radiographic processes. Included will be the processes behind computed tomography, magnetic resonance imaging, nuclear medicine, positron emitting tomography, and ultrasound as it pertains to simulation, detection, and diagnosis of cancer.
Total Contact Hrs: 16.00
Lecture Hrs: 16.00
Complete all the courses in the following option:
- Pre or Corequisite: RAT1614 (minimum grade: C)

RAT1804 CLINIC EDUCATION I (1.00 Credits)
Familiarization with the equipment utilized in the treatment of patients begins along with assisting the therapist in the clinical environment, simulation area, patient care nursing areas and the mold room. Demonstrations of patient leveling skills and beginning basic treatments and simulations competencies.
Total Contact Hrs: 128.00
Clinical Hrs: 128.00
Fees: EDU/ACCIDENT INSURANCE $4.75, EDU/ACCIDENT INSURANCE $4.75, LIABILITY INSURANCE $8.15, LIABILITY INSURANCE $8.15, LABORATORY FEE $17.00, LABORATORY FEE $17.00
Complete all the courses in the following option:
- Option 1 - Prerequisite: RAT1002 (minimum grade: C) and RAT1002L (minimum grade: C)

RAT2021 PRINCIPLES OF RADIATION THERAPY I (3.00 Credits)
An introduction to the principles of radiation therapy, radiation protection, and a review of radiation safety. This course will cover the historic and current aspects of cancer treatment. The roles and responsibilities of the radiation therapist and medical physicist will be discussed. This course will cover the simulation process and the use of a computed tomography simulator. Students will present a case study at the end of the semester on a patient they have followed in their clinical rotation.
Total Contact Hrs: 48.00
Lecture Hrs: 48.00
Complete all the courses in the following option:
- Option 1 - Corequisite: RAT2023 and RAT2243 and RAT2617, Pre or Corequisite: RAT2814 (minimum grade: S)

RAT2022 PRINCIPLES OF RADIATION THERAPY II (3.00 Credits)
This course is continuation of RAT 2021, Principles of Radiation Therapy I. This course is designed to present an in-depth study of the principles of electron therapies, safety, quality assurance, and quality management in Radiation Oncology. In addition, basic dosimetry concepts will be reviewed to prepare the student for the RAT 2619 Dosimetry course in the last semester of the program. Students will present a case study at the end of the semester on a patient the they have followed in their clinical rotation.
Total Contact Hrs: 48.00
Lecture Hrs: 48.00
Complete all the courses in the following option:
- Option 1 - Corequisite: RAT2824 (minimum grade: S), Pre or Corequisite: RAT2021 (minimum grade: C)

RAT2023 RADIATION ONCOLOGY 1 (4.00 Credits)
A study of the fundamentals of clinical radiation oncology. In this course students will be introduced to a cancer overview as it pertains to the biologic perspective, etiology, epidemiology, detection, diagnosis, screening, treatment options, prognosis, and pharmaceutical interventions for cancer. This course will introduce the student to clinical trials and their significance in the prevention and treatment of cancer. Students will be introduced to skin, prostate, breast, central nervous system, lung, and gastrointestinal cancers (esophagus, gastric, pancreatic head, large colon, and anus).
Total Contact Hrs: 64.00
Lecture Hrs: 64.00
Complete all the courses in the following option:
- Option 1 - Corequisite: RAT2021 and RAT2243 and RAT2617 and RAT2814

RAT2024 RADIATION ONCOLOGY II (4.00 Credits)
A study of the fundamentals of clinical radiation oncology. This course is a continuation of RAT 2024, Oncology I. In this course students will be introduced to a cancer overview as it pertains to the biologic perspective, etiology, epidemiology, detection, diagnosis, screening, treatment options, prognosis, and pharmaceutical interventions for cancer. Students will be introduced to head and neck, gynecological, urinary bladder, testicular, penis, kidney, bone, cartilage, soft tissue, pediatric, Hodgkin lymphoma, non-Hodgkin lymphoma, leukemia, and endocrine cancers.
Total Contact Hrs: 64.00
Lecture Hrs: 64.00
Complete all the courses in the following option:
- Option 1 - Prerequisite: RAT2023, Corequisite: RAT2022 and RAT2241 and RAT2618 and RAT2824

RAT2061 RADIATION THERAPY SEMINAR (2.00 Credits)
This course will provide the opportunity for the radiation therapy student to evaluate their cumulative knowledge through comprehensive testing, refinement of accumulated knowledge, and retention of all aspects of radiation therapy. The course challenges the student to be prepared for the American Registry of Radiologic Technologist comprehensive national examination upon completion of graduation.
Total Contact Hrs: 32.00
Lecture Hrs: 32.00
Complete all the courses in the following option:
- Option 1 - Pre or Corequisite: RAT2619 (minimum grade: C) and RAT2834 (minimum grade: C)

RAT2241 RADIOBIOLOGY (3.00 Credits)
This course is designed to establish a basic knowledge of atomic structure and terminology and provide an overview of the principles of radiation protection and interaction with living systems. Also presented are the nature and characteristics of radiation (i.e., its effects on molecules, cells, tissues and the body as a whole, X-ray production and the fundamentals of photon interactions with matter). Radiation health and safety requirements and the responsibilities of the radiation therapist for patients, personnel and the public are also incorporated. Factors affecting biological response are presented, including acute and chronic effects of radiation, survival curves, total body exposure responses, and the goals of radiation therapy.
Total Contact Hrs: 48.00
Lecture Hrs: 48.00
Complete all the courses in the following option:
- Option 1 - Prerequisite: RAT2021 (minimum grade: C), Corequisite: RAT2022 (minimum grade: C)

RAT2243 RADIATION ONCOLOGY SECTIONAL ANATOMY (3.00 Credits)
This course is designed to present sectional anatomy and its importance to radiation therapist. This course will include three-dimensional (3-D) imaging identification of anatomical structures in various imaging methods and planes. Location of internal organs and critical structures by topographical anatomy will also be included. Normal anatomic structures of the head, neck, thorax, abdomen, pelvis, and spine will be presented in multi-planar sections. The pathophysiology of normal tissues as well as malignant tissues will be discussed and visualized in 3-D imaging.
Total Contact Hrs: 48.00
Lecture Hrs: 48.00
Complete all the courses in the following option:
- Option 1 - Prerequisite: RAT1002 (minimum grade: C), Corequisite: RAT2814 (minimum grade: C)

RAT2617 ADVANCED RADIATION PHYSICS I (3.00 Credits)
The fundamentals of x-ray, gamma, and corpuscular radiation as applied to radiation therapy. Teletherapy units and nuclear reactors are also discussed.
Total Contact Hrs: 48.00
Lecture Hrs: 48.00
Complete all the courses in the following option:
- Option 1 - Corequisite: RAT2021 and RAT2023 and RAT2243 and RAT2814

RAT2618 RADIATION PHYSICS II (2.00 Credits)
Advanced physics of ionizing radiation including measurements, dosages, absorption, isodose curves, filters, radioactive materials treatment planning, properties of radionuclides, radiation safety and health physics.
Total Contact Hrs: 32.00
Lecture Hrs: 32.00
Complete all the courses in the following option:
- Option 1 - Corequisite: RAT2824 (minimum grade: C), Pre or Corequisite: RAT2617 (minimum grade: C)

RAT2619 DOSIMETRY & COMPUTER TREATMENT PLANNING (1.00 Credits)
This course will introduce the students to the advanced physics and math calculations they will be required to perform as radiation therapists. The course will describe the physical and geometric factors affecting the applied beam energy and how to correct for these factors. The course will describe how to modify an applied beam to avoid critical structures while delivering the required dose of radiation.
Total Contact Hrs: 16.00
Lecture Hrs: 16.00
Complete all the courses in the following option:
- Corequisite: RAT2834

RAT2814 CLINIC EDUCATION II (3.00 Credits)
Patient treatment competency assignments continue in radiation therapy departments. The student's responsibilities increase as more complex competencies in patient treatment are mastered, and additional competencies are performed in simulation and the dosimetry area are performed. Student is also introduced into a variety of patient care areas.
Total Contact Hrs: 384.00
Clinical Hrs: 384.00
Fees: EDU/ACCIDENT INSURANCE $4.75, LIABILITY INSURANCE $8.15, LABORATORY FEE $17.00
Complete all the courses in the following option:
- Pre or Corequisite: RAT1804 (minimum grade: C)

RAT2824 CLINIC EDUCATION III (3.00 Credits)
Advanced clinical education stressing practical application of dosimetry competencies under the direct supervision of a medical physicist or dosimetrist. Continuation of advanced patient treatment competencies under the supervision of a registered radiation therapist, continuation of simulation procedures and quality assurance testing.
Total Contact Hrs: 384.00
Clinical Hrs: 384.00
Fees: EDU/ACCIDENT INSURANCE $4.75, LIABILITY INSURANCE $8.15, LABORATORY FEE $17.00
Complete all the courses in the following option:
- Pre or Corequisite: RAT2814 (minimum grade: C)

RAT2834 CLINIC EDUCATION IV (1.00 Credits)
The most advanced clinical education as evidenced by the level of competency demonstrated by terminal competency skills.The student will also demonstrate their didactic knowledge, technical understanding of treatment planning and basic calculations required of an entry level radiation therapist. Completion of this course will ensure that the student is competent upon graduation to assume all the responsibilities required of an entry level Registered Radiation Therapy Technologists.
Total Contact Hrs: 128.00
Clinical Hrs: 128.00
Fees: EDU/ACCIDENT INSURANCE $4.75, LIABILITY INSURANCE $8.15, LABORATORY FEE $17.00
Complete all the courses in the following option:
- Corequisite: RAT2619