

Radiation Therapy Program

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DEGREE PROGRAM OFFERED

Bachelor of Science in Radiation Therapy (BSRT), major in Radiation Therapy

The radiation therapist is a key member of the professional team, which uses various forms of radiation to treat cancer patients. Radiation therapy may be used alone, or in combination with surgery or chemotherapy, and is the treatment of choice for cure of many cancers. Because of sustained contact with patients, the radiation therapist has considerable responsibility in patient care, dietary counseling and treatment evaluation. The radiation therapist must also appreciate the significant psychological impact that cancer has on patients and their families. The program is accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT). The curriculum complies with the professional curriculum of the American Society of Radiologic Technologists.

The degree program, Bachelor of Science in Radiation Therapy with a major in Radiation Therapy, is a two- and one-half year program beginning in the junior year. The junior and senior years combine clinical experiences in the affiliated radiation therapy facilities with advanced academic study in the professional disciplines. The program is designed to prepare students for the technical, theoretical, and psychological aspects of this career. Students acquire the technical skills necessary to plan, deliver, and record a prescribed course of radiotherapy. Upon completion of the degree, students are eligible to apply to the ARRT national registry examination.

Admission

Any student entering Texas State may declare Pre-Radiation Therapy as their major. Admission to Texas State does not guarantee admission to the program. Admission to the program is competitive and selective. It is recommended that students arrange academic advising at least once prior to making application. The academic sequence begins during the fall semester. Enrollment is limited by student/faculty ratios in the clinical components of the program. The deadline for submission of applications is January 15.

General Admission Requirements:

1. Admission to Texas State
2. Satisfactory completion of all general education requirements and a minimum overall GPA of 2.75.
3. Any student who did not complete at least two years of the same foreign language in high school is required to take 6-8 hours of the same foreign language.
4. Students must receive a "C" or higher in all math, science, and support courses: BIO 2430, HP 3302, AT 3358, PHYS 1320, PHYS 1110, CHEM 1341, CHEM 1141.
5. See Academic Services section of the catalog for course options that satisfy literature components.
6. Completion of an application packet for admission.

7. Three letters of reference and a career goal statement.
8. Successful interview of selected candidates with admission committee.
9. 40 hour clinical observation with completed evaluation on file by Jan. 15.
10. Students must be able to perform the 13 Technical Standards indicated by the American Disabilities Act (refer to program website or department for more information).
11. Previous misdemeanor or felony convictions will affect admission to the program.

Criminal Background Check/Drug Screening

As a condition for placement in some professional practice sites, students may be required to have a background check and/or drug screening and meet other requirements set by individual sites. Information on the process of drug screening will be provided by the school/department/program. Previous misdemeanor or felony convictions under various titles of the Texas Penal Code may affect eligibility for state license status following graduation and may affect admission consideration to the Radiation Therapy program.

Academic Progression

Students enrolled in the Radiation Therapy Program are required to maintain a grade of "C" or better in all coursework. Radiation Therapy courses are offered in a lock-step sequence. Each course is offered only once each academic year; therefore, progress in the program is affected should a student fall out of the sequence due to failure to successfully complete a course. A student who falls out of sequence (whether due to illness, course failure, or other reasons) will be delayed one year to repeat the course. In addition, a student may repeat a radiation therapy course only once. If the student does not earn a grade of at least "C" upon repeating the course, the student cannot continue in the program.

Graduation

To graduate with a Bachelor of Science in Radiation Therapy Degree, a student must successfully fulfill the general education requirements and complete all radiation therapy courses with a "C" or better. The student must meet the requirements for clinical competency as described in the Directed Clinical Learning syllabi. Graduation students must have attained a 2.0 or higher Texas State University GPA with a minimum of a 2.75 GPA in the Radiation Therapy major.

Liability Insurance

1. Students who participate in the clinical and internship portions of the Radiation Therapy program are required to purchase liability insurance, or demonstrate proof that they are insured.
2. Students may obtain information on liability insurance from the program office.

Immunization Requirements

It is a policy of the College of Health Professions that each student must provide a Health Report completed by a physician, and must take certain immunizations before the student can be placed in a clinical or internship assignment. Information on these requirements and forms to be supplied may be obtained through the program office.

Bachelor of Science in Radiation Therapy (BSRT)
Major in Radiation Therapy
Minimum required: 120 semester hours

General Requirements:

1. Any student who did not complete at least two years of the same foreign language in high school is required to take 6-8 hours of the same foreign language.
2. See Academic Services section of the catalog for course options that satisfy the literature component.
3. If US100 is waived, the student must have 120 hours to graduate. See College Advising Center.

Freshman Year - 1st Semester		Freshman Year - 2nd Semester		Freshman Year - Summer		Sophomore Year - 1st Semester	
Course	Hr	Course	Hr	Course	Hr	Course	Hr
ENG 1310	3	ENG 1320	3	ENG Literature	3	BIO 2430	4
HIST 1310	3	HIST 1320	3	PHIL 1305 or 1320	3	POSI 2310	3
BIO 1320 or 1330	3	BIO 1421 or 1331/1131	4	PSY 1300	3	MATH 2417 or 2471	4
COMM 1310	3	CHEM 1341	3			ART, DAN, MU, or TH 2313	3
US 1100	1	CHEM 1141	1				
Total	13	Total	14	Total	9	Total	14

Sophomore Year - 2nd Semester		Junior Year - 1st Semester		Junior Year - 2nd Semester		Junior Year - Summer	
Course	Hr	Course	Hr	Course	Hr	Course	Hr
AT 3358	3	RTT 3314	3	RTT 3310	3	RTT 4189	1
POSI 2320	3	RTT 3301	3	RTT 3302	3	RTT 4360	3
PHYS 1320, 1315, or 1325	3	RTT 3300	3	RTT 3350	3	RTT 4220	2
PHYS 1110, 1115, or 1125	1	RTT 3220	2	RTT 4370	3	RTT 4120	1
HP 3302, PSY 2301, SOCI 3307, MATH 2328, or CJ 3347	3	RTT 3120	1	RTT 3221	2		
				RTT 3121	1		
Total	13	Total	12	Total	15	Total	7

Senior Year - 1st Semester		Senior Year - 2nd Semester	
Course	Hr	Course	Hr
RTT 4371	3	RTT 4361	3
RTT 4330	3	RTT 4331	3
RTT 4310	3	RTT 4190	1
RTT 4221	2	RTT 4191	1
RTT 4121	1	RTT 4222	2
		RTT 4122	1
Total	12	Total	11

Courses in Radiation Therapy Technology (RTT)

- 3120 Clinical Simulation Lab I. (0-4) Students are provided instruction and simulated practice in a controlled laboratory setting. This course provides first-year students foundational clinical set-up skills from which to build on during the clinical learning practicum course.
- 3121 Clinical Simulation Lab II. (0-4) Students are provided instruction and simulated practice in a controlled laboratory setting. This course provides instruction, demonstration and participation in immobilization, positioning and simulation with the aid of an anthropomorphic phantom. Students will learn aspects of simulation for basic treatment delivery applications.
- 3220 Directed Clinical Learning I. (1-16) Students will observe the basic operations of the radiation oncology clinic while interacting with the multidisciplinary team involved in providing treatment and care. The student will be introduced to oncology terminology, equipment, and techniques used for treatment. Learning is achieved through direct patient care, with instruction, demonstration and direct supervision. Prerequisite: Acceptance into the major.
- 3221 Directed Clinical Learning II. (1-16) Students will gain additional skills in clinical procedures, interaction with patients and professional personnel. Students apply knowledge from previous clinical learning experience under the supervision of a registered radiation therapist. Students are tested on intermediate clinical radiation therapy skills.
- 3300 Patient Care in Radiation Oncology. (3-0) This course will focus on basic nursing concepts involved in providing care for the cancer patient. Topics to be included in the class will be cancer as a chronic health problem, social roles and cancer, multidisciplinary approach to patient care, psychosocial dimension of cancer, in-treatment examinations, follow-up examinations, emergency management, chemotherapy and nutritional aspects of treating patients with cancer.
- 3301 Introduction to Radiation Oncology. (3-0) An overview of radiation oncology and the role of the radiation therapist. Presentations will orient the student to the physical and biological basis of radiation equipment, procedures, tumor pathology, and patient interaction. (WI)
- 3302 Radiologic Science and Medical Imaging. (3-0) This course will cover the principles governing production of radiation, interaction of radiation with matter, and protection of the radiation worker and patient from exposure. Basic principles of x-ray equipment, exposure factors, latent image formation, and processing of radiographs are presented. Prerequisite: Program Director's approval.
- 3310 Physics of Radiation Therapy I. (3-0) Students will learn the principles of radiation physics as they apply to the treatment and care of the cancer patient. Course will include a thorough review of x-ray production, fundamental principles, concepts and terminology. Topics studied include measurements, general principles, structure of the atom, structure of the matter, electrostatics, magnetism, electrodynamics, electromagnetism, rectification and production and properties of radiation and radiographic techniques.
- 3314 Radiation Therapy Sectional Anatomy. (3-0) The course provides instruction in identifying cross-sectional anatomy to develop the ability to make anatomic correlations between multiple planes of view. Major organs, lymphatics, vessels are emphasized as related to the clinical significance in the field of radiation therapy.
- 3350 Radiobiology. (3-0) This course will cover the principles of cell response to radiation, including tissue sensitivity, survival, repair and the latent effects of irradiated tissue. Topics to be covered include the development of radiation science, cellular targets for radiation action, target theory, physical/chemical factors affecting radiation response, biological factors, repair and recovery, fractionated doses and dose rate, early/acute effects of whole body exposure, late/chronic effects of whole body exposure, and radiation protection dose guidelines.
- 4120 Clinical Simulation Lab III. (0-4) Students are provided instruction and simulated practice in a controlled laboratory setting. A continuation of RTT 3121. This course provides instruction, demonstration and participation in immobilization, positioning and simulation with the aid of an anthropomorphic phantom. Students will learn aspects of simulation for basic and intermediate treatment delivery applications.
- 4121 Clinical Simulation Lab IV. (0-4) Students are provided instruction and simulated practice in a controlled laboratory setting. A continuation of RTT 4120. This course provides instruction, demonstration and participation in immobilization, positioning and treatment simulation. Students will learn aspects of simulation for basic, intermediate, and some advanced treatment delivery applications.
- 4122 Clinical Simulation Lab V. (0-4) Students are provided instruction and simulated practice in a controlled laboratory setting. A continuation of RTT 4121. This course provides instruction, demonstration and participation in immobilization, positioning and treatment simulation. Students will learn aspects of simulation for basic, intermediate, and some advanced treatment delivery applications.
- 4189 Radiation Therapy Literary Scholarship and Manuscript Writing. (1-0) This intensive writing course provides instructions in research strategies, critical review and analysis of peer reviewed publications. An introduction to scholarly resources and professional manuscript development using peer reviewed journal guidelines for the profession of radiation therapy. This course prepares students for RTT 4191 Radiation Therapy Seminar. (WI)
- 4190 Professional Issues in Radiation Therapy. (1-0) This capstone course provides a comprehensive review of the program curriculum and clinical practice in the field. Current radiation therapy treatment management techniques and issues are presented for analysis.
- 4191 Radiation Therapy Seminar. (1-0) This course is a continuation of RTT 4189. The course provides instruction in the completion of a final draft for the student's technical manuscript. The course work builds from the completed manuscript and draws from the material and knowledge gained in RTT 4189 to develop a formal presentation.
- 4220 Directed Clinical Learning III. (1-16) Students will continue to develop skills during this clinical course. Progressive interaction with patients and professional personnel are monitored as students practice radiation therapy in a

- supervised setting. Additional areas include problem solving, identifying machine components and basic side effect management. Students will demonstrate competence in beginning, and intermediate procedures.
- 4221 Directed Clinical Learning IV. (1-24) The course provides students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and some advanced procedures through supervised clinical instruction, progressing through a competency-based educational sequence.
- 4222 Directed Clinical Learning V. (1-24) The student will complete their clinical training by practicing all the skills they have learned in the classroom, lab, and clinical practicum. The student will continue demonstrating proficiency while completing the Skills Competency Checklist.
- 4291 Professional Issues in Radiation Therapy. (2-0) This capstone course provides a comprehensive review of the program curriculum and clinical practice in the field. Current radiation therapy treatment management techniques and issues are presented for analysis.
- 4310 Physics of Radiation Therapy II. (3-0) Students will continue to learn the principles of cell response to radiation. Topics covered will include properties of x-ray and gamma radiation, radiation units, x-ray production, photon interactions, beam characteristics, radioactivity, treatment units, and particle irradiation.
- 4330 Quality Assurance. (3-0) Students will study quality assurance tests related to patient charts, treatment accessories, patient communication devices, machine reading and safety devices. Emphasis on quality control procedures to include Continuous Quality Improvement (CQI), Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and responsibilities of each team member in relation to quality assurance duties.
- 4331 Operational Issues in Radiation Therapy. (3-0) Course content is designed to focus on various radiation therapy operational issues. Accreditation, CQI development and assessment techniques will be presented. Human resource issues and regulations impacting the radiation therapist will be examined. Topics include the role of network information systems within the radiation oncology department. (WI)
- 4360 Dosimetry I. (3-0) This course will cover the basic concepts in treatment planning and clinical dosimetry. Students will learn to identify treatment preparation processes and needs for beam modifying devices. Students will also be taught isodose charts for several treatment arrangements and be able to calculate a variety of external beam treatment formulas.
- 4361 Dosimetry II. (3-2) Students will learn additional concepts in treatment planning and clinical dosimetry addressed in Dosimetry I. Computerized treatment planning applications will enhance the understanding of medical dosimetry.
- 4370 Clinical Radiation Oncology I. (3-0) The first of a two-part course, this course advances the student's knowledge of neoplastic disease management. Instruction will focus on the regional anatomy and physiology, epidemiology and etiology, detection and diagnosis, diagnostic procedures, histopathology, patterns of spread principles of treatment, staging, and prognosis.
- 4371 Clinical Radiation Oncology II. (3-0) The second of a two-part course, this course is a continuation of disease specific instruction. Instruction will focus on the regional anatomy and physiology, epidemiology and etiology, detection and diagnosis, diagnostic procedures, histopathology, patterns of spread, principles of treatment, staging, and prognosis.