

## **Radiation Therapy Program**

Phone: (512) 245-9081

Office: Health Professions Building 310A

Fax: (512) 245-1477

Web: <http://www.health.txstate.edu/rtt>

### **Degree Program Offered**

- 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 Process**

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 with a program advisor 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.

1. Admission to Texas State
2. Satisfactory completion of all general education requirements and a minimum overall GPA of 2.75.
3. Completion of an application packet for admission.
4. Three letters of reference and a career goal statement.
5. Interview of selected candidates with admission committee.
6. 40 hour clinical observation.
7. Deadline for submission of applications is January 15.

In order to fulfill the requirements of the Radiation Therapy Program 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).

### **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**  
**Major in Radiation Therapy**

Minimum required: 131 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 University College section of the catalog for course options that satisfy literature components.
3. Students must receive a "C" or higher in all RTT and support courses.
4. Students who do not meet requirements for computer proficiency must take HP 2351 or equivalent.

<b>Freshman Year</b>	<b>Hours</b>	<b>Sophomore Year</b>	<b>Hours</b>
BIO 1320, 1421.....	7	PT 3400.....	4
CHEM 1141, 1341.....	4	AT 3358 or RTT 3340.....	3
COMM 1310.....	3	PHYS 1110, 1320.....	4
ENG 1310, 1320.....	6	ENG Literature.....	3
US 1100.....	1	HA 4307, 4315.....	6
HIM 2360.....	3	HP 3302 or equivalent.....	3
HIST 1310, 1320.....	6	POSI 2310, 2320.....	6
MATH 2417.....	4	PFW one course.....	1
PHIL 1305 or 1320.....	3		
PSY 1300.....	3		
PFW one course.....	1		
ART, DAN, MU or TH 2313.....	3		
<b>Total</b>	<b>44</b>	<b>Total</b>	<b>30</b>
<b>Junior Year</b>	<b>Hours</b>	<b>Senior Year</b>	<b>Hours</b>
RTT 3300, 3301, 3302, 3310, 3314.....	15	RTT 4310, 4321, 4322, 4330, 4331.....	15
RTT 3320, 3321, 3350.....	9	RTT 4360, 4361, 4190, 4290.....	9
RTT 4320, 4370, 4371.....	9		
<b>Total</b>	<b>33</b>	<b>Total</b>	<b>24</b>

**Courses in Radiation Therapy Technology (RTT)**

**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.

(WI) **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.

**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. Prerequisite: Admission to program, and PT 3400.

**3320 Directed Clinical Learning I.** (1-16) Students will observe the basic operations of the radiation oncology clinic while interacting with the multidisciplinary team members involved in providing optimal care to cancer patients. The student will be introduced to oncology terminology, equipment, and techniques used for treatment.

**3321 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.

**3340 Oncologic Pathology.** (3-0) This course introduces the concept of disease, histology, types of growth, etiology and biological behavior of neoplastic diseases. Topics: the inflammatory process and clinical patterns, types of edema and etiology hormones related to growth; characteristics of benign and malignant tumors; histological grading; and pathophysiology across the lifespan and associated diseases.

**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.

**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.

(WI) **4290 Radiation Therapy Seminar.** (2-0) This writing intensive course provides instructions in research strategies, critical review, and analysis of peer-review publications, manuscript style, and publication guidelines according to the American Society of Radiologic Technologists (ASRT) professional journal. Emphasis is placed on critical thinking and building a foundation of research skills.

**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. Prerequisite: RTT 3310.

**4320 Directed Clinical Learning III.** (1-24) Students will improve their skills in clinical procedures. 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, intermediate, and advanced procedures.

**4321 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 advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures.

**4322 Directed Clinical Learning V.** (1-24) This course is the final in a series of five directed clinical courses. The student will complete the clinical training by practicing all the

skills learned in classroom and clinical instruction. The student will continue demonstrating proficiency while completing the Skills Competency Checklist.

**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.

**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.

(WI) **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.

(WI) **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. Prerequisite: RTT 4370.