RADIATION THERAPY TECHNOLOGY — BS

Program director
Carol A. L. Davis

Clinical coordinator
Norice Kisinger

Radiation therapy, or radiation oncology, is the medical use of ionizing radiation to treat cancer and control malignant cell growth. Radiation therapy is commonly combined with other modes of treatment for cancer, such as surgery, chemotherapy, and hormone therapy. Radiation therapists should be able to think critically, be proficient with computers, and able to work with a treatment team. Patient care and empathy are also important assets. The program is intended for radiographers or other allied health, patient-centered professionals who seek additional specialization, or for non-ARRT (American Registry of Radiologic Technologists) students who meet the prerequisites and would like to complete a bachelor’s degree in radiation therapy.

Mission
The mission of the Bachelor of Science degree in radiation therapy is to prepare professionals in the field of radiation therapy who have received broad education and training in all aspects of the profession. This will include critical thinking, clinical competence, effective communication, and professionalism as they apply to the field of radiation therapy. The program encourages intellectual, physical, social, and spiritual development by emphasizing these in its curriculum—all of which reflect the motto of Loma Linda University Health, “To Make Man Whole.”

Program goals
By the end of this program, the graduate should be able to:

1. Demonstrate critical thinking.
2. Be clinically competent.
3. Demonstrate effective verbal communication skills.
4. Demonstrate effective written communication skills.
5. Demonstrate professionalism.
6. Demonstrate ability to perform quantitative reasoning.

Program learning outcomes
By the end of this program, the graduate should be able to:

1. Optimize daily treatment images to ensure their congruence with the treatment-planning CT.
2. Apply oncology theory to understanding patient case histories and treatment plans.
3. Complete morning quality assurance tests and recognize when results are out of tolerance.
4. Educate patients, and maximize their comfort and safety.
5. Preform treatment sequences accurately.
6. Verify treatment console data and track all variables on the screen.
7. Treat all persons with respect as well as accept responsibility and accountability for actions.
9. Accept responsibility and accountability for actions.

CPR certification
Students are required to have current health-care provider adult, child, and infant cardiopulmonary resuscitation (CPR) certification for all scheduled clinical experience. CPR certification must be completed at the American Heart Association health-care provider level and must be completed prior to beginning the program of study. Classes are available on campus at Life Support Education, University Arts building, 24887 Taylor Street, Suite 102.

Accreditation
The Radiation Therapy Technology Program is accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT), 20 North Wacker Drive, Suite 900, Chicago, IL 60606-2901; telephone: 312/704-5300; website: www.jrcert.org (http://www.jrcert.org).

Admissions
Admission is based on a selective process. In addition to Loma Linda University (http://llucatalog.llu.edu/about-university/admission-policies-information/#admissionrequirements) and School of Allied Health Professions admissions requirements (http://llucatalog.llu.edu/allied-health-professions/#generalregulationstext), the applicant must also complete the following requirements:

• Prerequisite courses as listed below.
• Complete the prerequisite requirements, or be a graduate of an accredited radiologic technology program who has completed the prerequisite requirements in conjunction with that program.
• 24 hours of career observation in a radiation oncology department.
• G.P.A. of 3.0 or better, higher is more competitive.
• Admissions essay.
• Interview.

Prerequisite courses
Prerequisites are listed as they relate to general education domains. All courses must be completed at an accredited college or university prior to entering the program. Please note: C- grades are not transferable for credit.

Domain 1: Religion (8 quarter units)
(Completed during enrollment at LLU)

Domain 2: Arts and humanities (minimum 16 quarter units)
Units must be selected from at least three of the following content areas: civilization/history, art, literature, language, philosophy, religion, or general humanities electives. A minimum of 3 quarter units in an area is required to meet a “content area.”

Domain 3: Scientific inquiry and quantitative reasoning (minimum 12 quarter units)
• College algebra (completed within five years with a minimum grade of B).
• Human anatomy and physiology with laboratory, complete sequence (two course minimum)
• Introductory physics at the college level (one quarter/semester)
Domain 4: Social sciences (minimum 12 quarter units)
- General psychology or developmental psychology.
- Select addition units from two of the following content areas: anthropology, economics, geography, political sciences, psychology, and sociology.
- The human diversity requirement is fulfilled in the portfolio core courses: RTCH 491 Portfolio I and RTCH 492 Portfolio II (approved by the University GE Committee).

Domain 5: Written and oral communication (minimum 9 quarter units)
- English composition, complete sequence that meets the baccalaureate degree requirements of a four-year college or university
- Other areas of study in communication may include courses in computer information systems, critical thinking, and public speaking.

Domain 6: Health and wellness (minimum 2 quarter units)
- A didactic course in health or nutrition (e.g., personal health, personal nutrition, population health, global health, and community nutrition) minimum of 2 units
- Physical education. Must include at least two separate physical activity courses totaling a minimum of one quarter units.

Other
- Medical terminology
- Radiation physics, radiation protection, principles of radiography, and patient care methods - available, as part of the program, for non-ARRT students the first Summer Quarter (ARRT students start Autumn Quarter).

Electives
Electives may be needed to meet the minimum requirements of 192 quarter units. A maximum of 105 quarter units may be transferred from a community/junior college.

- ARRT-certified students will earn 89 units in the program. (prerequisite units required: 102 quarter/68 semester)
- non-ARRT-certified students will earn 103 units in the program. (prerequisite units required: 90 quarter/60 semester)

Electives may be selected from the GE domains listed above. For more information regarding GE requirements for graduation, see LLU general education requirements (http://llucatalog.llu.edu/about-university/division-general-studies/).

Program requirements

ARRT certified students

First Year

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<th>Course Name</th>
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<tr>
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<td>Portfolio I</td>
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<td>RTCH 387</td>
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<td>Patient-Care Practices in Radiation Therapy</td>
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Second Year

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Total Units: 89

Notes:
1 The CT sequence (RTSI 364, RTSI 367, RTSI 369) may be substituted with the CT sequence (RTMR 305 Introduction to Computed Tomography I, RTMR 306 Introduction to Computed Tomography II, and RTSI 307 Introduction to Computed Tomography Completion Course) completed by LLU’s ASMR students.
2 Fulfills service learning requirement.

Non-ARRT certified students

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<td>RTCH 285</td>
<td>The Principles and Physics of Radiation</td>
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<td>RTMR 224</td>
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<td>Radiation Protection and Biology</td>
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RTTH 364  Radiation Oncology I  2
RTTH 371  Radiation Therapy Affiliation I  2

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RTTH 342  Patient-Care Practices in Radiation Therapy  2
RTTH 356  Physical Principles of Radiation Therapy II  3
RTTH 365  Radiation Oncology II  2
RTTH 372  Radiation Therapy Affiliation II  3

Spring Quarter
AHCJ 403  Pathology II  2
AHRM 475  Health-Care Research and Statistics  2
RTTH 357  Applied Dosimetry  3
RTTH 366  Radiation Oncology III  3
RTTH 373  Radiation Therapy Affiliation III  3

Second Year
Summer Quarter
AHCJ 318  Emotional Intelligence and Leadership Skills for Health-Care Professionals  3
RELRT 406  Adventist Beliefs and Life  2
RTTH 474  Radiation Therapy Affiliation IV  3
RTTH 354  Quality Assurance in Radiation Therapy  2

Autumn Quarter
RELRT 409  Christian Perspectives on Death and Dying  3
RTSI 367  Cross-sectional Radiographic Anatomy  2
RTSI 369  CT Physics  2
RTTH 332  Radiation Biology  2
RTTH 475  Radiation Therapy Affiliation V  5

Winter Quarter
RELRT 415  Christian Theology and Popular Culture  2
RTCH 464  Moral Leadership  3
RTCH 467  Management of a Radiologic Service  2
RTSI 364  CT Patient Care and Procedures  3
RTTH 348  Radiation Therapy Review  2

Spring Quarter
RTCH 492  Portfolio II  3
RTTH 348  Radiation Therapy Review  2
RTTH 477  Radiation Therapy Affiliation VII  4

Total Units: 104

Courses

RTTH 332. Radiation Biology. 2 Units.
The effects of radiation on living systems.

RTTH 342. Patient-Care Practices in Radiation Therapy. 2 Units.
Aspects of radiation therapy patient care. Emphasizes equipment, treatment, and psychological support of the patient. Transfusion and prevention of AIDS and other communicable diseases, with specific application to radiation therapy.

RTTH 344. Radiation Therapy Procedures. 2 Units.

RTTH 348. Radiation Therapy Review. 2 Units.
Comprehensively reviews radiation physics, protection, and dosimetry.

RTTH 354. Quality Assurance in Radiation Therapy. 2 Units.
Focuses on quality improvement in radiation oncology. Emphasizes development of a culture of safety through continuous quality improvement (CQI) for clinical and technical aspects of patient care, including treatment delivery and localization equipment, treatment planning equipment, and electronic medical records. Discusses the role of various radiation therapy team members in CQI, and legal and regulatory implications for provision of services.

RTTH 355. Physical Principles of Radiation Therapy I. 3 Units.

RTTH 356. Physical Principles of Radiation Therapy II. 3 Units.
Discusses the following areas: calibration techniques of photon, particulate, and electron beams; percentage depth dose, tissue-air ratios, treatment planning, scatter functions, field flatness, and symmetry, field shaping, arc therapy, and tissue inhomogeneities; clinical dosimetric considerations. Includes laboratory.

RTTH 357. Applied Dosimetry. 2 Units.
Brachytherapy sources, isotope calibration, protection, and implantation techniques. Teletherapy equipment and protection. Quality assurance for external and brachytherapy procedures. Laboratory.

RTTH 364. Radiation Oncology I. 2 Units.
A three-term course covering pathology, etiology, epidemiology, histopathology, metastasis, staging, and treatment of major types of malignant neoplasms. Includes techniques/simulation laboratory.

RTTH 365. Radiation Oncology II. 2 Units.
A three-term course covering pathology, etiology, epidemiology, histopathology, metastasis staging, and treatment of major types of malignant neoplasms. Prerequisite: RTTH 364.

RTTH 366. Radiation Oncology III. 2 Units.
The third in a three-quarter course covering pathology, etiology, epidemiology, histopathology, metastasis, staging, and treatment of major types of malignant neoplasms.

RTTH 371. Radiation Therapy Affiliation I. 2 Units.
First of seven clinical affiliations.

RTTH 372. Radiation Therapy Affiliation II. 3 Units.
Continues RTTH 371.

1 May be substituted with another RELR course.
2 Fulfills service learning requirement.

A minimum grade of C (2.0) is required for all courses in this program.

Normal time to complete the program
Four (4) years — Based on full-time enrollment, a student who is a radiologic technologist (ARRT) completes the LLU portion of the program in seven (7) quarters. A student who is not a radiologic technologist (Non-ARRT) starts one quarter earlier and will complete in eight (8) quarters.
RTTH 373. Radiation Therapy Affiliation III. 3 Units.
Continues RTTH 371, 372.

RTTH 474. Radiation Therapy Affiliation IV. 5 Units.
Continues RTTH 371-373.

RTTH 475. Radiation Therapy Affiliation V. 5 Units.
Continues RTTH 371-373, 474.

RTTH 476. Radiation Therapy Affiliation VI. 4 Units.
Continues RTTH 371-373, 474-475.

RTTH 477. Radiation Therapy Affiliation VII. 4 Units.
Continues RTTH 371-373, 474-476.