

RADIATION SCIENCES – B.S. (POSTPROFESSIONAL)

Program director

Timothy Seavey

The postprofessional baccalaureate degree comprises a minimum of 192 quarter units in the following:

- Loma Linda University general education (GE) requirements.
- Professional certification in an imaging modality (entry-level imaging degree).
- Radiation science core requirements.*
- Area of emphasis: administration and education,* imaging informatics,* advanced imaging modalities, or science.*
- E-portfolio that comprises academic and professional work, a capstone project, and service learning.

*Online

Electives to meet the needs of individual students are selected from existing courses after consultation with the program director.

Program objectives

1. To graduate managers and educators who contribute to the imaging disciplines through service and leadership.
2. To graduate leaders who advocate for excellence in patient care.

Program learning outcomes

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

1. Incorporate moral leadership and management skills in a health-care setting.
2. Utilize meaningful communication skills in the health-care context.
3. Actively engage in meaningful reciprocal community service.
4. Apply emotional and social intelligence theories to health-care organizational management, and leadership problems.
5. Demonstrate competency in clinical and didactic elements of a chosen emphasis.

Admissions

Applications are accepted year-round and applicants may enter the B.S. degree program at the start of any quarter. Contact the program director for advisement. Admission is based on a selective process. In addition to Loma Linda University (<http://llucatalog.llu.edu/about-university/admission-policies-information/#admissionrequirementstext>) and School of Allied Health Professions admissions requirements (<http://llucatalog.llu.edu/allied-health-professions/#generalregulationstext>), the applicant must meet the following requirements:

- an associate degree or a minimum of 72-96 degree transferable units per program director approval;
- be a graduate of an approved program in radiologic technology, computed tomography, magnetic resonance imaging, radiation therapy, nuclear medicine, cardiac and/ or vascular imaging, or sonography (ultrasound);
- have a certification from the American Registry of Radiologic Technologists (ARRT) (R,N,T), American Registry for Diagnostic

Medical Sonography (AB, BR, FE, OB/GYN, PS, AE, PT, and /or VT), or an equivalent specialty credential (NMTCB).

Applicants who are eligible to take the ARRT, NMTCB or ARDMS specialty examination for certification/credential but who have not had the opportunity to do so are given provisional status for one quarter. Eligibility to continue is subject to the student obtaining certification. It should be understood that the University will not sign or validate registry documents of students who obtained their training in another program.

Prerequisites/corequisites

A maximum of 70 semester or 105 quarter didactic units from an accredited college or university will be accepted as transfer credit. Students who have completed a program with the same programmatic accreditation as LLU's program, are allowed up to 50 junior college-level quarter units of academic credit on the basis of their registry license. Students should be within 12 quarter units of completion of general education (GE) requirements in order to be considered for the Bachelor of Science core program OR have developed an academic plan with the program director. For a complete listing of general education requirements, see LLU General Education Requirements (<http://llucatalog.llu.edu/about-university/division-general-studies/#courserequirementstext>). Following is a list of specific requirements and the general education domain to which they apply:

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 are required to meet a "content area."

Domain 3: Scientific inquiry and quantitative reasoning (minimum 12 quarter units)

- Statistics (taken during the program).
- Additional units must be selected from two of the following content areas: biology, chemistry, geology, mathematics, and physics; and one course must include a lab component.

Domain 4: Social sciences (minimum 12 quarter units)

- Select 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.
- Additional courses may include 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.

Electives

To meet the minimum requirement of 72-96 quarter units required for matriculation, electives may be selected from the previous four domains.

For more information regarding GE requirements for graduation, see LLU general education requirements (<http://llucatalog.llu.edu/about-university/division-general-studies/>)

Program requirements

Core (30 units)¹

AHCJ 318	Emotional Intelligence and Leadership Skills for Health-Care Professionals	3
AHRM 475	Health-Care Research and Statistics	4
RTCH 385	Radiologic Trends in Health Care	2
RTCH 387	Writing for Health-Care Professionals	3
RTCH 464	Moral Leadership	3
RTCH 467	Management of a Radiologic Service	3
RTCH 485	Digital Management in Radiology	3
RTCH 489	Effective Communication for Supervisors	3
RTCH 491	Portfolio I	3
RTCH 492	Portfolio II ⁴	3

Religion (9 units)

RELT 406	Adventist Beliefs and Life	3
RELE 456	Personal and Professional Ethics	3
RELR 409	Christian Perspectives on Death and Dying	3

Area of emphasis² 12-24

Electives³ 0-34

Total Units 97

¹ Core courses are online.

² Area of Emphasis selected from options listed below.

³ Remaining units required for the B.S. program can be obtained from remaining emphases and other available courses offered at Loma Linda University.

⁴ Fulfills service-learning agreement

Area of emphasis: administration and education

HCBL 346	Legal and Ethical Environment in Health Care	3
HCBL 434	Financial Management for Health Care	3
HLIN 430	Quality Management and Performance Improvement in Health Care	3
RTCH 414	Practicum in Radiation Sciences	3
RTED 475	Curriculum Development for the Radiation Sciences	3
RTED 476	Adult Learning Theory for the Radiation Science Student	3
RTED 477	Learning Activities and Assessment for the Radiation Sciences	3
RTSI 344	Pharmacology for Imaging Professionals	4
Total Units		25

Area of emphasis: imaging informatics

HLIN 430	Quality Management and Performance Improvement in Health Care	3
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RTED 475	Curriculum Development for the Radiation Sciences	3
RTSI 344	Pharmacology for Imaging Professionals	4
RTII 354	Introduction to Informatics	3
RTII 356	Information Technology in Radiology	3
RTII 358	PACS Planning and Implementation	3
RTII 378	Systems Management in Informatics	3
RTII 384	Advanced Imaging Informatics	1
RTII 386	Certification Exam Review	2

Total Units 25

Area of emphasis: cardiovascular imaging (CVI)

Students may select CI, VI, or both.

AHCJ 402	Pathology I ^{1,2}	4
CEPT 245	Cardiovascular Anatomy and Physiology ¹	3
CEPT 251	Cardiac Electrophysiology and Rhythm Recognition I ¹	2
CEPT 252	Cardiac Electrophysiology and Rhythm Recognition II ¹	2
RTSI 344	Pharmacology for Imaging Professionals ^{1,2}	4
RTSI 345	Cardiac/Interventional Procedures ¹	3
RTSI 351	Angio/Interventional Procedures I ²	3
RTSI 352	Angio/Interventional Procedures II ²	3
RTSI 356	Vascular Anatomy and Physiology ²	3
RTSI 359	Vascular Imaging Review ²	1
Clinical affiliation ⁴		
RTCH 456	Cardiac Interventional Clinical Affiliation ^{1,3}	
RTCH 457	Vascular Interventional Clinical Affiliation ^{2,3}	
Total Units		28

¹ Required for cardiac interventional (CI). Total units 28

² Required for vascular interventional (VI). Total units 27

³ Clinical affiliation courses take 2-3 times depending on program selection.

⁴ Students pursuing both CI and VI are required to complete 12 units (6 units of RTCH 456 Cardiac Interventional Clinical Affiliation and 6 units of RTCH 457 Vascular Interventional Clinical Affiliation). Students pursuing only one emphasis (i.e., CI or VI) will complete 9 affiliation units in the designed emphasis.

Area of emphasis: special imaging CT/MRI

Students may select CT, MRI, or both.

RTSI 361	MRI Physics I ²	2
RTSI 362	MRI Physics II ²	2
RTSI 364	CT Patient Care and Procedures ¹	2
RTSI 365	MRI Patient Care and Procedures ²	2
RTSI 367	Cross-sectional Radiographic Anatomy ^{1,2}	2
RTSI 369	CT Physics ¹	2
Clinical affiliation ⁴		
RTCH 454	Computed Tomography Clinical Affiliation ^{1,3}	
RTCH 455	Magnetic Resonance Imaging Clinical Affiliation ^{2,3}	

Total Units 24

¹ Required for Computed Tomography (CT). Total 12 units

² Required for Magnetic Resonance Imaging (MRI). Total 14 units

Area of emphasis: science (15-20 units)

15-20 quarter units selected from the natural sciences in the areas of biology, microbiology, chemistry*, math, statistics, or physics*. Courses must be taken from two different content areas with the approval of the program director. These courses are taken at your local college/university. A minimum grade of C (2.0) is required for all courses.

* Introductory sequences not accepted.

Area of emphasis: clinical practice (12-31 units)

The didactic (not including clinical units) coursework from a clinically-based imaging specialty* (from the list below) may be transferred into a clinical practice emphasis. Any clinical practice emphasis requires licensure from the ARRT, NMTCB, or ARDMS:

- Diagnostic Sonography (ARDMS)
- Cardiac Sonography (ARDMS)
- Nuclear Medicine (NMTCB and/or ARRT)
- Special Imaging (Computed Tomography and/or Magnetic Resonance Imaging)(ARRT). Students with special imaging coursework totaling less than 12 units must take additional science or didactic emphasis courses to complete the emphasis. Courses must be approved by the program director.
- Radiation Therapy Technology (ARRT)
- Cardiac Interventional and/or Vascular Interventional (ARRT)

* Didactic coursework should come from a regionally accredited institution. Coursework from a non-regionally accredited institution will be considered on a case-by-case basis by the program director.

Normal time to complete the program

Four (4) years - Two (2) years (6 academic quarters) at LLU – based on full-time enrollment; part time permitted