

# BHS in Clinical and Diagnostic Sciences with Emphasis in Radiography

## Degree Program Description

Radiographers employ ionizing radiation (x-rays) and strong magnetic fields to image anatomy and aid in the diagnosis of injury and disease. Radiographers work closely with radiologists and other physicians to provide patient services such as general x-ray, magnetic resonance imaging (MRI), computed tomography (CT), cardiac and vascular interventional procedures, mammography, and bone densitometry. Radiographers work in a variety of settings including hospitals, clinics, imaging centers, mobile services, research centers, and industry.

## Program Mission

The Mission of the Radiography Program at the University of Missouri is to equip current and future imaging sciences professionals to achieve their personal and professional goals, meet workforce needs and improve health outcomes for our communities through the provision of exemplary diagnostic care. Our program and curriculum are designed to provide an educational foundation for the advancement into leadership and supervisory positions within medical imaging, as well as providing an environment where scholarly activity, professional development, and service are expectations.

## Degree Program Options

There are two options for completing the degree based on a student's entry level into the program and previous experiences. The Entry to Practice program is for students who are interested in becoming a radiographer. The RT(R) Degree Advancement option is for students who are credentialed as registered radiologic technologists. There is no required clinical component for the Degree Advancement option. Students may elect to enroll in the Advanced Medical Imaging Externship to obtain clinical competencies in their chosen modality.

## Entry to Practice Radiography

The Radiography program includes two years of prerequisite coursework and two years (including summer semesters) of professional coursework, including clinical experiences at facilities locally and across the state. The program includes didactic coursework in advanced imaging modalities, including MRI, CT, or Cardiac and Vascular Interventional Radiography. Graduates of the program may elect to enroll in the advanced imaging clinical externship to complete clinical requirements for MRI, CT, or Cardiac/Vascular Interventional Radiography in the semesters following graduation. Students graduate with a Bachelor of Health Science (BHS) degree in Clinical and Diagnostic Sciences with an emphasis in Radiography. Graduates of the program are eligible to challenge credentialing examinations administered by the American Registry of Radiologic Technologists (ARRT <http://www.arrt.org/>). Accreditation of the program is granted by:

The Joint Review Committee on Education in Radiologic Technology  
20 North Wacker Drive, Suite 2850  
Chicago, Illinois 60606-3182  
(312) 704-5300

[mail@jrcert.org](mailto:mail@jrcert.org)

## Entry to Practice BHS in CDS with an Emphasis in Radiography - Student Learning Outcomes

1. Students will be clinically competent, demonstrating the ability to provide timely and appropriate patient care, achieve optimal patient positioning for the ordered examinations, select technical factors that optimize image quality, and implement effective radiation protection strategies.
2. Students will demonstrate effective verbal and non-verbal communication skills with a wide range of individuals including, physicians, healthcare professionals, patients and their families.
3. Students will employ sound, independent judgment and successful problem-solving in completion of professional medical imaging tasks.
4. Students will display professional behavior consistent with employer expectations for a registered radiologic technologist.

## RT(R) Degree Advancement

A fully online degree advancement program is available for ARRT-registered Radiologic Technologists RT(R) who seek a bachelor's degree. This program includes professional courses to broaden the students' understanding of the health care system, while enhancing their patient care skills. Additionally, this program provides graduates of associate degree radiologic technology programs with additional knowledge, skills and abilities in leadership, management, research and advanced modality training in CT, MRI, Cardiac Interventional Radiography and/or Vascular Interventional Radiography, to help them achieve their academic and professional goals.

## RT(R) Degree Advancement - Student Learning Outcomes

1. Utilize management and leadership principles to solve problems and improve performance.
2. Demonstrate strategies and techniques for advanced medical imaging exams.
3. Employ research methodology to analyze relevant medical literature.
4. Students will demonstrate effective verbal and non-verbal communication skills with a wide range of individuals including, physicians, healthcare professionals, patients and their families.

## Major Program Requirements

All students must complete all Program Prerequisite courses below with a grade of C (2.0) or higher for admission to the BHS in Clinical and Diagnostic Sciences with an emphasis in Radiography program. Once admitted to the program, all Major Core Requirements must be completed with a grade of C (2.0) or higher, and students must maintain a 2.5 or higher GPA each semester while in the program. In addition, students must meet degree and University requirements (<http://catalog.missouri.edu/academicdegreerequirements/universityrequirements/>), including University general education (<http://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/>) requirements. A separate application is required for admission to the program. Students are encouraged to work with an advisor and the Radiography Program Director in order to best structure the prerequisites and prepare for the program application. Students transferring from other institutions should contact the program

director and work with an advisor to evaluate coursework and ensure they will meet the program's prerequisite requirements.

| <b>Program Prerequisites</b>                                      |   | <b>37</b> |
|---|---|-----------|
| ENGLISH 1000<br>or ENGLISH 1000H                                  | Writing and Rhetoric<br>Honors Writing and Rhetoric   | 3         |
| PSYCH 1000<br>or PSYCH 1000H                                      | General Psychology<br>General Psychology - Honors   | 3         |
| BIO_SC 1010<br>& BIO_SC 1020<br>or BIO_SC 1500<br>or BIO_SC 1500H | General Principles and Concepts of Biology<br>and General Biology Laboratory<br>Introduction to Biological Systems with Laboratory<br>Introduction to Biological Systems with Laboratory Honors | 5         |
| MATH 1100   | College Algebra   | 3         |
| CHEM 1320<br>or CHEM 1320H  | College Chemistry I<br>College Chemistry I - Honors   | 4         |
| PTH_AS 2201<br>& PTH_AS 2203                                      | Human Anatomy Lecture<br>and Human Anatomy Laboratory   | 5         |
| MPP 3202  | Elements of Physiology  | 5         |
| STAT 1200<br>or STAT 1300<br>or ESC_PS 4170                       | Introductory Statistical Reasoning<br>Elementary Statistics<br>Introduction to Applied Statistics   | 3         |
| CDS 2190  | Medical Terminology   | 3         |
| CDS 4955W<br>or HLTH_SCI 4200W                                    | Introduction to Research - Writing Intensive<br>Introduction to The Research Process and Evidence Base - Writing Intensive  | 3         |
| <b>Major Core Requirements - Entry to Practice</b>                |   | <b>66</b> |
| RA_SCI 3110   | Radiography Procedures I  | 3         |
| RA_SCI 3120   | Fundamentals of Radiography   | 3         |
| RA_SCI 3140   | Principles in Radiographic Exposures  | 3         |
| RA_SCI 3150   | Radiologic Pharmacology   | 3         |
| RA_SCI 3160   | Radiologic Physics  | 3         |
| RA_SCI 3170   | Imaging Modalities  | 2         |
| RA_SCI 3180   | Radiography Procedures II   | 3         |
| RA_SCI 3190   | Radiography Procedures III  | 3         |
| RA_SCI 4110   | Sectional Anatomy   | 3         |
| RA_SCI 4160<br>& RA_SCI 4170<br>or RA_SCI 4140<br>or RA_SCI 4150  | Vascular Interventional Radiography<br>and Cardiac Interventional Radiography<br>Magnetic Resonance Imaging: Physics and Procedures<br>Computed Tomography: Physics and Procedures              | 6         |
| RA_SCI 4947   | Radiography Overview  | 3         |
| RA_SCI 3941   | Clinical Education I  | 3         |
| RA_SCI 3942   | Clinical Education II   | 3         |
| RA_SCI 4943   | Clinical Education III  | 3         |
| RA_SCI 4944   | Clinical Education IV   | 3         |
| RA_SCI 4945   | Clinical Education V  | 3         |
| CDS 3460W<br>or RA_SCI 4490W                                      | Cardiovascular and Pulmonary<br>Diagnostic Applications I - Writing Intensive<br>Image Analysis with Pathologic Considerations  | 3         |
| CDS 3200  | Essentials of Pathology   | 3         |
| CDS 4328  | Radiation Safety and Biology  | 4         |
| CDS 4460  | Cardiovascular and Pulmonary<br>Diagnostic Applications II  | 3         |

| CDS 4985  | Healthcare Organization and Leadership   | 3         |
|---|--|-----------|
| <b>Major Core Requirements - RT(R) Degree Advancement</b>         |  | <b>15</b> |
| CDS 3460W   | Cardiovascular and Pulmonary<br>Diagnostic Applications I - Writing Intensive  | 3         |
| CDS 4985  | Healthcare Organization and Leadership   | 3         |
| RA_SCI 3150   | Radiologic Pharmacology  | 3         |
| RA_SCI 4110   | Sectional Anatomy  | 3         |
| RA_SCI 4140<br>or RA_SCI 4150<br>or RA_SCI 4160<br>or RA_SCI 4170 | Magnetic Resonance Imaging: Physics and Procedures<br>Computed Tomography: Physics and Procedures<br>Vascular Interventional Radiography<br>Cardiac Interventional Radiography | 3-6       |

\* HLTH\_SCI 3900W will be changing to HLTH\_SCI 4200W. Either course will be accepted towards degree requirements.

### Professional Certification

Upon completion of the program, students are eligible to sit for the national certifying exam(s) given by the American Registry of Radiologic Technologists (ARRT (<https://www.arrt.org/>)). The RT(R) credential is required to begin the RT(R) Degree Advancement core courses.

Graduates may be required to apply for licensing in the state in which they choose to work.

### Accreditation

The University of Missouri Radiography Program's Bachelor of Health Science in Clinical & Diagnostic Sciences with an emphasis in Radiography is accredited by:

The Joint Review Committee on Education in Radiologic Technology (<https://www.jrcert.org/>)  
20 North Wacker Drive, Suite 2850  
Chicago, Illinois 60606-3182  
(312) 704-5300  
mail@jrcert.org

Programmatic outcomes data (<https://www.jrcert.org/programs/university-of-missouri-columbia-campus/>) for entry into practice programs are available to the public on the JRCERT website.

### Semester Plan

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available. An individualized semester plan will be created for RT(R) Degree Advancement students by the program director or SHP Student Services.

| <b>First Year</b>                         |           |                        |           |
|---|-----------|------------------------|-----------|
| <b>Fall</b>                               | <b>CR</b> | <b>Spring</b>          | <b>CR</b> |
| BIO_SC 1010<br>& BIO_SC 1020              | 5         | CHEM 1320              | 4         |
| MATH 1100                                 | 3         | ENGLISH 1000           | 3         |
| Humanities                                | 3         | PSYCH 1000             | 3         |
| Elective (HLTH_SCI 1000 recommended, 3hr) | 2         | 2000+ level Humanities | 3         |
| <b>13</b>                                 |           | <b>13</b>              |           |

| Second Year                        |    |                    |    |             |          |
|------------------------------------|----|--------------------|----|-------------|----------|
| Fall                               | CR | Spring             | CR | Summer      | CR       |
| HIST 1100, 1200, or<br>POL_SC 1100 | 3  | MPP 3202           | 5  | RA_SCI 3110 | 3        |
| PTH_AS 2201<br>& PTH_AS 2203       | 5  | CDS 2190           | 3  | RA_SCI 3120 | 3        |
| STAT 1200                          | 3  | CDS 4955W          | 3  |             |          |
| Humanities                         | 3  | Beh/Social Science | 3  |             |          |
|                                    |    | <b>14</b>          |    |             | <b>6</b> |

| Third Year  |    |             |    |             |          |
|-------------|----|-------------|----|-------------|----------|
| Fall        | CR | Spring      | CR | Summer      | CR       |
| RA_SCI 3150 | 3  | CDS 3200    | 3  | CDS 4460    | 3        |
| RA_SCI 3160 | 3  | CDS 4985    | 3  | RA_SCI 4943 | 3        |
| RA_SCI 3170 | 2  | RA_SCI 3140 | 3  |             |          |
| RA_SCI 3180 | 3  | RA_SCI 3190 | 3  |             |          |
| RA_SCI 3941 | 3  | RA_SCI 3942 | 3  |             |          |
|             |    | <b>14</b>   |    |             | <b>6</b> |

| Fourth Year                        |    |  |    |  |           |
|------------------------------------|----|--|----|--|-----------|
| Fall                               | CR | Spring   | CR |  |           |
| CDS 4328                           | 4  | RA_SCI 4140, 4150,<br>or 4160 <b>and</b> 4170 <sup>+</sup> | 6  |  |           |
| RA_SCI 4110                        | 3  | RA_SCI 4945  | 3  |  |           |
| RA_SCI 4944                        | 3  | RA_SCI 4947  | 3  |  |           |
| RA_SCI 4490<br>(Writing Intensive) | 3  |  |    |  |           |
|                                    |    | <b>13</b>  |    |  | <b>12</b> |

**Total Credits: 120**

+ Course is taught solely on the internet.