

## Program Information

### Radiation Sciences

#### *Career Information*

The Radiography curriculum prepares the graduate to be a radiographer; a skilled health care professional that uses radiation to produce images of the human body. Course work includes clinical rotations to area health care facilities, radiographic procedures, radiographic exposure, pathology, physics, patient care and management, radiation protection, quality assurance, anatomy and physiology, and radiobiology. Graduates are eligible to apply to take the American Registry of Radiologic Technologists' national examination for certification and registration. Graduates of the program are employed in hospitals, clinics, physician's offices, medical laboratories, government agencies and industry.

#### *Admission Requirements*

Students must adhere to all the admission policies and requirements of the School in addition to the following:

- Graduate of an accredited high school or GED (General Equivalency Diploma).
- Successful completion of high school Algebra I, Algebra II or Geometry, and Biology.
- Successful completion of a course in medical terminology either at a post-secondary school or an online course.
- Successful completion of the following college course with a GPA of 2.5 or greater: Anatomy & Physiology I & II, English Composition, General

Psychology, and College Algebra.

- Pre-admission entrance test (\$35 fee payable on the date of testing). Applicants must achieve High School level or greater on the Reading Comprehension and Essential Math Skills sections of the HOBET (Health Occupations Based Entrance Test).
- Personal interview and tour.
- Negative drug screen and criminal background history.
- Applicants who are not U.S. citizens by birth must provide immigration or citizenship documentation.

Pre-Admission testing is scheduled based upon the following:

- Completed application;
- Non-refundable \$70 application fee;
- Official transcripts from high school or GED documentation;
- Official transcripts from all colleges/universities attended;
- SAT scores (if available);
- TOEFL scores (if applicable);
- Personal interview with a member of the Admissions Committee will be scheduled with applicants who have scored successfully on the pre-admission entry exam and have met all other required criteria.

Following acceptance into the program, the student must complete a health history, provide evidence of immunization and/or immunization titers for measles,

mumps, rubella (MMR) and Varicella, and verify compliance with the Core Performance Standards for Radiation Science.

An applicant who meets all admission requirements is not automatically guaranteed admission to the program. Admission is based in part upon space availability. The School reserves the right to immediately dismiss any applicant who have falsified their application, have unsatisfactory criminal background checks, prior felony convictions, positive drug screens, or they miss the deadline for screening.

Students should be aware that they will be required to provide evidence of a health history, immunization and/or immunization titers, submit to drug screenings and undergo criminal and child protective services background checks, and verify Core Performance Standards required by the Radiation Science Program. Students who refuse to offer this information will be denied entry into the Radiation Science Program.

Completion of course work and/or graduation from the program does not guarantee that a student will be eligible to sit for the Registry Exam. Students who may have questions regarding the criminal background checks need to contact the Program Director for Radiation Science.

## Program of Studies

### SOUTHSIDE REGIONAL MEDICAL CENTER RADIATION SCIENCES PROGRAM 2008 - 2010

Prerequisites: (17 credits)

- ▶ Biology 205/206 (Human Anatomy & Physiology I & II) - 8 credits
- ▶ English 101 (Introduction to Literary Genres) - 3 credits
- ▶ Mathematics 101 (College Algebra) - 3 credits
- ▶ Psychology 201/210 (General Psychology) - 3 credits
- ▶ *Demonstrated Proficiency in Medical Terminology - no credit assigned*

#### Term 1

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CSCI 202 (Introduction to Microcomputers) - 3 credits  
 Radiologic Technology 101 - 2 credits  
 Radiologic Technology 110 - 3 credits  
 Radiologic Technology 120 - 5 credits  
 Radiologic Technology 150 - 3 credits

Term 1 Total - 16 credits

#### Term 2

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English 102 (Introduction to Literary Genres) - 3 credits  
 Radiologic Technology 121 - 5 credits  
 Radiologic Technology 161 - 3 credits  
 Radiologic Technology 151 - 4 credits

Term 2 Total - 15 credits

#### Term 3

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Philosophy 203 (Introduction to Ethics) - 3 credits  
 Radiologic Technology 122 - 2 credits  
 Radiologic Technology 152 - 5 credits  
 Radiologic Technology 171 - 2 credits

Term 3 Total - 12 credits

#### Term 4

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Social Science Elective - 3 credits  
 Radiologic Technology 261 - 3 credits  
 Radiologic Technology 223 - 2 credits  
 Radiologic Technology 250 - 5 credits  
 Radiologic Technology 272 - 3 credits

Term 4 Total - 16 credits

#### Term 5

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Radiologic Technology 230 - 3 credits  
 Radiologic Technology 251 - 5 credits  
 Radiologic Technology 273 - 3 credits  
 Radiologic Technology 281 - 1 credit

Term 5 Total - 12 credits

*Terms 1, 2, 4, & 5 are 15 weeks each and Term 3 is 12 weeks.*

*All courses listed above are required program courses.*

*An elective course may be taken each semester in order to fulfill RBC A.S. degree requirements.*

## Radiation Science Course Descriptions

### *RADT 101 - Introduction To Radiography*

(30 class hours = 2 credits)

An introduction to the career of radiography, its history and role in health care delivery. Basic radiographic and medical terminology, radiation protection, personal adjustments, learning techniques, medical imaging equipment, exposure factors, and film processing are discussed. Professional ethics and legal responsibilities are introduced. Medical terminology is the study of various word roots, stems and combining forms and use of these components to develop a medical vocabulary essential to understanding disease and terminology used within radiology and the medical field. The major roots, suffixes, and prefixes of each system in the human anatomy are presented for interpretation and word construction. Abbreviations, terms, and medical specialist are discussed and defined.

### *RADT 110 - Introduction To Patient Care & Pharmacology*

(45 class hours = 3 credits)

The presentation of patient care and procedures for general patient care in radiography and other imaging modalities including the discussion of patients with special needs. Course also includes a study of aseptic technique, venipuncture technique, contrast media and the procedures utilizing contrast media. Basic information of current drug therapy is discussed.

### *RADT 120 - Radiographic Anatomy & Procedures I*

(45 class hours, 60 hours lab = 5 credits)

A presentation of radiographic positioning principles and terminology, radiographic anatomy and positioning of the chest, abdomen, upper and lower limbs, and shoulder and pelvic girdle. Includes laboratory demonstration, practice, and competency-based examinations of material presented in the classroom.

### *RADT 121 - Radiographic Anatomy & Procedures II*

(45 class hours, 60 lab hours = 5 credits)

A study of various radiographic and fluoroscopic procedures. Includes demonstrations, practice, and competency-based procedures.

### *RADT 122 - Radiographic Anatomy & Procedures III*

(23 class hours, 15 lab hours = 2 credits)

A presentation of anatomy and positioning of the cranium, Para nasal sinuses, and facial bones.

**RADT 150 - Clinical Radiography I**

(120 class hours, 15 lab hours = 3 credits)

To acquaint the student with the medical center environment through supervised participation of the theories presented in the classroom. Emphasis is on patient care for all age groups, protocols, identification of radiographic equipment, supplies, office procedures, processing and general diagnostic procedures in all clinical assignments.

**RADT 151 - Clinical Radiography II**

(180 clinical hours = 4 credits)

This course is a continuation of RadT 150 with an introduction to surgery and evening shift through supervised participation of theories presented in the classroom. Clinical Competency begins.

**RADT 152 - Clinical Radiography III**

(225 clinical hours = 5 credits)

This course is a continuation of RadT151. This semester the student is provided with the opportunity to operate more independently in all areas of basic radiography. Clinical competency evaluation continues.

**RADT 161 - Medical Imaging I**

(45 class hours = 3 credits)

The structure of matter, electrostatics, magnetism, electromagnetism and rectification are presented. The properties of x-rays, x-ray tubes and equipment, x-ray circuitry, and the production of radiation are discussed in detail. Prime factors affecting the x-ray beam are presented including inverse square law, density maintenance formula, and 15% rule.

**RADT 171 - Medical Imaging II**

(23 class hours, 15 lab hours = 2 credits)

The student will learn of the energy transformation required in the interaction with matter. Discussion includes the methods of modifying an x-ray beam for radiographic purposes. The adjustment of the prime factors and how each affects radiographic density is presented in classroom discussion and laboratory demonstration. The uses of beam limiting devices and the patient factors that effect radiographic exposure are presented. The student will be involved in solving radiographic exposure problems and making technical adjustments to obtain selected radiographic density.

**Radiation Sciences Course  
Descriptions Continued on  
Pages 78 and 79**

## **Radiation Science Course Descriptions Continued**

### **RADT 223 - Radiographic Anatomy & Procedures IV**

(23 lab hours, 15 class hours = 2 credits)

A presentation of procedures and positioning for age specific categories with emphasis on pediatric procedures. Procedures and positioning for trauma patients, for surgical procedures, basic principles for special diagnostic procedures are included. Basic principles of CT and MRI and cross-sectional anatomy are presented.

### **RADT 230 - Radiographic Pathology**

(45 class hours = 3 credits)

A study of nature and etiology of disease, the changes that occur through disease and injury, and the conditions of illness particular to the various body systems with correlation to radiographic imaging.

### **RADT 250 - Clinical Radiography IV**

(225 clinical hours = 5 credits)

This course is a continuation of RADT 152. The student will continue to improve proficiency in basic radiography and be introduced to the specialty areas. The student will be provided with the opportunity to perform more independently in basic radiography and be able to identify more pathology on radiographs as a result of film critique sessions with radiologists. Competency evaluation continues.

### **RADT 251 - Clinical Radiography V**

(225 clinical hours = 5 credits)

This semester the student is provided the opportunity to perform more independently in areas of basic radiography. The student will continue to rotate through the diagnostic modalities and be introduced to other specialized imaging modalities based on availability. Some of these modalities may include nuclear medicine, cardiac catheterization, ultrasound, and magnetic resonance imaging. Competency evaluation continues.

### **RADT 261 - Radiation Biology & Protection**

(45 class hours = 3 credits)

The study of radiation interaction with matter and the effect it has on cells with factors affecting cell response to acute and chronic results of radiation. The principles of radiation protection, the responsibility of the technologist to the patient, personnel, and public, the regulations, regulatory committees, and maximum permissible dose are presented.

### **RADT 272 - Medical Imaging III**

(38 class hours, 15 lab hours = 3 credits)

An introduction to the prime factors of radiographic exposure and its effects on the radiographic image. Discussion will include the prime factors affecting radiographic detail, distortion, density, contrast, and the components of radiographic film and intensifying screens and digital imaging. The process of making radiographic film and intensifying screens, the development of the latent and permanent images, film sensitometry and its affect on the radiographic image, and various film-screen combinations and their uses are presented. Emphasis is on

more sophisticated recording media and specialized techniques of image detection and recording including computers such as DSA, DF, and DR. The student is involved in solving exposure problems, making the necessary adjustments to maintain image quality, and the art of film critique. Subject material from various aspects of radiography will be covered.

**RADT 273 - Medical Imaging IV**

(38 class hours, 15 lab hours = 3 credits)

The student will be involved in the development of various kinds of exposure charts. A review of the circuitry common to most radiographic equipment, and the methods of modifying an x-ray beam for radiographic purposes. Several modes of imaging systems and image detection principles including fluoroscopy, and image intensification are presented in detail. Emphasis is on more sophisticated recording media and specialized techniques of image detection and recording including MRI and CT. The basic operation of automatic exposure control devices, their components, uses, and problems are presented. The student will become familiarized with the aspects of Quality Assurance Program and the different tests involved in evaluating the quality performance for various radiographic equipment and accessories. The student will perform assigned QA test and report the test procedure and results to the class.

**RADT 281 - Independent Research Project**

(15 class hours = 1 credit)

The student has the opportunity to investigate a modality or a medical imaging issue in depth. Methods to research aspects of medical imaging are discussed to assist with a written research paper which will be presented in class. May include some additional clinical experience. Resume writing, cover letter, interview and continued education requirements as a radiographer are presented.