

## **Medical Imaging and Therapeutic Sciences**

SCIH 037 055

Credits: 0.5 units / 5 hours

### **Course Description**

This course will provide the student with a basic introduction to the field of medical imaging and therapeutic sciences. An overview of basic radiation physics, foundations in medical imaging and the practitioner's role in the health care delivery system will be presented. Fundamentals of the most-important clinical medical imaging modalities will be covered including: radiography, computed tomography, mammography, interventional radiology, nuclear medicine, magnetic resonance imaging, diagnostic medical sonography, and radiation therapy

**Graded Assessments:** 5 Projects; 3 Proctored Progress Tests

### **Course Objectives**

When you have completed the materials in this course, you should be able to:

1. Define radiation and radioactivity and identify their characteristics.
2. Define areas of and positions in medical imaging and therapeutic sciences.
3. Describe the educational and training requirements for medical imaging professionals.
4. Define the scope and practice of medical imaging professionals.
5. Describe typical days in the lives of medical imaging professionals.
6. Identify and describe the equipment used by medical imaging professionals.
7. List common procedures performed and common pathologies used medical imaging and therapeutic sciences.
8. Define the Patient Care Partnership and the Patient's Bill of Rights.

### **Course Outline**

#### **Unit 1: Radiation, History of X-Rays, and Radioactivity**

Lesson 1: Basic Radiation

Lesson 2: History of X-Rays

Lesson 3: Radioactivity

Project 1

#### **Unit 2: Radiography, Computed Tomography, and Mammography**

Lesson 4: Radiography

Lesson 5: Computed Tomography (CT)

Lesson 6: Mammography  
Project 2  
Progress Test 1

**Unit 3: Magnetic Resonance Imaging, Cardiovascular Interventional Technology, and Nuclear Medicine**

Lesson 7: Magnetic Resonance Imaging  
Lesson 8: Interventional Radiology  
Lesson 9: Nuclear Medicine  
Project 3  
Progress Test 2

**Unit 4: Diagnostic Medical Sonography and Radiation Therapy**

Lesson 10: Diagnostic Medical Sonography (DMS)  
Lesson 11: Radiation Therapy (RT)  
Project 4

**Unit 5: Basic Patient Care for Medical Imaging and Therapeutic Sciences**

Lesson 12: Basic Patient Care  
Project 5  
Progress Test 3

**Required Textbook and Materials**

(available through Follett virtual bookstore at <http://highschool.nebraska.bkstr.com>)

Textbook: *No additional textbook is required for this course.*