

## Master Syllabus

### RAT 2543 - Radiologic Sciences III

**Division:** Health Sciences

**Department:** Radiologic Technology

**Credit Hour Total:** 2.0

**Lecture Hrs:** 2.0

**Prerequisite(s):** RAT 2442

**Other Prerequisite(s):** AND Restricted to Majors

**Date Revised:** February 2014

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### Course Description:

Fundamental principles of molecular and cellular effects of x-ray interaction, along with a comprehensive study of health physics and radiation protection to include quality management and quality assurance testing of the radiographic system. Includes basic principles and applications of computed tomography.

### General Education Outcomes:

- Critical Thinking/Problem Solving Competency

### Course Outcomes:

#### Molecular and cellular radiobiology

Describe the effects of irradiation of macromolecules, along with the radiolysis of water and the principle of target theory.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 71% passing score

#### Fundamental principles of radiobiology

Describe the laws, physical, and biological factors that affect radiation response.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 71% passing score

#### Early and late effects of ionizing radiation

Describe acute radiation syndromes, local tissue damage, cytogenetic effects, late effects of radiation exposure.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 71% passing score

#### Health physics, radiation protection procedures and design practices

Explain health physics, the principles of radiation protection, and design principles as they pertain to As Low As Reasonably Achievable (ALARA) concepts.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 71% passing score

#### Quality management principles

Identify and discuss the need for quality management in diagnostic imaging.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 71% passing score

#### Computed tomography principles and practical applications

Describe the basic principles of computed tomography and practical applications of CT in medical imaging.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 71% passing score

#### Quality control parameters, system alignment and performance testing

Identify and discuss the various quality management tools and procedures of radiographic imaging systems.

**Assessment Method:** Locally developed exams

**Performance Criteria:** 71% passing score

### Outline:

Fundamental principles of radiobiology  
Molecular and cellular radiobiology  
Early and late effects of ionizing radiation  
Health physics, radiation protection procedures and design practices  
Quality management principles  
Quality control parameters, system alignment and performance testing  
Computed tomography principles and practical applications