Washtenaw Community College Comprehensive Report

RAD 190 Physical Foundations of Radiography
Effective Term: Winter 2013

Course Cover

Division: Math, Science and Health
Department: Allied Health
Discipline: Radiology
Course Number: 190
Org Number: 15600
Full Course Title: Physical Foundations of Radiography
Transcript Title: Physical Found. of Radiography
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:
Outcomes/Assessment
Objectives/Evaluation
Rationale: 3-year syllabi review
Proposed Start Semester: Winter 2013
Course Description: This course covers the theoretical and practical application of radiation physics with an emphasis on electromagnetic radiation, electricity, magnetism, x-ray circuitry, radiation production and radiation's interaction with matter. This course was previously RAD 200.

Course Credit Hours

Variable hours: No
Credits: 3
Lecture Hours: Instructor: 45 **Student:** 45
Lab: Instructor: 0 **Student:** 0
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 45 **Student:** 45
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

Prerequisite
RAD 110 minimum grade "C-"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Apply the concepts and principles of radiographic physics, equipment operation and x-ray production.
   Assessment 1
   Assessment Tool: The Equipment Operation & Quality Control section of the American Registry of Radiologic Technologists
   Assessment Date: Spring/Summer 2014
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All course sections/All students
   Number students to be assessed: All enrolled students
   How the assessment will be scored: The "Equipment Operation and Quality Control" section of the American Registry of Radiologic Technologists (ARRT) national certification examination is a standardized multiple choice exam. Section scores are reported on a scale that ranges from 0.1 to 9.9 and are reported in one-tenth point intervals.
   Standard of success to be used for this assessment: 90% of the graduates will obtain a scaled score equal to or greater than the national average on the "Equipment Operation and Quality Control" section of the ARRT national certification examination.
   Who will score and analyze the data: American Registry of Radiologic Technologists (ARRT)

Course Objectives

1. List and explain the basic radiographic physics concepts that relate to the operation of x-ray equipment and the production of x-rays.
   Matched Outcomes
2. Describe the wave and particle characteristics of electromagnetic (EM) radiation.
   Matched Outcomes
3. List the components of an x-ray tube and describe their function.
   Matched Outcomes
4. List the components of the x-ray generator and describe their function.
   Matched Outcomes
5. Identify the atomic and nuclear origins of x-radiation.
   Matched Outcomes
6. Identify the factors that affect the production of diagnostic x-rays.
   Matched Outcomes
7. List and explain the factors that affect the x-ray spectrum.
   Matched Outcomes
8. Interpret changes in the x-ray spectrum.
   Matched Outcomes
9. Compare and contrast the operating systems of computed radiography (CR) and direct digital radiography imaging systems.
   Matched Outcomes
10. Compare and contrast the components and design of fluoroscopy, mammography, and computed tomography imaging systems.
    Matched Outcomes

New Resources for Course

Course Textbooks/Resources

Textbooks
Manuals
Periodicals
Software

Equipment/Facilities

Level I classroom
Testing Center

Reviewer	Action	Date

Faculty Preparer:		
Connie Foster	*Faculty Preparer*	*May 07, 2012*
Department Chair/Area Director:		
Connie Foster	*Recommend Approval*	*May 07, 2012*
Dean:		
Martha Showalter	*Recommend Approval*	*May 17, 2012*
Vice President for Instruction:		
Stuart Blacklaw	*Approve*	*Jul 12, 2012*