

Washtenaw Community College Comprehensive Report

RAD 232 Digital Imaging in Radiography Effective Term: Winter 2020

Course Cover

Division: Health Sciences

Department: Allied Health

Discipline: Radiography

Course Number: 232

Org Number: 15600

Full Course Title: Digital Imaging in Radiography

Transcript Title: Digital Imaging in 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

Other:

Rationale: The course assessment report demonstrated the assessment tools are no longer applicable to learning outcomes.

Proposed Start Semester: Winter 2020

Course Description: In this course, students are introduced to the physical principles of digital radiography imaging systems. Topics include digital image acquisition processing, the effective use of exposure factors for digital image receptors (computed radiography and flat-panel digital radiography), imaging physics of digital fluoroscopy and mammography, and quality control for digital radiographic equipment. The principles of image display, archiving, and retrieval commonly used for Picture Archiving Communication Systems (PACS) will also be presented.

Course Credit Hours

Variable hours: No

Credits: 2

Lecture Hours: Instructor: 15 **Student:** 15

Lab: Instructor: 30 **Student:** 30

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

No Level Required

Requisites

Prerequisite

RAD 190 minimum grade "C-"

General Education**Request Course Transfer**

Proposed For:

Student Learning Outcomes

1. Identify the primary components of digital radiography systems (computed radiography and Flat-Panel Digital Radiography) and their function.

Assessment 1

Assessment Tool: Computed Radiography and Flat-Panel Digital Radiography homework assignments administered through Blackboard

Assessment Date: Winter 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 90% of the students will score 75% or higher on the outcome related questions.

Who will score and analyze the data: Department faculty

2. Identify the primary components of a Picture Archiving Communication System (PACS) and their function.

Assessment 1

Assessment Tool: Picture Archiving Communication System (PACS) homework assignment administered through Blackboard

Assessment Date: Winter 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Answer key

Standard of success to be used for this assessment: 90% of the students will score 75% or higher

Who will score and analyze the data: Department faculty

3. Analyze and explain how changes in kilovoltage peak (kVp) influence patient dose and subject contrast.

Assessment 1

Assessment Tool: Lab Analysis

Assessment Date: Winter 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally developed rubric

Standard of success to be used for this assessment: 90% of the students will score 75% or higher on the lab analysis

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Identify the primary use of computers in diagnostic imaging.
2. Discuss the various types of digital radiography systems.
3. Describe the process of digital image data formation.

4. Describe the process by which the histogram is acquired and the look-up table (LUT) is applied to the collected data.
5. Describe the advantages of computed radiography over film-screen (analog) radiography.
6. Identify workflow changes caused by the introduction of computed radiography in the diagnostic imaging department.
7. Explain the function of digital image window level and width controls.
8. Describe various digital radiography image receptor and detector systems.
9. Discuss the relevant features of a storage phosphor imaging plate.
10. Explain the operating characteristics of an imaging plate reader.
11. Discuss spatial resolution, contrast resolution, and image noise related to digital radiography.
12. Identify opportunities for reducing patient radiation dose with digital radiography.
13. Explain the causes of several digital radiography artifact problems.
14. Describe various platforms used in biomedical informatics.
15. Discuss the advantages of using a Picture Archiving Communication System (PACS) in a medical imaging department.

New Resources for Course

No additional resources are needed.

Course Textbooks/Resources

Textbooks

Seeram, Euclid. *Digital Radiography: Physical Principles and Quality Control*, 2 ed. Springer, 2019, ISBN: 978-981133243.

Manuals

Periodicals

Software

Equipment/Facilities

Level I classroom

Testing Center

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>William Nelson</i>	<i>Faculty Preparer</i>	<i>May 14, 2019</i>
Department Chair/Area Director: <i>Kristina Sprague</i>	<i>Recommend Approval</i>	<i>May 21, 2019</i>
Dean: <i>Valerie Greaves</i>	<i>Recommend Approval</i>	<i>Jun 14, 2019</i>
Curriculum Committee Chair: <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Jul 10, 2019</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Jul 18, 2019</i>
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Jul 26, 2019</i>

Washtenaw Community College Comprehensive Report

RAD 232 Digital Imaging in Radiography Effective Term: Fall 2015

Course Cover

Division: Math, Science and Health

Department: Allied Health

Discipline: Radiography

Course Number: 232

Org Number: 15600

Full Course Title: Digital Imaging in Radiography

Transcript Title: Digital Imaging in Radiography

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission: New Course, Course Change

Change Information:

Consultation with all departments affected by this course is required.

Outcomes/Assessment

Rationale: Conditionally approved course seeking full approval.

Proposed Start Semester: Fall 2015

Course Description: In this course, students are introduced to the physical principles of digital radiography imaging systems. Topics include digital image acquisition processing, the effective use of exposure factors for digital image receptors (computed radiography and flat-panel digital radiography), imaging physics of digital fluoroscopy and mammography, and quality control for digital radiographic equipment. The principles of image display, archiving, and retrieval commonly used for Picture Archiving Communication Systems (PACS) will also be presented.

Course Credit Hours

Variable hours: No

Credits: 2

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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

No Level Required

Requisites

Prerequisite

RAD 190 minimum grade "C-"

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Identify the primary components of a digital radiography system and their function.

Assessment 1

Assessment Tool: Embedded multiple-choice question on final exam

Assessment Date: Winter 2018

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: answer key

Standard of success to be used for this assessment: 90% of the students will score 75% or higher on the outcome related questions.

Who will score and analyze the data: department faculty

2. Use digital radiography systems to capture, display, store and distribute radiographic images.

Assessment 1

Assessment Tool: Lab skills checklist

Assessment Date: Winter 2018

Assessment Cycle: Every Three Years

Course section(s)/other population: All sections

Number students to be assessed: All students

How the assessment will be scored: answer key

Standard of success to be used for this assessment: 90% of the students will score 75% or higher

Who will score and analyze the data: department faculty

Course Objectives

1. Identify the primary use of computers in diagnostic imaging.
Matched Outcomes
2. Discuss the various types of digital radiography systems.
Matched Outcomes
3. Describe the process of digital image data formation.
Matched Outcomes
4. Describe the process by which the histogram is acquired and the look-up table (LUT) is applied to the collected data.
Matched Outcomes
5. Describe the advantages of computed radiography over film-screen (analog) radiography.
Matched Outcomes
6. Identify workflow changes caused by the introduction of computed radiography in the diagnostic imaging department.
Matched Outcomes
7. Explain the function of digital image window level and width controls.
Matched Outcomes
8. Describe various digital radiography image receptor and detector systems.
Matched Outcomes
9. Discuss the relevant features of a storage phosphor imaging plate.
Matched Outcomes
10. Explain the operating characteristics of an imaging plate reader.
Matched Outcomes
11. Discuss spatial resolution, contrast resolution, and image noise related to digital radiography.
Matched Outcomes

12. Identify opportunities for reducing patient radiation dose with digital radiography.
Matched Outcomes
13. Explain the causes of several digital radiography artifact problems.
Matched Outcomes
14. Describe various platforms used in biomedical informatics.
Matched Outcomes
15. Discuss the advantages of using a Picture Archiving Communication System (PACS) in a medical imaging department.
Matched Outcomes

New Resources for Course

No additional resources are needed.

Course Textbooks/Resources

Textbooks

Seeram, Euclid. *Digital Radiography: An Introduction for Technologists*, 1 ed. Clifton Park: Cengage Learning, 2011, ISBN: 10: 1-4018-89.

Manuals

Periodicals

Software

Equipment/Facilities

Level I classroom

Testing Center

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Connie Foster</i>	<i>Faculty Preparer</i>	<i>Feb 03, 2015</i>
Department Chair/Area Director: <i>Connie Foster</i>	<i>Recommend Approval</i>	<i>Feb 03, 2015</i>
Dean: <i>Kristin Brandemuehl</i>	<i>Recommend Approval</i>	<i>Feb 04, 2015</i>
Vice President for Instruction: <i>Bill Abernethy</i>	<i>Approve</i>	<i>Feb 18, 2015</i>