

**Bergen Community College
Division of Health Professions
Department of Radiography**

RAD 276 – Principles of Imaging Equipment

Basic Information About Course

Course Typically Offered: Spring
Semester and Year: Spring, Year 1
Course and Section Number: RAD 276
Locations: HP-124

Course Description

The overall focus of this course is to orient the student radiographer to the fundamental principles, operation, and application of radiation-producing imaging equipment used in diagnostic imaging. Topics in this course include atomic structure, radiation, diagnostic x-ray circuit, tomography, image intensification, mobile and automatic exposure control units. Radiation safety and patient care principles are reinforced.

Credits – 2 CR, Lecture [2.00]
Prerequisites - RAD 180 Introduction to Radiography
RAD 181 Radiography I
RAD 182 Radiography Practicum I

Co Requisites - RAD 281 Radiography II
RAD 282 Radiography Practicum II

Student Learning Objectives: As a result of meeting the requirements in this course, students will be able to:

1. Identify, describe, and explain the parts and functions of radiographic imaging equipment.
2. Prepare a radiographic examination room, including manipulation of medical equipment.
3. Educate a patient before a procedure on the risks and benefits of radiographic imaging.
4. Apply their knowledge of radiation safety to protect the patient and participating occupational workers.

Means of Assessment

Students in this course will:

1. Complete a midterm and final examination in class.
2. Demonstrate their understanding of material through discussion.
3. Complete short assignments and quizzes related to current topics.

Course Content

In this course, radiography students will be introduced to the importance of atomic structure, electromagnetism, and various radiographic imaging equipment used in a clinical setting. Included in this material is radiation safety, technical considerations, and procedure modifications. Students are expected to begin integrating equipment considerations with their prior knowledge of radiographic imaging. Students will demonstrate their knowledge through class participation, discussion and examination.

Course Texts and/or Other Study Materials

Fauber, Terri. *Radiographic Imaging and Exposure 6th Edition*. Mosby, 2020. ISBN 978-0323661393

Callaway, William. *Mosby's Comprehensive Review of Radiography: The Complete Study Guide and Career Planner 8th Edition*. Mosby, 2022. ISBN 978-0323694889

Research, Writing, and/or Examination Requirement(s)

Quizzes, Short Writing Assignments

Students will be given short writing assignments or quizzes to complete. Timelines for completion will be determined by the course instructor.

Midterm and Final

The midterm and final will be objective, computerized tests that demonstrate the student's ability to identify and apply course material. Students will be expected to evaluate various radiographic images and identify related course material.

Grading Policy**Recommended Grade Structure**

Written assignment and participation grading will be defined by the instructor.

The Radiography program grading scale is outlined in the program handbook available here <https://bergen.edu/radiography/more-info/>

Recommended Policy for Late Assignments:

Students will receive a deduction of 5% of the final grade for the assignment for each day late.

Attendance Policy**BCC Attendance Policy:**

All students are expected to attend every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor for each section of each course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor for administrative and counseling purposes.

Attendance Policy for this Course.

To be determined by the instructor.

Other College, Divisional, and/or Departmental Policy Statements**Accommodations for Disabilities:**

Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at ossinfo@bergen.edu for assistance.

Statement on Mental Health and Wellbeing

Mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. Bergen Community College has licensed Personal Counselors available to assist you with addressing these and other concerns you may be experiencing.

You can learn more about the confidential mental health services available on campus via the Health and Wellness Center at www.bergen.edu/personalcounseling

BCC Statement on Plagiarism: Plagiarism is a form of academic dishonesty and may be a violation of U.S. Copyright laws. Plagiarism is defined as taking someone else's words, opinions, or ideas and claiming them as one's own.

Examples of plagiarism include instances in which a student:

- knowingly represents the work of others as his/her own
- represents previously completed academic work as current
- submits a paper or other academic work for credit which includes words, ideas, data or creative work of others without acknowledging the source
- uses another author's exact words without enclosing them in quotation marks and citing them appropriately
- paraphrases or summarizes another author's words without citing the source appropriately

Instructors may define their own policies regarding plagiarism. See the Academic Regulations section of the college catalog for college policies.

Available Online and On-Campus Resources

Office of Testing and Tutoring at the Meadowlands LYN 202

<https://bergen.edu/tutoring/tutoring-testing-center-at-the-meadowlands/>

The Writing Center and Tutoring Center L-125 <https://bergen.edu/tutoring/writing-center/>

OWL (Online Writing Lab) <http://www.owl.english.perdue>

The English Language Resource Center (ELRC) C-212

<https://bergen.edu/tutoring/english-language-resource-center/>

The Library <https://bergen.edu/library/>

MLA Formatting Guides <https://bergen.libguides.com/citationguides/mla>

Library Research Guides <https://bergen.libguides.com/index.php?b=s>

Free Time Computer Labs <https://bergen.edu/technology-assistance/computer-lab-availability/>

The Center for Student A-118 (Academic, Career, International, and Transfer Counselors)

<https://bergen.edu/center-for-student-success/>

Academic Support <https://bergen.edu/academics/pathway-scholars-program/academic-support/>

Personal Counseling HS-100

<https://bergen.edu/health-wellness-and-personal-counseling/personalcounseling/>

Sample Course Outline

Week	Topic/Activity	Assignment/Events
1	Orientation & Historical Perspective	
2	Atomic Structure	
3	Waves & Electricity	Assignment - Atomic Structure & Electricity
4	Electricity & Magnetism	
5	Electricity & Magnetism	
6	Diagnostic Circuitry	Assignment - Circuit Calculations
7	Diagnostic Circuitry	
8	Midterm	
9	Radiographic Tube	Assignment - Diagramming
10	X Ray Production	Assignment - X Ray Calculations
11	AEC & Mobile Imaging	
12	Introduction to CR & DR	
13	Image Intensification	
14	Image Intensification	
15	Final Exam	

Important dates for the semester can be found at
<https://bergen.edu/events/category/academic-calendar/list/>

Note to Students: This Course Outline and Calendar is tentative and subject to change, depending upon the progress of the class.

Date of Most Recent Syllabus Revision: 01/2023