

Bergen Community College
 Division of Health Professions
 Radiography Program

Course Title	RAD-276 Principles of Imaging Equipment
Course Description	RAD 276 is the first of two courses related to imaging equipment that is considered to be an integral part of medical imaging. The knowledge of equipment is the foundation for radiation production and display. The equipment and acquisition of the image using computers is taught when the second half is offered.
Course Credit	Credits 2; Lecture 2

Student Learning Objectives

Upon completion of the course, the student radiographer will be able to:

- Explain basic atomic structure.
- Identify the various components, and functions of all diagnostic units.
- Name the basic materials or metals of each component of the imaging system are composed.
- Explain the production of high energy x-rays to image creation.
- Identify the basic physical processes involved in the operation of the units.
- Perform basic mathematic computations related to- autotransformer law, transformer law, inverse square law, and anode heat units' calculations.
 - A. Anode Heat Units
 - B. Autotransformer law
 - C. Transformer Law
- Explain the purpose for making radiation exposures using a portable unit s opposed to a unit in the department.
- Explain the negative issues when using the portable unit.
- ❖ Relate the imaging system to assuring “as low as reasonably achieved” is met.

Course topics

- Study, time management, and planning.
- Atoms and atomic theory.
- Basic radiation circuitry.
- Radiographic tubes.
- Mobile imaging units.
- Automatic exposure control
- APR, and technique charts.
- Exposure/ technique/ emphasis on safety practices

Teaching and learning strategies

- Power points
- Text readings
- Instructor- Guided Discussion
- Journal writing
- Group learning (whether online or face to face)
- Handouts/ supplements work sheets

Instructor Expectations:

1. Check Bergen Community College and Moodle room course emails at least two times or more per day.
2. Develop sound study skills for this course. Delving into the x-ray circuit is dangerous and not conducive to your responsibilities as a technologist. Study and developing an understanding the concepts are challenging, but not impossible to learn. Retain all information.
3. Highlight important information only. Do not highlight the entire book. Study a snippet at a time. Snippets are bits at a time.
4. Keep a writing pad with you during study. Jot down questions related to the content that is unfamiliar to you.
5. All courses require an exchange between each student and the instructor. Participating in the class is mandatory and shows interest.
6. One Reflective Journal Entry per week. In this course and other RAD courses, this process tracks trends and comprehension.
7. Bring your laptop or tablet to each class.
8. Be to class on time. Health Professions Programs do not tolerate lateness.

Course Grade

The final course grade is derived of:

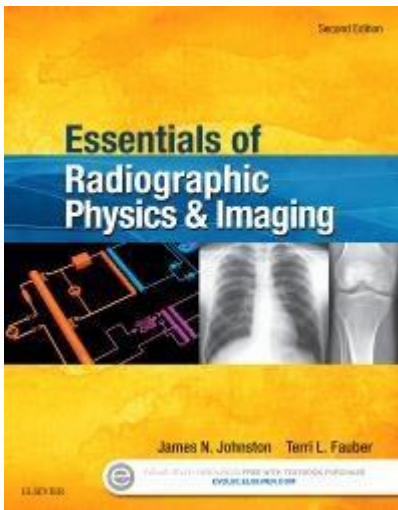
150	Weekly quizzes
200	Test 1
250	Test 2
250	Midterm Examination
300	Final examination
100	Course projects (Moodle learning quizzes, attendance, and participation) Weekly rubric)

As a part of becoming a Radiologic Technologist is embracing a life time of study. Techniques and equipment change. In to keep current of change, research and study are vital to understanding and application to clinica

Point Deductions (the deduction is from the final grade)

- -2 points for each consecutive lateness
- -4 points for each consecutive absence
- -2 points for leaving prior to class dismissal
- -3 point for the unpermitted use of the calculator
- -2 points for coming to class unprepared.

Required Textbooks:



Essentials of Radiographic Physics and Imaging

2nd Edition

Authors: **James Johnston Terri Fauber**

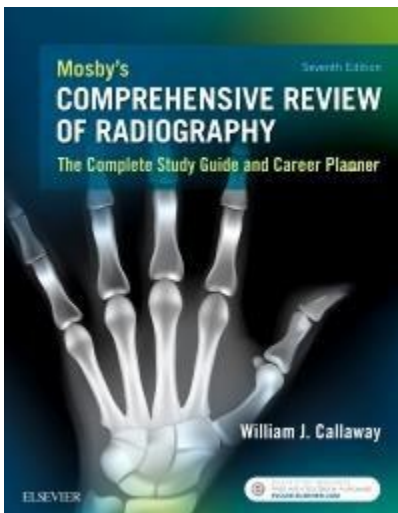
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Page Count: **288**

And



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Week	Dates	Topics:	Assignments:
1 and 2		Atoms, atomic theory, ionization, and excitation etc.	
3 and 4		Electricity and magnetism.	
5 and 6	1/25 & 2/1	Radiographic circuits	<ul style="list-style-type: none"> • Read Chapters 3 & 4 • Study
7		Test 1	
8	2/15 & 2/22	Radiographic tube, x-ray production, and anode heat units, Kahoot practice questions	<ul style="list-style-type: none"> • Chapters 5 & 6 • Study • Worksheets • Kahoot
9	3/1	Midterm Exam	<ul style="list-style-type: none"> • Study • Worksheets • Kahoot
10 and 11	3/8 & 3/15	Image Intensified Fluoroscopy	<ul style="list-style-type: none"> • Study • Worksheets • Kahoot
	3/15	Spring break	<ul style="list-style-type: none"> • Study
12	3/22	Test 2	
13	3/29	Image Intensification	Create outlines and practice questions
14	4/5 & 4/12	Mobile/ bedside and AEC SID/ OID	<ul style="list-style-type: none"> • Read • Worksheets • Kahoot • Prepare for the final examination
15	5/3	Final Exam	<ul style="list-style-type: none"> • Overview • Final Examination

****Course Policies (Important)**

The textbook, power points, notebook and writing tool are to come to each class.

Course textbook and PowerPoints

Students' must purchase an up-to-date text book. The reason is why? The answer is the change of the technology happens rapidly. Using older editions of the textbook create confusion with the class.

The Power Points, worksheets, and the ARRT content specifications serve as a study guide.

Readings

The text is an important supplement to the course. The book does not (is not) replace instruction.

Notice of Changes Policy

The student is apprised that this document is subject to change. When any change is made the instructor will notify you in class or electronically.

Make -Up Policy

One makeup quiz is permissible. NO test or examination can be made up.

Attendance Policy

Your attendance and participation in the classroom and laboratory aspects of the courses is mandatory. Lack of course attendance could result in an unsuccessful grade.

The rationale for our attendance and progression policies is to help you achieve success with the course and clinical performance. Absences and consistent tardiness affects course and clinical performance.

There may be times in which the course schedule might be adapted. Students must begin to learn adapt ability.

You are expected to be logged in and ready for class by no later than the start time indicated your schedule.

THIS SYLLABUS IS TENTATIVE AND SUBJECT TO CHANGE. STUDENTS WILL BE APPRISED OF SUCH CHANGES ON THE COURSE PAGE UNDER ANNOUNCEMENTS.

The course instructor will:

1. Use computer-based testing. Quizzes, Tests, and Exams allow for 1.09 min/ question. The length of time is comparable with the ARRT.
2. Allow only one attempt at a test or exam. The assessment will be opened for viewing after the assessment is studied.
3. Take four days before assessments (test, quizzes, or exam) grades are released due to the class after the faculties take the time to analyze the assessment.
4. Post all announcements are on the course web page.
5. Testing times are not altered for other class assessments. For example, if Professor Romano and I are testing on the same day. Both tests will be given.
6. Students must earn a 77% on both the midterm and final examination to pass the course, regardless of other course grades.

Practice

Practice questions are on Kahoot. There are no practices on Moodle. Use the practice items (questions) to identify strengths, weaknesses, or a need for clarity. The amount of practices vary from is the prevue of the instructor.

Retention

Review books are outstanding study tools. As a Student Radiologic Technologist, your retention is imperative to the program and Bergen Community College. You are taking a nations Examination in two years. You must remember that the ARRT expects you to retain the info for their exam. A 75% score is needed to be successful. The program requires Callaway. Callaway has an outline for study.

Over the course of study offered by this program, student will work hard in their studies. The certification will seem challenging for some. The challenge is regular study (daily).

The program is aware that you must work, however, will not accept that issue as an excuse for not doing an assignment or test.

Through Moodle room learning platform used by Bergen Community College, lectures and assessments are uploaded. The program uploads all materials, worksheets, and assessments.

Students feel more comfortable approaching faculty if they perceive that there is an accepting environment. Examples of the statements that help establish this type of environment might include:

“If you are a student with special needs or circumstances, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible during my office hours”

“Any student with special needs or circumstances should feel free to meet with me during office hours”

“Any student who feels that he or she may need an accommodation because of a disability (learning disability, attention deficit disorder, psychological, physical, etc.), please make an appointment to see me during office hours”

“If you need adaptations or accommodations because of a disability (learning disability, attention deficit disorder, psychological, physical, etc.), if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My office location and hours are. “

