

BERGEN COMMUNITY COLLEGE

Division of Science and Health

Radiography Program

**STUDENT COURSE of STUDY and SYLLABUS for LECTURE
Spring 2016**

A. COURSE INFORMATION

Course Title: Specialty Imaging and Therapeutic Modalities

Course Code: RAD 275

Section: 001

Credits: 1.0 (1 hour per week for 15 weeks= 15 lecture hours)

Pre-requisites: RAD 276- Radiation Health and Protection
RAD 281- Radiography II
RAD 283- Intermediate Radiography Clinical

Co-requisites: RAD 280- Image Production and Evaluation
RAD 285- Radiography III
RAD 286- Radiography Clinical III
RAD 183- Radiographic Pathology

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This course offers students an exploration of advanced imaging techniques and related imaging sub specialties. This course also offers legal and ethical issues as they pertain to radiography.

Prerequisite- RAD 184, 285, and 286

Co requites- RAD 288, 289

C. COURSE TEXTBOOKS

Author: Bontrager, Anthony (2002)

Title: Radiographic Positions and Related Anatomy

Edition: 9th, Mosby Publishers

Instructor Power points and handouts

D. STUDENT LEARNING OBJECTIVES

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

- (1) Identify and describe the components of the diagnostic unit, image Intensifier, tomography, DEXA, PACS, digital, radiation therapy CT and MRI units.

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- (2) Describe the physical set up and basic equipment for nuclear medicine Units
- (3) Identify various contrast agents used and identify potential contraindications for CT and MR procedures.
- (4) Explain the procedures, materials and images made angiography, in myelography, arthrography, lymphangiography procedures.
- (5) Explain and differentiate: scanogram, bone survey and bone age study.
- (6) Explain the anatomy, positions, and indications for mammography, CT and MR.
- (7) Correlate basic pathologies to the specialty imaging study needed.
- (8) Explain basic patient care practices used during special procedures.
- (9) Explain the basic principles of death and dying as described by Dr. Elizabeth Kubler Ross.
- (10) Determine how various lesions spread from one area of the body to other areas.
- (11) Apply medical terminology to the procedures performed and conditions identified.

E. STUDENT LEARNING OUTCOMES AND ASSESSMENT

- 1) *Identify and explain the basic components of the imaging equipment that is used to create specialty images, such as the circuit, its x-ray tube, image intensifier, mobile, automatic exposure control, treatment and tomographic units.*
- 2) *Explain and demonstrate various ways in which health care providers care for and patient, minimizes patient dose, while properly using all diagnostic imaging equipment.*
- 3) *Apply reasoning and critical thinking processes when managing patients using various diagnostic and specialty imaging modalities.*

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- 4) *Use critical thinking and reasoning when applying basic physical principles to the operation of the imaging equipment and when performing basic mathematical computations.*

F. COURSE CONTENT and SUBJECT MATTER

The content for RAD 275 Special Procedures and Imaging Modalities I includes the following content, but is not limited to:

- | | |
|---|---|
| 1. Course Introduction | 8. Pet Scanning |
| 2. Principles of computed tomography (CT) | 9. PACS |
| 3. Mammography | 10. DEXA, Limb length measurement, Bone age |
| 4. Magnetic Resonance Imaging (MRI) | 11. Hysterosalpinogram |
| 5. Sonography/Ultrasound | 12. Forensics in Radiology |
| 6. Angiography/ Cardiac intervention | 13. Legal and Ethical issues in Medical Imaging |
| 7. Nuclear medicine | 14. Emerging modalities |
| | 15. Review of all modalities |

G. TEACHING METHODOLOGIES AND LEARNING STRATEGIES

- (1) structured lecture presentations
- (2) instructor guided class discussions
- (3) handouts/ power point presentations
- (4) learning modules
- (5) anatomic illustrations

H. GRADING POLICY, COURSE REQUIREMENTS AND ASSIGNED GRADES

15% Assignments & Participation

85% Weekly Quizzes

Policy Statement

1. Students are expected to attend each lecture section.
2. Reading assignments are published on this document and should be done **prior** to the related lecture.
3. The instructor will **not** accept any late assignments.
4. Participation and assignments, together account for 15% of the final course grade.
5. Students benefit from the assignments for it provides a mechanism to apply concepts introduced, explained, and reinforced in class.

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6. A final grade will be assigned based on the final average from the components indicated above.
7. Only one make up quiz will be given when a student is late or absent. Any quiz beyond the one allotted will be given a zero grade.
8. Grades are assigned as follows based on the policy that is published in the Radiography Student Handbook:

Grade Guide

A	92% to 100%
B+	89% to 91.9%
B	83% to 88.9%
C+	80% to 82.9%
C	77% to 79.9%
D	76.9 to 70% = is not recognized by the Radiography Program
F	69.9% and lower = unsuccessful and must be repeated
INC	Incomplete

LESSONS , READINGS and ASSIGNMENTS

Week 1: Introduction to the course

explanation of syllabus
course requirements and instructor expectation

Week 2: CAT Scanning

advantages and disadvantages of the modality, generations spiral and helical ,the system scanning unit- console, monitor, couch, beam restriction, windowing, slices, agents and uses

Week 3 & 4 Mammography

anatomy
cancer and other conditions and pathology
equipment, and projections/positions

Week 5: Principles of Magnetic Resonance Imaging

uses for the modality
its application and useful diagnostic information

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basic physics involved- procession and resonance
cautions and safety practices basic patient preparation

Week 6: Ultrasound

uses for the modality and its application and diagnostic
information
basic equipment and physics involved common procedures,
safety etc

Week 7: Angiography

basic anatomy of the heart
basic vasculature, pathology and conditions
basic equipment used for angiography- contrast agent
administration, side effects, indications, contraindications
basic radiation safety and patient care
Seldinger Technique finishing the study and care of the
patient

Week 8: Angiography and Cardiac Intervention

- A. basic anatomy of the heart
- B. basic vasculature, pathology and conditions
- C. basic equipment used for angiography
- D. contrast agent administration, side effects, indications,
contraindications

Week 9: Nuclear Medicine

Week 10: PACS

Week 11: Dexa and Bone age

Week 12: Hysteriosalpinogram

Week 13: Forensics

Week 14: Legal and ethical issues in Medical Imaging

**Week 15: Radiation Therapy (date depends on availability of the
instructor).**

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I acknowledge receipt of the syllabus for RAD 275

I agree to abide by the course policies for successful completion of the course.

Name: _____
Print clearly

Name: _____
Signature

Date: _____

Note: Course policies, schedule, and subject material are subject to change.

The course Instructor will notify students of any changes electronically.