



ANTELOPEVALLEY COLLEGE

**Academic Affairs
Course Outline of Record**

Academic Affairs Only

- X New Course 5/24/2007
- COR Revision
- COR Update
- X Pre Req/Advisories 5/24/07
- X Other Changes 12/06/2007
- X Effective Date 200870
- X SLO 7/30/2008

COURSE SUBJECT & NUMBER: RADT 207 RADT 207CL

COURSE NAME: Advanced Radiographic Procedures

COURSE UNITS: 10 **COURSE HOURS:** 3 hours lecture and 385 clinical hours total

COURSE REQUISITES: *(Follow format of similar courses found in the college catalog.)*

Limitation on Enrollment: Formal admission to the Radiologic Technology program

Prerequisites: Completion of RADT 202, 202CL, 203, 204, and 210 with grades of "C" or higher

Corequisites: Concurrent enrollment in RADT 207CL and 208

COURSE DESCRIPTION: *(Write a short paragraph providing an overview of topics covered. Be sure to identify target audience--transfer, major, GE, degree/certificate, etc. If repeatable, state the number of times at end of description.)*

This course provides the advanced radiography student with a survey of advanced imaging and an introduction to other specializations in radiation sciences. An introduction to special invasive procedures is also included. (CSU, AVC)

COURSE OBJECTIVES: *(Use Bloom's taxonomy to formulate concise, performance-based measurable objectives common to all students. Objectives must be closely aligned with course content, assignments, and methods of evaluation.)*

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

1. Differentiate among invasive studies presented in this course.
2. Evaluate the principles of managing pediatric patients.
3. Describe examinations performed exclusively on pediatric patients.
4. Compare and contrast examinations performed in reproductive patients (gravid and non-gravid patients).
5. Critique radiographs with the assistance of faculty or assigned radiographers.
6. Perform in the role of the radiologic technologist a radiation environment with minimal supervision.
7. Demonstrate proper radiation protection safety procedures for imaging personnel, the patient, and other individuals within the radiation environment.
8. Produce medical images of suitable diagnostic quality with minimal supervision.
9. Communicate accurately using radiographic and medical terminology.
10. Demonstrate professional conduct.
11. Perform all ASRT elective positioning competencies.
12. Perform basic CT exam of the head without contrast.
13. Performed examinations in CT, MRI, Ultrasound, and nuclear medicine.
14. Critique medical images for correct exposure, positioning, pathology, and radiographic quality with minimal supervision.
15. Evaluate personal readiness to enter the profession.

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COURSE CONTENT: *(Enter course content in terms of specific topics or a specific body of knowledge that each instructor must cover. Put topics in outline form with major and minor headings. Title 5 requires that each instructor must cover all material listed below.)*

- I. Digital imaging
 - A. Advantages
 - B. Terminology
 - C. Digital fluoroscopy
 - D. Detector arrays and related equipment
- II. Computed tomography
 - A. Principles of operation
 - B. Developments in generations 1-4
 - C. CT components
 - D. Review of image characteristics
 - E. Critique of films
- III. Magnetic resonance imaging
 - A. Advantages
 - B. Development
 - C. Image parameters
 - D. Equipment and magnet comparisons
 - E. Biologic hazards
 - F. Physical hazards
- IV. Ultrasound
 - A. Characteristics of sound
 - B. Modes of operation
 - C. The transducer
 - D. The Doppler Shift
 - E. Image quality and beam characteristics
- V. Angiography (5 hrs contrast media)
 - A. Areas of study
 - B. Approaches
 - C. Injections and contrast materials
 - D. Aortography
 - E. Peripheral angiography
 - F. Cerebral angiography
 - G. Angiography equipment
 - H. Sterile technique
- VI. Interventional angiography (5 hrs contrast media)
 - A. Embolization
 - B. Percutaneous Transluminal Angioplasty
 - C. Subtraction techniques
 - D. First/second order subtraction techniques
 - E. Composite-mask subtraction
- VII. Needle biopsy techniques
 - A. Core biopsy
 - B. "Skinny Needle" biopsy
 - C. Complications
 - D. Guidance methods
- VIII. Percutaneous nephrostomies
 - A. Advantages
 - B. Insertion techniques & objectives
 - C. Applications
 - D. Complications
- IX. Percutaneous Biliary Drainage (1 hr contrast media)
 - A. Advantages
 - B. Insertion techniques & objectives
 - C. Maintenance
 - D. Applications
- X. Imaging of the central nervous system
 - A. Pneumoencephalography
 - B. Pneumoventriculography
- XI. Miscellaneous procedures (1 hr contrast media)
 - A. Lymphangiography
 - B. Nuclear medicine
 - C. Radiation therapy
 - D. Pediatric radiology
 - E. Thermography
- XII. Supervised clinical practice in imaging modalities
 - A. Mammography
 - B. CT
 - C. MRI
 - D. NM
 - E. Ultrasound
 - F. Radiation therapy
 - G. Angiography
 - H. Cardiac cath lab
 - I. Surgery
 - J. Portables
 - K. Routine skull
- XIII. Radiographic exams for special populations
 - A. Children (10 pediatric radiography)
 - B. Reproductive radiography
 - i. Male tracts
 - ii. Non-gravid female tracts
 - iii. Gravid radiography

(Course includes 18 hrs film critique and 10 hrs senior seminar)

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TYPICAL HOMEWORK ASSIGNMENTS: READING, WRITING, COMPUTATIONAL, OTHER

This information is necessary for all credit courses. Assignments should be closely related to course objectives, content, and methods of evaluation. (See sample of a "Model Outline" in the AP&P Standards & Practices handbook.) Include a range of assignments (minimum of three) from which faculty may choose when designing their syllabus.

1. Describe nature and frequency of typical reading assignments if applicable; note if any are required:

Ten to twenty pages of reading from assigned text weekly.

2. Describe nature and frequency of typical writing assignments if applicable; note if any are required:

Analysis of case studies and films weekly, 2-3 pages each (required)

3. Describe nature and frequency of typical computational assignments if applicable; note if any are required:

Daily clinical problems in dosage calculation and time/distance/shielding

4. Describe other types of homework assignments that students may be asked to complete; note if any are required:

5. Describe those critical thinking skills that are derived from assignments listed above; be sure that they reflect course objectives.

Analysis and evaluation of radiographic images to determine quality and appropriateness of examination

6. For categories 1-4, describe the estimated time per week it would take a student to complete homework assignments.

Title 5 uses the Carnegie formula for establishing units using a 2:1 ratio as follows: 1 hr. lecture = 2 hrs .homework; 2 hrs. lecture = 4 hrs .homework; etc. For example: reading textbook—2 hours; writing reports—3 hours.

Reading: 3 hours per week reading text

Writing: 3 hours per week writing and case studies

Computational: ½ hour per week calculating dosages and computing time/distance/shielding problems

Other:

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METHODS OF INSTRUCTION: *(Methods must be consistent with content and appropriate to objectives; state in terms of what instructor will be doing in order to present course content to students: for example, lecture, demonstration, facilitate group work, etc. Do not list specific instructional equipment.)*

Lecture, discussion, audiovisuals, demonstration and return demonstration, supervised clinical practice

METHODS OF EVALUATION: *(These must be clearly related to course content, assignments, and objectives in order to comply with Title 5 requirements. Describe what instructor will be looking for when evaluating various assignments and tests in order to determine whether students have met course objectives. Grades must be based on demonstrated proficiency in subject matter and determined, where appropriate, by essays, objective and essay tests, research papers or projects, problem solving exercises, or skills' demonstrations.)*

Multiple choice, short answer, and essay exams to assess achievement of objectives 1 through 5

Case studies and film analysis papers to assess achievement of objectives 1-5

Evaluation of clinical performance to assess achievement of objectives 6-15

Suggested Texts or other Instructional Materials *(list several when possible; include title, author, publisher, date, and latest edition.)*

Bontrager, Kenneth. 2002. Pocket Atlas: Handbook of Radiographic Positioning and Techniques. 4th ed. Bontrager Publishing Inc.

Bushong, S. Radiologic Science for Radiologic Technologists, 8th Ed., Mosby, 2004.

RADT 207 course packet (created by faculty and updated annually)