Medical Radiography Technology

Radiographic Technique 2

COURSE INFORMATION

COURSE NUMBER	**MRAD 256**
TOTAL HOURS	**125**
THEORY	**75**
PRACTICAL	**50**
PREREQUISITES	**ANPH 202 - Anatomy and Pathology 1** **APPH 226 - Apparatus and Image Management** **MEDT 211 - Medical Terminology** **MRAD 204 - Radiologic Technique 1** **MRAD 223 - Patient Care 1** **RADP 215 - Radiation Protection** **PRCT 250- Introduction to Clinical Placement**
CO-REQUISITES	**None**
ACADEMIC UNIT RESPONSIBLE FOR COURSE	**Allied Health Education**

STUDENTS, PLEASE NOTE

This course contains information that may be required to substantiate learning for professional recognition. It is your responsibility to retain a copy for your own use during your program and after graduation.

COURSE DESCRIPTION

Radiographic Technique 2 expands on Radiographic Technique 1 and covers radiographic procedures for more complex anatomical structures, including the vertebrae, thorax, cranium, and facial bones. Standard radiographic positioning, exposures and procedures will be discussed, in addition to nomenclature and how to develop a workflow. A hands-on component will allow learners to practice critiquing radiographic images, correcting mistakes and using problem solving skills in the clinical setting. The practical component for hands-on learning is conducted at the clinical environment.

COURSE OBJECTIVES

Following completion, the student will be able to:

1. Plan an imaging procedure associated with the vertebral column.
    - 1.1 Prepare the room for a standard examination of the vertebral column.
    - 1.2 Prepare a patient for an examination of the vertebral column.
    - 1.3 Review previous reports and images from related disciplines.
    - 1.4 Determine the appropriate protocol or positioning requirements for the vertebral column.
    - 1.5 Set exposure techniques appropriate for an individual patient.

2. Evaluate the positioning of the patient to acquire appropriate views and projections associated with the vertebral column.
    - 2.1 Explain the guidelines, terminology, positions, body movements, planes and perspectives associated with the vertebral column.
    - 2.2 Describe the purpose of specific projections and views associated with the vertebral column.
    - 2.3 Identify topographical landmark locations associated with the vertebral column.
    - 2.4 Demonstrate proper positioning techniques associated with the vertebral column.
    - 2.5 Produce diagnostic radiographs associated with the vertebral column.
    - 2.6 Critique radiographs associated with of the vertebral column.
    - 2.7 Modify suboptimal positioning examinations associated with the vertebral column.

3. Recommend basic changes in vertebral column procedures to address individual patient needs.
    - 3.1 Apply the patient's clinical information when imaging the vertebral column.
    - 3.2 Explain how to adapt an examination of the vertebral column to increase patient comfort in difficult situations.
    - 3.3 Demonstrate how to care for patients with diminished mobility.
    - 3.4 Discuss how a given pathology may affect the imaging procedure.
    - 3.5 Protect a possibly pregnant patient when imaging the vertebral column.

4. Evaluate various views and projections associated with the vertebral column anatomy.

4.1 Define the appropriate osteology and basic bone terminology associated with the vertebral column.
4.2 Describe the different types of joints and joint terminology associated with the vertebral column.
4.3 Identify the anatomy of the vertebral column.
4.4 Identify radiographic anatomy of the vertebral column in a cross-sectional format.
4.5 Correlate the patient's position with the image of the vertebral column.
4.6 Identify an appropriately positioned image of the vertebral column.
4.7 Compare and contrast the significance of various radiographic projections of the vertebral column.

5. Evaluate the quality images associated with the vertebral column and sacroiliac (SI) joints.
5.1 Critique images of the vertebral column for positioning.
5.2 Critique an image of the vertebral column for technical deficiencies.
5.3 Evaluate the images for demonstration of appropriate anatomical structures.
5.4 Identify when corrective and supplemental images are required.

6. Plan an imaging procedure of the thorax.
6.1 Prepare the room for a standard examination of the thorax.
6.2 Prepare the patient for a thorax examination.
6.3 Review previous reports and images from related disciplines.
6.4 Determine appropriate protocols or positioning requirements of the thorax.
6.5 Set exposure techniques appropriate to the needs of an individual patient.

7. Evaluate the positioning of a patient to acquire appropriate views and projections of the thorax.
7.1 Explain the guidelines, terminology, positions, body movements, planes and perspectives used in radiographic technique associated with the thorax.
7.2 Describe the purpose of specific projections and views of the thorax.
7.3 Identify topographical landmark locations of the thorax.
7.4 Demonstrate the proper positioning techniques for the thorax.
7.5 Produce diagnostic radiographs of the thorax.
7.6 Critique radiographs of the thorax.
7.7 Modify suboptimal examinations of the thorax.

8. Recommend basic changes in thorax examination procedures to address individual patient needs.
8.1 Apply a patient's clinical information when imaging the thorax.
8.2 Explain how to adapt an examination of the thorax to increase patient comfort in difficult situations.
8.3 Demonstrate how to care for patients with diminished mobility.
8.4 Discuss how a given pathology may affect an image of the thorax.
8.5 Protect a possibly pregnant patient when imaging the thorax.

9. Evaluate various views and projections of the thorax.
9.1 Define osteology and basic bone terminology associated with the thorax.

9.2 Describe the different types of joints and joint terminology when imaging the thorax.
9.3 Identify the anatomy of the thorax.
9.4 Identify the anatomy of the thorax in a cross-sectional format.
9.5 Correlate the patient's position with the image of the thorax.
9.6 Identify an appropriately positioned image of the thorax.
9.7 Compare and contrast various different projections of the thorax and their significance.

10. Evaluate the quality of thorax images.
10.1 Critique images of the thorax for correct positioning.
10.2 Critique images of the thorax for technical deficiencies
10.3 Evaluate images of the thorax for appropriate anatomical structures.
10.4 Identify when corrective and supplemental images of the thorax are required.

11. Plan an imaging procedure of the skull, sinuses, and facial bones.
11.1 Prepare the room for a standard examination of the skull, facial bones, and sinuses.
11.2 Prepare a patient for an examination of the skull, facial bones, and sinuses.
11.3 Review reports and images from related disciplines.
11.4 Determine the appropriate protocol or positioning requirements for the skull, facial bones, and sinuses.
11.5 Set exposure techniques appropriate to the needs of an individual patient.

12. Acquire appropriate view and projections of the skull, facial bones, and sinuses.
12.1 Explain the guidelines, terminology, positions, body movements, planes and perspectives used in radiographic technique of the skull, facial bones, and sinuses.
12.2 Describe the purpose of specific projections and views of the skull, facial bones, and sinuses.
12.3 Identify topographical landmark locations of the skull, facial bones, and sinuses.
12.4 Demonstrate proper positioning techniques for the skull, facial bones, and sinuses.
12.5 Produce diagnostic radiographs of the skull, facial bones, and sinuses.
12.6 Critique radiographs of the skull, facial bones, and sinuses.
12.7 Modify suboptimal examinations of the skull, facial bones, and sinuses.

13. Recommend basic changes in skull, facial bones, and sinus examination procedures to address individual patient needs.
13.1 Apply a patient's clinical information when imaging the skull, facial bones, and sinuses.
13.2 Explain how to adapt an examination of the skull and facial bones to increase patient comfort in difficult situations.
13.3 Demonstrate how to care for patients with diminished mobility.
13.4 Discuss how a given pathology may affect an image of the skull, facial bones, and sinuses.
13.5 Protect a possibly pregnant patient when imaging the skull, facial bones, and sinuses.

14. Evaluate various views and projections of the skull, facial bones, and sinuses.
14.1 Define the osteology and basic bone terminology associated with the skull, facial bones, and sinuses.

14.2 Describe the different types of joints and joint terminology.
14.3 Identify the anatomy of the skull, facial bones, and sinuses.
14.4 Identify the anatomy of the skull, facial bones, and sinuses in a cross-sectional format.
14.5 Correlate the patient's position with the view of the skull, facial bones, and sinuses.
14.6 Identify an appropriately positioned image of the skull, facial bones, and sinuses.
14.7 Compare and contrast various radiographic projections of the skull, facial bones, and sinuses, and their significance.

15. Evaluate the quality of an image of the skull, facial bones, and sinuses.
15.1 Critique images of the skull, facial bones, and sinuses.
15.2 Critique images of the skull, facial bones, and sinuses for technical deficiencies.
15.3 Evaluate images of the skull, facial bones, and sinuses for demonstration of appropriate anatomical structure.
15.4 Identify when corrective and supplemental images of the skull, facial bones and sinuses are required.

16. Plan an imaging procedure of the chest and abdomen.
16.1 Provide a safe, clean, and comfortable environment.
16.2 Prepare the room for a standard examination of the chest or abdominal.
16.3 Verify clinical history through patient interview.
16.4 Prepare a patient for an examination of the chest or abdomen.
16.5 Establish patient rapport.
16.6 Review reports and images from related disciplines that may be relevant to an examination of the chest and abdomen.
16.7 Determine the appropriate protocol or positioning requirements for the chest and abdomen.
16.8 Set chest and abdomen exposure techniques appropriate to the needs of the individual patient.
16.9 Ensure the patient's needs are met prior to release from the technologist's care.

17. Evaluate the positioning of the patient to acquire appropriate views and projections of the chest and abdomen.
17.1 Explain the guidelines, terminology, positions, body movements, planes and perspectives used in radiographic technique associated with the chest and abdomen.
17.2 Describe the purpose of specific projections and views associated with the chest and abdomen.
17.3 Identify topographical landmark locations on the chest and abdomen.
17.4 Demonstrate proper positioning techniques for the chest and abdomen.
17.5 Produce diagnostic radiographs of the chest and abdomen.
17.6 Critique radiographs of the chest and abdomen.
17.7 Modify positioning examinations of the chest and abdomen that are sub optional.

18. Recommend basic changes in procedure to address individual patient needs.
18.1 Apply a patient's clinical information to the chest or abdomen procedure.

18.2 Adapt chest and abdomen examinations to increase patient comfort in difficult situations.
18.3 Identify strategies that may be used when adapting a chest or abdomen examination to facilitate the different age groups.
18.4 Simulate care of patients with diminished mobility when performing a chest or abdomen examination.
18.5 State the importance of ascertaining the patient's cognitive status when performing a chest or abdomen examination.
18.6 Specify a procedure for patients with a sensory impairment.
18.7 Protect a possibly pregnant patient when performing a chest or abdomen examination.

19. Evaluate various views and projections of the chest and abdomen.
19.1 Describe the different types of joints and joint terminology associated with the chest and abdomen.
19.2 Identify the anatomy of the chest and abdomen on a radiograph.
19.3 Identify chest and abdomen anatomy in a cross-sectional format.
19.4 Correlate the patient position with the image of the chest and abdomen.
19.5 Characterize an appropriately positioned image of the chest and abdomen.
19.6 Compare and contrast different projections of the chest and abdomen and their significance.
19.7 Assess images of the client and abdomen based on anatomy seen.

20. Evaluate the quality of chest and abdomen images.
20.1 Critique images of the chest and abdomen for positioning.
20.2 Critique an image of the chest and abdomen for technical deficiencies.
20.3 Evaluate images for appropriate anatomical structures associated with the chest and abdomen.
20.4 Identify when corrective and supplemental images of the chest and abdomen are required.

COMMON STUDENT LEARNING OUTCOMES

Upon successful completion of Anderson College programs, the student will:

Learn
Students will actively and independently acquire, apply, and adapt skills and knowledge to develop expertise and a broader understanding of the world as lifelong learners.

Think
Students will think analytically and creatively to explore ideas, make connections, draw conclusions, and solve problems.

Communicate
Students will exchange ideas and information with clarity and originality in multiple contexts.

Integrate
Students will demonstrate proficiency in the use of technologies in the broadest sense related to

their field of study.

Act

Students will act purposefully, reflectively, and respectfully in diverse and complex environments.

EVALUATION

COLLEGE GRADING SYSTEM

The student must achieve an overall minimum grade of 70% on course assessments to be successful.

Students who achieve a failing grade of less than 70% may be eligible to write a supplemental examination to gain course credit. Remedial assistance will be required prior to writing the supplemental examination. Students will not progress in the program without achieving a passing grade in the course.

COURSE EVALUATION

Project	25%
Lab Exam (2)	35%
Mid Term Exam	15%
Final Exam	15%
Professionalism	10%
Total 100%	

ASSESSMENT RATIONALE/ CRITERIA

Achievement of learning outcomes will be assessed through class participation, class work, group activity, assignment, tests, project, mid-semester examination, and end of semester examination. Assessment will require students to demonstrate understanding and application of all the topics taught.

LEARNING MATERIALS

REQUIRED TEXTS

Lampignano, J. & Kendrik, L. (Last Published). Textbook of Radiographic Positioning and Related Anatomy (Current ed.). St. Louis, MO: Elsevier Mosby.

Lampignano, J. & Kendrik, L. (Last Published). Workbook for Radiographic Positioning and Related Anatomy (Current ed.). St. Louis, MO: Elsevier Mosby.

Lampignano, J. & Kendrik, L. (Last Published). Handbook for Radiographic Positioning and Techniques (Current ed.). St. Louis, MO: Elsevier Mosby.

SUGGESTED READINGS

To be determined by the instructor.

REFERENCE TEXTS AND MATERIALS

To be determined by the instructor.

TEACHING/LEARNING STRATEGIES

Lectures on all the topics, power point presentations, video presentations, classwork, assignments, groupwork. All the students are expected to familiarise themselves with foundational knowledge prior to class. Personal study before and after classes and use of online resources are essential.

COLLEGE POLICY STATEMENTS

Refer to the Anderson College Student Handbook for more information on the following policies.

ACADEMIC RESPONSIBILITY – STUDENTS

1. Each student must know the due dates for assignments, tests, and examinations.
2. Each student must maintain their own academic record of work covered each Unit/term.
3. Each student must maintain paper and electronic copies of assignments for the academic year.
4. Each student must arrange academic discussion time with a faculty member to discuss progress.
5. Each student must perform self-evaluation on progress in the course.

PERSONAL CONDUCT – STUDENTS

1. Students must arrive on time for class and be prepared to work when the instructor begins.
2. Students must be courteous to faculty and classmates.
3. Eating in classrooms and clinic is not allowed.
4. Cell phones, Text messengers and other electronic devices must be turned off during class time.

ACADEMIC ADVANCEMENT

At mid-point and at the end of each academic term, the members of the Faculty Team (FT) for the Medical Radiography Technology program meet to review the progress of all students. Following these meetings each student is advised orally and in writing of their status in the program.

Students experiencing difficulty will be counseled regarding assistance available to foster academic success.

At the end of each term, the Medical Radiography Technology Program Instructor and or Director of Education will make recommendations after deliberating on all relevant information. Decisions regarding each student may include (but are not limited to) the following. S/he has:

- Successfully completed all program requirements and can graduate.
- Successfully completed all requirements and is promoted to the next academic level in the program.
- Been granted supplemental privileges for courses not successfully completed and if successful will graduate or be promoted to the next academic level. **Supplemental privileges are not automatically granted and will be limited in number.**
- Not successfully completed all elements in the academic level but may remain in the program to repeat failed portions and continue toward program completion according to an individualized timetable.
- Experienced such difficulty that repetition of the entire academic level is required, and a space will be provided for the student in the program at the earliest opportunity if the student wants to return.
- Experienced such difficulty that the student is asked to leave the school and if s/he desires readmission must complete the admissions process in competition with other applicants.

ATTENDANCE

Attendance is mandatory – The College reserves the right to determine whether absences are excused or unexcused (may affect student funding) and to request any medical evidence that may be required. Student tardiness is unacceptable, and students are expected to demonstrate professional behaviour at all times, in class or on a clinical placement. Students are entirely responsible for catching up on their own or for missed material and demonstrations. A doctor's note may be requested for each absence.

Absence from Missed Test/Assignment Due Protocol

Upon return to school, the student is to provide a doctor's note or approved excusable absence to the instructor prior to admission to the make-up test/submission of late assignments. Failure to submit an approved excuse within 5 school Units upon return, the student will receive a zero for all missed, tests and late assignments.

Absence from Class Protocol

The College monitors attendance closely. A student who is absent from a class more than 3 times in a term, will be identified at risk and required to submit a doctor's note or approved excusable absence to their instructor(s) and the Program Instructor prior to readmission to the class.

Make-Up Procedure

All students are expected to take exams at the scheduled time. Make-up exams will be arranged only in recognized emergency cases. The instructor must be informed before or during the exam, to be eligible. Refer to the Anderson College Student Handbook for protocols. Quizzes are taken in class and at the time specified by the instructor. Late students will be given no extra time for the quiz. Quizzes given in the classroom cannot be made-up.

CHEATING AND PLAGIARISM

Any evidence of cheating will result in a failure for the course. Evidence of plagiarism will result in a failure for all students involved in the plagiarism. Plagiarism is turning in the work of someone else as if it was your own. When working on assignments in a group setting, students must submit their assignments using their own words. Identically worded assignments submitted by multiple students are acts of plagiarism.

MOBILE PHONES

Mobile phones are to be turned completely OFF while class is in session. Please use laptop computers responsibly. Web browsing, messaging, emailing, and recording are otherwise prohibited during class. Students who abuse the privilege of using their laptops will be asked to put it away for the duration of the class.