Medical Radiography Technology

Fluoroscopic Imaging

COURSE INFORMATION

COURSE NUMBER	**MRAD 254**
TOTAL HOURS	**50**
THEORY	**25**
PRACTICAL	**25**
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

Fluoroscopic Imaging introduces how fluoroscopic equipment works and its' numerous features. Different procedures used to determine the function capabilities and anatomical structures for the digestive, biliary, and genitourinary systems will be introduced. Patient care, radiation dose and patient positioning related to these procedures will also be covered. The practical component for hands-on learning is conducted at the clinical environment.

COURSE OBJECTIVES

Following completion, the student will be able to:

1. Outline the parameters used during a fluoroscopic examination.
    - 1.1 Differentiate fluoroscopic examinations from regular static examinations.
    - 1.2 Explain the operation of image intensifiers (II).
    - 1.3 Describe image acquisition storage and display parameters.
    - 1.4 Summarize how primary factors affect image quality.
    - 1.5 Compare fluoroscopic unit configurations and design.

2. Outline the different procedures performed for visualizing the digestive system.
    - 2.1 Describe the gross anatomy, relational anatomy, and physiology of the digestive system.
    - 2.2 Describe the radiographic procedures used for imaging the digestive system.
    - 2.3 Identify the contrast media used for individual imaging procedures of the digestive system.
    - 2.4 Describe the preparations required for rectal catheter insertion.
    - 2.5 List the indications and contraindications for examinations of the digestive system.
    - 2.6 State the key components when verifying a patient's clinical history.
    - 2.7 Determine patient preparation and post-procedural care for each of the individual digestive system procedures.
    - 2.8 Identify procedures for prioritizing examinations according to medical status and resource availability.
    - 2.9 Indicate the common anatomical structures presented on images of the digestive system.

3. Distinguish the elements required for producing radiographic images of the digestive system.
    - 3.1 Determine the protocols and positioning requirements of a facility.
    - 3.2 Describe the technical imaging considerations that are specific to examinations of the digestive system.
    - 3.3 State the projections and positions used in digestive procedures and examinations.
    - 3.4 Identify topographical landmark locations of the digestive system.
    - 3.5 Generalize how to increase patient comfort during an exam of the digestive system.
    - 3.6 Determine if corrective and supplemental images are needed.

4. Distinguish the elements required for producing radiographic images of the biliary system.
    - 4.1 Describe gross and relational anatomy and physiology of the biliary system.
    - 4.2 Determine the positioning for biliary procedures and examinations.
    - 4.3 Describe the radiographic procedures that are used to image the gallbladder and biliary ducts.
    - 4.4 Indicate the contrast media used in procedures of the biliary system.
    - 4.5 State the patient preparation and post-procedural care for biliary procedures.
    - 4.6 Identify radiographic images associated with individual procedures of the biliary system.
    - 4.7 Explain the purpose and value of alternate modalities and procedures for gallbladder and biliary duct imaging.
    - 4.8 Indicate the common anatomical structures presented on images of the biliary system.

5. Outline the different procedures performed for visualizing the genitourinary system.
    5.1 Describe gross and relational anatomy and physiology of the genitourinary system.
    5.2 Describe the radiographic procedures used to image the genitourinary system.
    5.3 Indicate the contrast media used for individual imaging procedures of the genitourinary system.
    5.4 Describe the room preparation for examinations of the genitourinary system.
    5.5 List the indications and contraindications for examinations of the genitourinary system.
    5.6 State the key components for verifying a patient's clinical history.
    5.7 Determine patient preparation and post-procedural care for each of the individual genitourinary procedures.
    5.8 Identify procedures for prioritizing examinations according to medical status and resource availability.
    5.9 Indicate the common anatomical structures presented on images of the genitourinary system.

6. Distinguish the elements required for producing radiographic images of the genitourinary system.
    6.1 Describe gross and relational anatomy and physiology of the genitourinary system.
    6.2 Determine the protocols and positioning requirements of the facility.
    6.3 Describe the technical imaging considerations that are specific to examinations of the genitourinary system.
    6.4 State the projections and positions used in genitourinary procedures and examinations.
    6.5 List the indications and contraindications for examinations of the genitourinary system.
    6.6 Determine patient preparation and post-procedural care for each of the individual genitourinary procedures.
    6.7 Determine if corrective and supplemental images are needed.
    6.8 State the key components when verifying a patient's clinical history.

7. Describe the techniques used with fluoroscopy equipment for minimizing patient dose.
    7.1 Define the use of pulsed images and last image hold.
    7.2 Indicate the exposure concepts used in fluoroscopy.
    7.3 Discuss the rule regarding excessive use of time in obtaining an image.
    7.4 Describe the ways in which positioning can be used to decrease patient dose.
    7.5 State the purpose and benefits of automatic brightness control (ABC).
    7.6 Identify rules of fluoroscopic equipment use.
    7.7 Describe the effect that magnification has on dose.
    7.8 Explain the optimum operation of an image intensifier (II) as it relates to safety.

COMMON STUDENT LEARNING OUTCOMES

Upon successful completion of Edenbrook 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

Quizzes (3)	15%
Assignment (2)	35%
Lab	15%
Final Exam	35%
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

Bushong, S. C. (Last Published). Radiologic Science for Technologists (Current ed.). St. Louis, MO: Mosby Elsevier.

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

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 Edenbrook 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 Edenbrook 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.