CAMOSUN COLLEGE	***School of Health & Human Services*** Medical Radiography Technology **Course Name:** **Radiographic Procedures 1** **Course Number:** **MRAD 109**

COURSE OUTLINE

The Approved Course Description is available on the web:
http://camosun.ca/learn/calendar/current/web/mrad.html#MRAD109

Please note:

- *This outline will be electronically stored for five (5) years only. It is strongly recommended students keep this outline for their records.*
- *This course is only open to students in the Medical Radiography program.*

Introduction:

This course is the first of three focusing on patient care, medico-legal documentation, image production and diagnostic quality. This course provides the theory and skills required to perform basic imaging procedures of the axial (vertebrae and thoracic cage) and appendicular skeleton (excluding skull), chest and abdomen.

In addition, students will cover the positioning requirements and patient care associated with gastrointestinal system examination. Emphasis is placed on problem solving for atypical patients and their specific physical, emotional and psychological needs. The theory will be supported by various laboratory settings and hands-on experiences to prepare for the clinical practice.

Students must achieve a minimum of a C+ (65%) to use this course as a prerequisite. Refer to the Camosun Calendar for detailed information about course prerequisites.

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1. Instructor Information

(a)	Instructor:	Brent McMillen & Lynelle Yutani
(b)	Office Hours:	Wednesday & Friday 1230 – 1320 or by appointment/email
(c)	Location:	WT 212D
(d)	Phone:	250-370-3169
(e)	Email:	mcmillenB@camosun.ca, & yutaniL@camosun.ca
(f)	Website:	http://online.camosun.ca/

2. Intended Learning Outcomes/Competencies

Letters and numbers following certain learning outcomes indicate the specific competencies covered from the CAMRT Medical Radiography Competency Profile:

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

1. Interpret physician requests for patient examinations. (A1.1,B1.8, F2.3 – F30.3 inclusive, F32.3, F33.3, G 2.3 – G6.3, H3.3)
2. Effectively communicate with the patient and healthcare team. (A1.1, A2.8, B2)
3. Plan the examination based on patient needs and room environment. (A1.1, F1.3, F2.4 – F30.4 inclusive, F32.4, F33.4 G1.3, G2.4 – G6.4, H1.3, H3.4, H3.7)
4. Apply appropriate interview questions to ascertain patient's history and identity. (A1.1, B1.7, B1.8, B1.9, B2.2, C1.3, F1.2, F2.3 – F30.3 inclusive, F32.3, F33.3, G1.2, G2.3 – G6.3, H1.2, H3.3,)
5. Counsel patient with respect to pre and post procedural care. (B3.5, F29.5, F30.5, G3.11, G4.5, G4.13,G5.5, G5.13,G6.5, G6.14)
6. Assess the patient's physical, mental, or psychological limitations and provide for alternate methods of achieving required images. (A1.1, B1.6, B3.1,F1.4, F2.6 – F28.6 inclusive, F29.7, F30.7, F32.6, F33.6, G1.4, G2.6, G3.8, G4.10, G5.10, G6.11 H1.4, H3.6)
7. Describe methods to familiarize the patient to the imaging environment. (B2)
8. Describe course of action for confirmed pregnant patients. (C1.3, E1.12)
9. Provide patient care prior, during, and post examination. (B3, B5, G1.4, H1.4)
10. Compensate for the influence of age on routine examinations. (A1.1, E1.12)
11. Describe and apply principles of beam geometry on body anatomy. (F2.5 – F28.5, F29.6,F30.6, F32.5, F33.5, G2.5, G4.9,G5.9, G6.10, H3.5)
12. In an organized manner, accurately position the patient to demonstrate the required body anatomy of the: (F2.5 –F28.5 inclusive, F29.6, F30.6, F2.6 – F28 inclusive, F29.7, F30.7, F32.6, F32.5, F33.5, F33.6,G2.5,G2.6, G3.8, G4.9, G4.10, G5.9, G5.10 G6.10, G6.11, H3.5,H3.6
    a. Axial and appendicular skeletons
    b. Vertebrae
    c. Thoracic cage and shoulder girdle
    d. Chest
    e. Abdomen
    f. Gastrointestinal system.
13. Apply gross relational anatomy and its relationship to external surface landmarks and bodily habitus to positioning requirements. (F2.1 to F 30.1 inclusive, , F32.1, F33.1, F 2.5 – F28.5 inclusive, F29.6, F30.6, F2.6 – F28 inclusive, F29.6,F29.7,

F30.6,F30.7,F32.5, F32.6, F33.5, F33.6, G2.1, G2.5,G2.6, G3.1, G3.8 G4.1, G4.9, G5.1, G5.9, G5.10, G6.1, G6.10, G6.11, G7.1, H3.1, H3.5, H3.6 K1.1)

14. Demonstrate the correct and efficient use of radiographic, accessory equipment and PACS. (C1.2,C2.1, E1.1, E1.2,E1.3, E1.9, E1.10, E3.1)
15. Accurately select, activate and monitor radiographic exposure settings such as kV, mAs, and distance based on equipment, patient habitus, pathologies and equipment. (E1.1, E1.2, E1.3, E1.9, E1.10, E1.12, E1.13,)
16. Provide a radiation safe environment for themselves, all members of the imaging team, allied health professionals, patients and bystanders. (C1.1-C1.6, C2)
17. Evaluate radiographic images for image quality and diagnostic acceptability. (A1.1, E1.14, E2, F2.7 – F28.7 inclusive, F29.8, F30.8, F32.7, F33.7, G2.7, G3.9, G4.11, G5.11, G6.12, H3.8
18. Apply corrective measures as required to resultant image. (A1.1, E2, F2.8 – F28.8 inclusive, F29.9, F30.9, F32.8, F33.8, G2.8, G3.10, G4.12, G5.12, G6.13, H3.9)
19. Identify gastrointestinal contrast media, dosage, contraindications, and potential reaction. (G3.5-G3.7, G4.5- G4.8, G5.5 – G5.8, G6.5– G6.8)
20. Identify supporting medication for digestive procedures. (G6.9)

CAMRT Medical Radiography Competency Profile

3. Learning Resources

Required Textbooks:

Ballinger, P.W., & Frank, E.D. (2012). ***Merrill's Atlas of Radiographic Positions and Radiologic Procedures, Volumes 1, 2, 3 & Workbook*** (12th ed.). Mosby: Elsevier.

McQuillen/Martensen (2011). ***Radiographic Image Analysis***, (3rd ed.). Saunders: Elsevier.

Torres, L.S., Dutton, A.G., & Linn-Watson, T. (2010). ***Patient Care in Imaging Technology*** (8th ed.). Baltimore: Lippincott Williams & Wilkins.

Carlton, Greathouse, Adler. (2006) ***Delmar's Principles of Radiographic Positioning and Procedures Pocket Guide***, (2nd ed.). Delmar Cengage Learning: Nelson.

Optional Textbooks: (available for purchase or on reserve in library):

Fauber (2013). ***Radiographic Imaging and Exposure***, (4th ed.). Mosby: Elsevier.

McQuillen/Martensen (2011) ***Radiographic Image Analysis, Workbook*** (3rd ed.). Saunders: Elsevier.

Carlton, R.R. & Adler, A.M. (2005). ***Principles of Radiographic Imaging – An Art and a Science*** (4th ed.). Delmar Cengage Learning: Nelson.

Bushong, S.C. (2008). ***Radiologic Science for Technologists: Physics, Biology, and Protection*** (10th ed.). Elsevier Health Sciences.

Medical dictionary – Student's Choice

Desire-to-Learn (D2L):

D2L – the Camosun College online learning portal contains the remainder of the learning materials for this course. Students are expected to familiarize themselves with the online learning environment and all the features it has to make this course experience enriching. Log on at https://online.camosun.ca/ to access these materials.

D2L materials ***must not*** be considered your sole source of information! They merely summarize the main points and provide direction for your learning experiences. You may need to write down additional information in each lecture. Additionally, not all details can be covered in a lecture, and you will be required to refer to textbook material that is not discussed specifically in class.

Other Materials:

Additional resources may include, but are not limited to: lecture notes, PowerPoint slides, Textbook Companion Workbooks, Laboratory Manuals, and hyperlinks. You may prefer to download lectures notes ahead of time (when available) and then write your notes directly onto copies of the slides.

4. Student Assessment

Module Quizzes (9)	20 %
Workbook Assignments (10)	5 %
Labs & Comps	50 %
Cumulative Final Competency	Pass/Fail
Final Written Exam	25 %
TOTAL	**100 %**

Students must achieve a minimum of 65% and must pass the Cumulative Final Competency to use this course as a prerequisite.

Assessment Details

Module Quizzes

- There are nine Module Quizzes covering 10 Modules.
- Quizzes are usually administered, in class following the completion of a Module and cover all procedural ***and*** critique content from that Module. Students will have a set amount of time to complete the quiz using the D2L online testing system.
- Questions on all quizzes are randomized for each student. The questions are drawn from a testbank library and are in a variety of formats including: multiple choice, fill-in-the-blank, matching, true/false, short answer, and essay.

Workbook Assignments:

- Each Module has a workbook assignment. These are due immediately prior to each corresponding laboratory activity. Each

completed workbook assignment turned in on time is weighted .5% of the final grade.

- Late workbook assignments must be completed by the student prior to being allowed to participate in the laboratory activity.
- Failing to turn in a completed workbook assignment results in a ZERO mark for the assignment ***in addition*** to the being unable to participate in the laboratory activity.
- Students who disadvantage their lab partners by failing to participate in the laboratory activities may be subject to additional penalties.
- Incomplete assignments are not accepted.

Exceptions to the penalty rules will be made solely at the discretion of the instructor. In mitigating circumstances evidence of acute injury, illness, or other emergency situation may be required. However, this does not guarantee that an exception will be made. When possible, it is highly recommended that students attempt to arrange an extension of an assignment **BEFORE** the due date.

Lab & Comps

- Each of the ten modules includes three Skill Building components having a combined weight of 50% of the student's final grade (weighted 5% each).
    1. **Critique Activities (combined weight 10%)** – students complete critique activities with a partner designed to build their image evaluation skills. There are also critique assignments to prepare students for clinical critique assignments.
    2. **Written Lab Assignments (combined weight 15 %)** – students complete a written assignment describing their directed Skill Building experiences and Simulated Comps, including a self-reflection.
    3. **Skill Building & Simulated Competency Evaluations with Instructor Feedback (combined weight 25%)** – upon completion of the practice activities and written assignment, students will demonstrate their ongoing Simulation Competency (SimComp) through a combination of scenarios, role playing, phantom simulation & exposure, image production, and image critique.
- Unless otherwise stated, all lab assignments will be submitted via D2L or Study Share.
- All written assignments are subject to a ***Late Assignment Penalty***.

- Assignments will be accessible from within D2L and are posted no later than the first day of the module. Lab assignments will be due on Fridays by 11:59 PM following the last competency evaluation for the module.

While lab attendance is ***not*** mandatory, students receive marks for completing activities with a lab partner. When a failure to complete the workbook assignments or an unexplained/unsanctioned lab absence compromises a lab partner's ability to complete a lab assignment, the absent student shall incur a ***2% penalty*** subtracted from a student's total **FINAL GRADE** in the course. In addition, a student missing lab experiences may not achieve full marks for the lab. Consider this carefully when choosing to opt out ***or*** failing to notify a partner, instructor, and/or the program assistant of an unavoidable absence. ***Lab is 50% of the final grade.***

Cumulative Final Competency

- The cumulative final competency evaluates the student's mastery of all the course learning outcomes through a consolidated practical assessment encompassing best practices in patient care, anatomical knowledge, exposure selection, equipment use, documentation, and resultant image critique within the ***simulation*** environment.
- Students randomly choose a Request for Consult to interpret and execute demonstrating the application of learned theory into simulation practice drawn from a cumulative assay of all ten Modules.
- Following the final competency, students receive written and verbal feedback from the evaluating instructor.
- The final competency will be scheduled during the final exam week as determined by the registrar.
- ***Students must successfully pass the cumulative final competency in order to pass the course.***
- Students who are unsuccessful on the cumulative final competency receive an "F" (failing grade) for the entire course and no credit is awarded regardless of their academic marks.

In emergency circumstances, a student may arrange to perform a final competency before or after the scheduled time if the student would otherwise be unable to complete the program or course. Exceptions due to emergency circumstances, such as unavoidable employment commitments, health problems, or unavoidable family crises, require the approval of the instructor. Holidays or scheduled flights are not considered to be emergencies. The student may be required to provide verification of the emergency circumstance. (Camosun Academic Policy http://camosun.ca/learn/calendar/current/pdf/academic-policies.pdf)

Late Assignment Penalties

- Late assignments will be accepted only until the next assignment due date.
- Late assignments will be subject to 10% per day penalty, at the instructor's discretion.

- Habitual late assignments and behaviours that negatively impact other students' ability to complete their laboratory activities may be subject to additional penalties.
- **Up to 2% per instance may be subtracted from the final grade in the course.**
- ***Students who incur multiple late assignment penalties and fail to submit assignments are at risk for failing this course.***

There is NO written midterm for this course.

5. Course Content and Schedule:

Lecture Days/Times & Room Number:
Rotates between: MRT212 A, B, & C

Procedures: Monday 2:30 PM – 4:20 PM & Tuesday 9:30 AM – 11:20 AM
Critique: Wednesdays 9:30 AM – 10:20 AM

Lab Days/Times & Room Number:
X-RAY LABS (WT212 A & B) & Classroom (WT212 C)

Procedures: Tuesdays 2:30 PM – 4:20 PM, Additional Lab Time (Open Lab) available 4:30 PM – 5:25 PM, Wednesdays 1:30 PM – 5:20 PM & Fridays 1:30 PM – 5:20 PM (alternating times & activities by set)
Critique: Wednesdays 1:30 PM – 5:20 PM (alternating times & activities by set)

Students are broken up into four different lab sections or sets and will rotate seating pods and lab partners during each module.

Weekly Course Schedule

The following schedule is tentative and subject to change if deemed necessary by the instructor.

Week	Dates	Module/Assignments
1	Sept 1-5	**Module 1 - Radiography Basics** • **Practice Quiz** Friday, September 5 on Orientation, Lab Manual & MRT Policies (This un-weighted quiz will be taken, scored, and reviewed in class to demonstrate testing procedures, randomized test bank, question accessibility for review, and to familiarize students with D2L testing). • Introduction to the Camosun College Medical Radiography Technology Program Curriculum, Laboratory Policies and How the Radiographic Procedures 1 Course Works, **Radiography Basics**, Preliminary Steps in Radiography, & Radiography as a profession. (Procedures Lecture) • How to view X-rays & image analysis guidelines. (Critique Lecture) • Basic orientation to X-Ray Labs & Lab Groups, D2L Course Materials & Assignments, Student Handbook, Laboratory Safety Manuals & MRT Policies. (Laboratory Experiences)

Week	Dates	Module/Assignments
2	Sept 8-12	**Module 1 - Radiography Basics Continued** • **Module 1 Quiz & COMP –** Friday, September 12 - Radiography Basics workbook assignment due Tuesday, September 9 prior to Lab. • **Continue Module 1** - **Radiography Basics**, Preliminary Steps in Radiography, & Radiography as a profession. • Low quality images, avoidable pitfalls, & troubleshooting. • Applied skills in Radiography with reflective practice and considerations of patient interactions, process development, professional behaviours, terminology use & anatomic relationships. Written lab submission required for marks before Friday, September 12 @ 11:59 PM.
3	Sept 15-19	**Module 2 - Upper Extremity** • **NO Quiz,** Week 3 • **Begin upper limb** lectures on positioning techniques for fingers, thumb, hand, wrist, forearm, elbow, & humerus. • Radiographic critique of the upper limb. • Upper Extremity workbook assignment due & begin procedure labs for upper extremities.
4	Sept 22-26	**Module 2 - Upper Extremity Continued** • **Module 2 Quiz & COMP –** Friday, September 26 • **Continue upper limb** lectures on positioning techniques for fingers, thumb, hand, wrist, forearm, elbow, & humerus. • Radiographic critique of the upper limb. • Continue procedure labs for upper extremities, written lab submission due for marks Friday, September 26 @ 11:59 PM.
5	Sept 29 - Oct 3	**Module 3 - Shoulder Girdle** • **Module 3 Quiz –** Friday, October 3 - Shoulder Girdle workbook assignment due prior to lab activities. • **Shoulder girdle** lectures on positioning techniques for the shoulder joint, clavicle, and scapula. • Radiographic critique of the shoulder girdle. • Procedure Labs for the shoulder girdle. Written lab submission due for marks Friday October 3 @ 11:59 PM
6	Oct 6-10	**Module 4 - Lower Extremity** • **NO Quiz, Week 6** - Lower Extremity workbook assignment due prior to lab activities. • **Begin lower limb** lectures on positioning techniques for toes, feet, ankle, lower leg, knee, and femur. • Radiographic critique of the lower extremity. • Procedure Labs for the lower limb.
7	Oct 14-17 *No School on Thanksgiving (STAT - Oct 13)*	**Module 4 - Lower Extremity, Continued** • **Module 4 Quiz –** Friday, October 17 • **Continue lower limb** lectures on positioning techniques for toes, feet, ankle, lower leg, knee, and femur. • Radiographic critique of the lower extremity. • Complete procedure Labs for the lower limb. Written lab submission due for marks Friday, October 17 @ 11:59 PM.

Week	Dates	Module/Assignments
8	Oct 20-24	**Module 5 - Pelvis & Upper Femora** • **Module 5 Quiz –** Friday, October 24 - Pelvis & Upper Femora workbook assignment due prior to lab activities. • **Pelvis & upper femora** lectures on positioning the hip, pelvis, including special pelvic views and intro to trauma considerations. • Radiographic critique of the pelvis & upper femora. • Procedure Labs for the hip & pelvis. Written lab submission due for marks Friday, October 24 @ 11:59 PM.
9	Oct 27 - 31	**Module 6 - Bony Thorax** • **Module 6 Quiz –** Friday, October 31 - Bony Thorax workbook assignment due prior to lab activities. • **Bony thorax** lectures on positioning the sternum, SC joints, and ribs. • Radiographic critique of the bony thorax. • Procedure Labs for the bony thorax. Written lab submission due for marks Friday, October 31 @ 11:59 PM
10	Nov 3-7	**Module 7 - Thoracic Viscera** • **Module 7 Quiz** – Friday, November 7 - Thoracic Viscera workbook assignment due prior to lab activities. • **Thoracic Viscera (including heart)** lectures on positioning the chest and mediastinum. • Radiographic critique of the chest. • Procedure Labs for the chest. Written lab submission due for marks Friday, November 7 @ 11:59 PM.
11	Nov 11-14 *No School on Remembrance Day (STAT – Nov 11)*	**Module 8 - Vertebral Column** • **NO Quiz week 11** – Vertebral Column workbook assignment due prior to lab activities. • **Vertebral column** lectures on positioning the Cervical spine, including intro to C-Spine Trauma. • Radiographic critique of the spine. • Procedure Labs for the spine.
12	Nov 17-21	**Module 8 - Vertebral Column, Continued** • **Module 8 Quiz –** Friday, November 22 • **Continue Vertebral column** lectures on positioning the Thoracic and Lumbar spine. • Radiographic critique of the spine. • Complete procedure Labs for the spine. Written lab submission due for marks Friday, November 22 @ 11:59 PM.
13	Nov 24-28	**Module 9 - Abdomen** • **Module 9 Quiz –** Friday, November 28 – Abdomen workbook assignment due prior to lab activities. • **Abdomen** lectures on positioning the abdominal viscera without contrast, standard radiographic techniques. • Radiographic critique of the abdomen. • Procedure Labs for the abdomen. Written lab submission due for marks Friday, November 28 @ 11:59 PM.
14	Dec 1-5	**Module 10 – Digestive System & Intro to Fluoroscopy** • **No Module Quiz. Content will be on final exam.** – Digestive system workbook assignment due prior to lab activities. • **Digestive System/Intro to Fluoro** lectures, no new critique material. • **Procedure Labs for review.** Written lab submission due for marks Friday, December 5 @ 11:59 PM.

Exam Period Dec. 8th – 16th (scheduled by registrar) - check CAMLINK.

Do not book trips until the final exam schedule is posted by the registrar.

6. Grading System

The following two grading systems are used at Camosun College. This course will use:

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+	Minimum level of achievement to use the course as a prerequisite.	3
60-64	C		2
50-59	D	Minimum level of achievement for which credit is granted.	1
0-49	F	Minimum level has not been achieved.	0

Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy E-1.5 at **camosun.ca** for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or
IP	*In progress*: A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. *(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of*
CW	*Compulsory Withdrawal:* A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum,

7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

CONDUCT POLICIES

It is the student's responsibility to become familiar with the content of these policies. The policies are available in each School Administration Office, Registration, and on the College web site in the Policy Section.

Academic Policies and Procedures
Student Conduct Policy

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at

http://www.camosun.bc.ca

MRT PROFESSIONAL CODE OF ETHICS

Camosun College Medical Radiography Technology students are expected to abide by the Canadian Association of Medical Radiation Technologist (CAMRT) Code of Ethics insomuch as it applies to them in the learning and clinical environments. This information is available on the CAMRT website at:

CAMRT Code of Ethics

MRT Department Policies & Procedures

Camosun College Medical Radiography Technology students are responsible for knowing all of the MRT Department Policies and must abide by them, including dress codes & lab safety procedures.

http://camosun.ca/learn/programs/mrt/_documents/handbook.pdf

8. GENERAL INFORMATION

Suggested Study Time/Study Habits

- Successful students will probably spend 6 – 14 hours outside of class per week studying the content for this course to achieve full marks.
- The instructor will be available during the scheduled "open lab" hour for students needing additional support mastering the course content.
- Map out a homework schedule; include time for reading and workbooks.
- It is valuable to review your notes within 24 hours following each class to help retain the information.
- Study groups are a highly effective way of learning for many students.

Attendance

- Each student is required to read the X-ray Laboratory Safety Manual and sign an X-ray Laboratory Safety Contract and give it to the instructor or instructional assistant prior to commencing laboratory work in the course.
- Students are expected to be **on time;** tardiness disrupts the class. When students are more than 5 minutes late (and/or the classroom door is shut), they cannot enter the classroom until the class break period.
- If you choose not to ***or*** are unable to attend lecture it is your responsibility to acquire ***all*** information given during a class missed, incl. notes, hand-outs,

assignments, changed exam dates etc.

- Missed exams or quizzes cannot be made up except in case of documented illness (doctor's note required).

The Medical Radiography Technology program is committed to promoting competence, professionalism and integrity in our students and developing their core skills to succeed throughout their academic programs and in their careers. The purpose of Academic Honesty Guidelines is to provide clear expectations of appropriate academic conduct and to establish processes for discipline in appropriate circumstances. It is the student's responsibility to become familiar with the content and the consequences of academic dishonesty. Before you begin your assignments, review the Academic Policies on the Camosun College website: http://camosun.ca/learn/becoming/policies.html