

CLASS SYLLABUS



COURSE TITLE: MRAD 119 – Principles of Imaging 1
CLASS SECTION: BX01AD
TERM: F2021
COURSE CREDITS: 4
DELIVERY METHOD(S): Synchronous

Camosun College campuses are located on the traditional territories of the Ləkʷəŋən and W̱SÁNEĆ peoples. We acknowledge their welcome and graciousness to the students who seek knowledge here.
Learn more about Camosun's [Territorial Acknowledgement](#).

<https://camosun.ca/about/covid-19-updates>

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable explanation in advance, you will be removed from the course and the space offered to the next waitlisted student.

INSTRUCTOR DETAILS

NAME: Evan Nielsen
EMAIL: NielsenE@camosun.bc.ca
OFFICE: CHW 317
HOURS: By Appointment

As your course instructor, I endeavour to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me. Camosun College is committed to identifying and removing institutional and social barriers that prevent access and impede success.

CALENDAR DESCRIPTION

In this novice course, students examine the function and safe operation of radiographic and accessory imaging equipment found in the clinical environment. Students explore technical and physical principles affecting the radiographic image acquisition, processing, display and storage. Historical references to film screen imaging and the sensitometric curve will enhance students' conceptualisation of digital imaging principles.

Note: Only open to Medical Radiography program students.

PREREQUISITE(S): Click or tap here to enter text.
CO-REQUISITE(S): Click or tap here to enter text.
PRE/CO-REQUISITE(S): Click or tap here to enter text.

COURSE DELIVERY

ACTIVITY	HOURS / WEEK	# OF WEEKS	ACTIVITY HOURS
Lecture	4	14	
Seminar			
Lab / Collaborative Learning	2	14	
Supervised Field Practice			
Workplace Integrated Learning			
Online			
	TOTAL HOURS		84

COURSE LEARNING OUTCOMES

Upon successful completion of this course a student will be able to:

- describe the equipment and components of a general x-ray room (including accessories), and explain how they interrelate to produce a diagnostic image.
- discuss problem solving for equipment malfunction and technical errors based on image artifacts.
- list the major components of a computed radiography system and summarize how a digital image is created and processed.
- explain the influence of technical and non-technical factors on the resultant image.
- compare and contrast the use of a characteristic curve for describing conventional versus digital radiography.
- explain the fundamental principles of radiation protection and current radiation protection standards as it applies to diagnostic radiology.

COURSE OBJECTIVES AND MAPPED PROFESSIONAL COMPETENCIES

(also known as “sub-outcomes” or “learning objectives”)

Canadian Association of Medical Radiation Technologists Competency Profile, Radiological Technology (2014)

- A.3.4 Utilize medical terminology in professional communication. I
- A.7.2 Participate in activities that support a quality assurance program. I
- C.3.1 Apply ALARA principle. I
- C.3.2 Apply knowledge of radiation effects and risks. I
- C.3.3 Use protective devices and apparel for personnel. I
- C.3.4 Implement safe practices to minimize radiation dose to personnel and support persons. I
- C.3.5 Implement safe practices to minimize radiation dose to patients. I
- C.3.6 Monitor personal radiation exposure, and respond. I
- D.1.2 Apply knowledge of operational components of imaging systems listed in Appendix 2. I
- D.2.1 Operate imaging systems listed in Appendix 2. I
- D.2.2 Select and optimize parameters for performing a procedure. I
- D.4.1 Apply knowledge of principles affecting image quality. I

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Fauber, T. (2013). *Radiographic Imaging & Exposure* (5th ed.). Elsevier Health Sciences.

Bushong, S.C. (2017). *Radiologic Science for Technologists: Physics, Biology, and Protection* (11th ed.). Elsevier Health Sciences.

COURSE SCHEDULE, TOPICS, AND ASSOCIATED PREPARATION / ACTIVITY / EVALUATION

The following schedule and course components are subject to change with reasonable advance notice, as deemed appropriate by the instructor.

WEEK or DATE RANGE	ACTIVITY or TOPIC	OTHER NOTES
1: Sept 6-10	Introduction: History, Properties & Equipment	See D2L for more Note and course details
2: Sept 13-17	The X-Ray Beam	
3: Sept 20-24	Conventional Radiography & The Characteristic Curve (Film-screen Imaging)	MT1&2 PRQ3
4: Sept 27-Oct 1 National Day for Truth and Reconciliation	Image Formation and Radiographic Quality	PRQ4
5: Oct 4-8	Exposure Technique Factors	MT3&4 PRQ5
6: Oct 11-15 Thanksgiving	Exposure Technique Factors	
7: Oct 18-22	Scatter control & Grid errors	PRQ6
8: Oct 25-29	Image Receptors & Image Acquisition (Digital Imaging)	PRQ7 MT5,6,&7
9: Nov 1-5	Exposure Technique Selection	PRQ8
10: Nov 8-12 Remembrance Day	Image Evaluation	PRQ9
11: Nov 15-19	Radiobiology & Radiation Protection <i>Intro, Concepts, Biology</i>	MT8&9 PRQ10
12: Nov 22-26	Radiobiology & Radiation Protection <i>Early & Late Effects; Measuring/Minimizing Dose</i>	PRQ11
13: Nov 29-Dec 3	Radiobiology & Radiation Protection <i>Discussion: Discontinuing a Legacy of Practice</i>	
14: Dec 6-10	Project Presentations Final Exam	Final Exam
15: Dec 13-17	FINAL EXAMS	

Students registered with the Centre for Accessible Learning (CAL) who complete quizzes, tests, and exams with academic accommodations have booking procedures and deadlines with CAL where advanced noticed is required. Deadlines scan be reviewed on the [CAL exams page](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

STUDENT EVALUATION

DESCRIPTION	WEIGHTING
Reading Quizzes	10%
Module Tests	20%
Term Project	30%
Cumulative Final Exam	40%
TOTAL	100%

If you have a concern about a grade you have received for an evaluation, please come and see me as soon as possible. Refer to the [Grade Review and Appeals](http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf) policy for more information.

<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf>

Students must achieve a minimum of 65% to use this course as a prerequisite.

COURSE GUIDELINES & EXPECTATIONS

Reading Quizzes

In order to gain the most from lectures, students should come to class prepared. This means having done the assigned reading beforehand. In order to assess your understanding of the material, there will be a short 5-10 question reading quiz prior to the beginning of the module on the weekend. Pay close attention to the D2L calendar for quiz availability window. The quizzes cover the general concepts addressed in the readings.

Module Tests

In lieu of a midterm exam, there will be module tests to assess your level of knowledge as it relates to the theory of rad sciences. The purpose of these tests throughout the term is to keep you up to date on course content, help you identify areas of weakness, celebrate successful integration of knowledge, provide confidence, decrease anxiety, and expose you to the type of questions you can expect on the final exam. The tests will take place on the weekend, and again, pay close attention to the D2L calendar for availability window.

Term Project

The term project provides an alternative platform for you to demonstrate your expert knowledge of a Radiographic Imaging Principle. It is an individual, term-long project in which you will build stepwise towards producing a 7 minute multimedia video presentation based on subject matter covered in this course. We will gather during the last week of class (virtually) to celebrate your work, watch the videos you have produced, and use them as a review tool to study for the final exam. Details will be discussed in class.

Final Exam

The final examination is cumulative and includes material from all modules covered in the course. This final examination will occur during the regularly scheduled final week.

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

In emergency circumstances, a student may write a test or final examination 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 retrievable from:

<http://camosun.ca/learn/calendar/current/pdf/academic-policies.pdf>)

SCHOOL OR DEPARTMENTAL INFORMATION

Health & Human Services Student Handbook: <http://camosun.ca/learn/school/health-human-services/student-info/index.html>

General Practicum Information: <http://camosun.ca/learn/school/health-human-services/student-info/practicum-info.html>

Allied Health & Technologies Department Handbooks:

- Certified Medical Laboratory Assistant: <http://camosun.ca/learn/school/health-human-services/student-info/program-info/cmla.html>
- Diagnostic Medical Sonography: <http://camosun.ca/learn/school/health-human-services/student-info/program-info/sono.html>
- Medical Radiography: <http://camosun.ca/learn/school/health-human-services/student-info/program-info/mrad.html>

Students enrolled in Allied Health & Technologies Programs must achieve a minimum of 65% or a "COM" in each of their courses in order to use their course as a pre-requisite and progress in their program.

Students enrolled in Allied Health & Technologies Programs must participate in learning activities that include intimate and direct personal contact with their classmates during supervised practice. Students are training to perform the duties of a healthcare professional. These duties usually require constant, close physical contact with patients and clients. Students may be required to simulate and perform these activities on one another during this course. Students may also be required to use special hygiene practices and protective gear to protect themselves from the transmission of communicable diseases (like COVID-19). Risks associated with learning and performing the physical duties of a healthcare profession cannot be entirely eliminated by any amount of caution or protection. Students who refuse, or are incapable of participating and performing these activities due to personal or medical limitations, may only continue to participate in their course work when supported by officially registered accommodations or temporary medical advisory.

STUDENT RESPONSIBILITY

Enrolment at Camosun assumes that the student will become a responsible member of the College community. As such, each student will display a positive work ethic, assist in the preservation of College property, and assume responsibility for their education by researching academic requirements and policies;

demonstrating courtesy and respect toward others; and respecting expectations concerning attendance, assignments, deadlines, and appointments.

SUPPORTS AND SERVICES FOR STUDENTS

Camosun College offers a number of services to help you succeed in and out of the classroom. For a detailed overview of the supports and services visit <http://camosun.ca/students/>.

Support Service	Website
Academic Advising	http://camosun.ca/advising
Accessible Learning	http://camosun.ca/accessible-learning
Counselling	http://camosun.ca/counselling
Career Services	http://camosun.ca/coop
Financial Aid and Awards	http://camosun.ca/financialaid
Help Centres (Math/English/Science)	http://camosun.ca/help-centres
Indigenous Student Support	http://camosun.ca/indigenous
International Student Support	http://camosun.ca/international/
Learning Skills	http://camosun.ca/learningskills
Library	http://camosun.ca/services/library/
Office of Student Support	http://camosun.ca/oss
Ombudsperson	http://camosun.ca/ombuds
Registration	http://camosun.ca/registration
Technology Support	http://camosun.ca/its
Writing Centre	http://camosun.ca/writing-centre

If you have a mental health concern, please contact Counselling to arrange an appointment as soon as possible. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, please contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

Academic Accommodations for Students with Disabilities

The College is committed to providing appropriate and reasonable academic accommodations to students with disabilities (i.e. physical, depression, learning, etc). If you have a disability, the [Centre for Accessible Learning](#) (CAL) can help you document your needs, and where disability-related barriers to access in your courses exist, create an accommodation plan. By making a plan through CAL, you can ensure you have the

appropriate academic accommodations you need without disclosing your diagnosis or condition to course instructors. Please visit the CAL website for contacts and to learn how to get started:

<http://camosun.ca/services/accessible-learning/>

Academic Integrity

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.13.pdf> for policy regarding academic expectations and details for addressing and resolving matters of academic misconduct.

Academic Progress

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.1.pdf> for further details on how Camosun College monitors students' academic progress and what steps can be taken if a student is at risk of not meeting the College's academic progress standards.

Course Withdrawals Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <http://camosun.ca/learn/fees/#deadlines>.

Grading Policy

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf> for further details about grading.

Grade Review and Appeals

Please visit <http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

Mandatory Attendance for First Class Meeting of Each Course

Camosun College requires mandatory attendance for the first class meeting of each course. If you do not attend, and do not provide your instructor with a reasonable reason in advance, you will be removed from the course and the space offered to the next waitlisted student. For more information, please see the "Attendance" section under "Registration Policies and Procedures"

(<http://camosun.ca/learn/calendar/current/procedures.html>) and the Grading Policy at

<http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.5.pdf>.

Medical / Compassionate Withdrawals

Students who are incapacitated and unable to complete or succeed in their studies by virtue of serious and demonstrated exceptional circumstances may be eligible for a medical/compassionate withdrawal. Please visit <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.8.pdf> to learn more about the process involved in a medical/compassionate withdrawal.

Sexual Violence and Misconduct

Camosun is committed to creating a campus culture of safety, respect, and consent. Camosun's Office of Student Support is responsible for offering support to students impacted by sexual violence. Regardless of when or where the sexual violence or misconduct occurred, students can access support at Camosun. The

Office of Student Support will make sure students have a safe and private place to talk and will help them understand what supports are available and their options for next steps. The Office of Student Support respects a student's right to choose what is right for them. For more information see Camosun's Sexualized Violence and Misconduct Policy: <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.9.pdf> and camosun.ca/sexual-violence. To contact the Office of Student Support: oss@camosun.ca or by phone: 250-370-3046 or 250-370-3841

Student Misconduct (Non-Academic)

Camosun College is committed to building the academic competency of all students, seeks to empower students to become agents of their own learning, and promotes academic belonging for everyone. Camosun also expects that all students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Please review Camosun College's Student Misconduct Policy at <http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

Changes to this Syllabus: Every effort has been made to ensure that information in this syllabus is accurate at the time of publication. The College reserves the right to change courses if it becomes necessary so that course content remains relevant. In such cases, the instructor will give the students clear and timely notice of the changes.