

# COURSE SYLLABUS



COURSE TITLE:	MRAD 106 - Anatomy & Physiology for Radiographer
CLASS SECTION:	BX01
TERM:	F2024
COURSE CREDITS:	3
DELIVERY METHOD(S):	Synchronous

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

---

## INSTRUCTOR DETAILS

NAME:	Meggan Pohanka
EMAIL:	<a href="mailto:PohankaM@camosun.ca">PohankaM@camosun.ca</a>
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

### Restricted to students in Medical Radiography

In this novice course, students examine the anatomy of the body using radiographic images and a variety of media. Students develop a foundational understanding of the structure, function, and relationship of the body systems. Emphasis is placed on identifying the radiographic demonstrations of the body and correlating these to the anatomic landmarks used for radiographic positioning.

PREREQUISITE(S):	N/A
CO-REQUISITE(S):	N/A
EQUIVALENCIES:	N/A

---

## COURSE OBJECTIVES AND MAPPED PROFESSIONAL COMPETENCIES

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

- describe the anatomic structures and components of the body using radiographic images and a variety of media.
- relate structure to function of the body systems as they pertain to radiographic imaging.
- describe anatomical features and movements of the body to facilitate accurate radiographic positioning.

Canadian Association of Medical Radiation Technologists Competency Profile, Radiological Technology (2019)

## Module Scheduled Activities CAMRT Competencies

### Week 1

- 1.1 · Describe the process of science.
- 1.2 · Define the terms anatomy and physiology.
- 1.3 · Identify the characteristics of life.
- 1.4 · List and discuss in order of increasing complexity the levels of organization of the body and the major organ systems, identifying the primary functions of each.
- 1.5 · Describe the anatomical position.
- 1.6 · Name the cavities of the body and identify the major organs in each. RTR.3.1
- 1.7 · Discuss and contrast the axial and appendicular subdivisions of the body by identifying the specific anatomical regions in each area. RTR.3.1
- 1.8 · List the nine abdominal regions and the four abdominal quadrants. RTR.3.1
- 1.9 · List and define the principal directional terms and body planes used in describing the body and the relationships of its parts.
- 1.1 · Explain the interaction between structure and function.
- 1.11 · List and discuss the five homeostatic functions of bones.
- 1.12 · List the four types of bones and give examples of each. RTR.6.3
- 1.13 · Identify the six major structures of a typical long bone and the parts of flat bone. RTR.6.3
- 1.14 · Identify each of the major constituents of bone as a tissue and discuss how structural organization contributes to function. RTR.6.3
- 1.15 · Identify by name and discuss each of the major components of a haversian system. RTR.6.3
- 1.16 · Compare and contrast cancellous bone and compact bone. RTR.6.3
- 1.17 · List and describe the functions of the three major types of cells found in bones. RTR.6.3
- 1.18 · Discuss the two types of bone marrow. RTR.3.1
- 1.19 · Explain the role bones play in maintaining homeostasis of blood calcium levels in the body.
- 1.2 · Compare and contrast the development of intramembranous and endochondral bone.
- 1.21 · Describe the process of bone remodeling and the steps involved in bone fracture repair. RTR.6.3
- 1.22 · Compare the basic structural units of bone and cartilage. RTR.3.1
- 1.23 · Identify the three specialized types of cartilage, give examples of each, and summarize the structural and functional differences among them. RTR.6.3
- 1.24 · Compare the mechanisms of growth in bone and cartilage. RTR.6.3
- 1.25 · Discuss the diseases of skeletal tissues. RTR.6.3

## Week 2

- 2.1 · List the primary subdivisions of the appendicular skeleton. RTR.3.1
- 2.2 · List the bony components of the shoulder. RTR.3.1
- 2.3 · Discuss the structures and functions of the arm, forearm, and hand. RTR.3.1
- 2.4 · Discuss age-related changes in the skeleton. RTR.6.3
- 2.5 · Define the different types of bone fractures. RTR.6.3
- 2.6 · Identify the anatomical structures of the upper limb from a picture/diagram/drawing/x-ray. RTR.6.2

## Week 3

- 2.7 · Define the term articulation. RTR.3.1
- 2.8 · Compare the classification of joints according to both structure and function.
- 2.9 · List the types of fibrous joints and cartilaginous joints and give an example of each. RTR.6.3
- 2.1 · Discuss the seven structures that characterize diarthrotic joints and explain the functional significance of bursae. RTR.6.3
- 2.11 · Discuss the structural characteristics of uniaxial, biaxial, and multiaxial diarthroses and give an example of each. RTR.6.3
- 2.12 · Describe locations in the body where synovial joints can be found and the anatomical features of each. RTR.3.1
- 2.13 · Identify the types of movement at synovial joints and give examples of specific joints where each occurs. RTR.3.1
- 2.14 · Discuss bursitis, joint disorders, non-inflammatory and inflammatory joint disease, and treatments for these conditions. RTR.6.3

## Week 4

- 3.1 · List the primary subdivisions of the appendicular skeleton. RTR.3.1
- 3.2 · List the bony components of the pelvic girdle. RTR.3.1
- 3.3 · Discuss the structures and functions of the thigh and leg. RTR.3.1
- 3.4 · Discuss the structural components and functional significance of the arches of the foot. RTR.3.1
- 3.5 · List the skeletal differences between men and women. RTR.6.3
- 3.6 · Identify the anatomical structures of the lower limb from a picture/diagram/drawing/x-ray. RTR.6.2

## Week 5

- 3.7 · Define the term articulation. RTR.3.1
- 3.8 · Compare the classification of joints according to both structure and function. RTR.3.1
- 3.9 · List the types of fibrous joints and cartilaginous joints and give an example of each. RTR.6.2
- 3.1 · Discuss the seven structures that characterize diarthrotic joints and explain the functional significance of bursae. RTR.3.1
- 3.11 · Discuss the structural characteristics of uniaxial, biaxial, and multiaxial diarthroses and give an example of each. RTR.3.1
- 3.12 · Explain why knee injuries are among the most common type of athletic injury. RTR.3.1
- 3.13 · Describe locations in the body where synovial joints can be found and the anatomical features of each. RTR.3.1
- 3.14 · Identify the types of movement at synovial joints and give examples of specific joints where each occurs. RTR.3.1

## Week 6

## Week 7

- 4.1 · Identify the two main subdivisions of the skeleton and the primary subdivisions of the axial skeleton. RTR.3.1
- 4.2 · List the cranial & facial bones RTR.3.1
- 4.3 · Identify the cranial & facial bones from images, diagrams, models, and x-rays RTR.6.2
- 4.4 · Identify bony landmarks of the cranial & facial bones RTR.6.2

## Week 8

- 4.5 · List the cranial & facial bones RTR.3.1
- 4.6 · Identify the cranial & facial bones from images, diagrams, models, and x-rays RTR.6.2
- 4.7 · Identify bony landmarks of the cranial & facial bones RTR.6.2
- 4.8 · Distinguish between the bones of the skull and those of the face. RTR.6.3
- 4.9 · List/identify the bones that form the orbital wall. RTR.3.1
- 4.1 · List/identify the paranasal sinuses. RTR.3.1
- 4.11 · List/identify the sutures and fontanelles of the skull. RTR.3.1

4.12 · Explain the morphological changes associated with how the skull matures over time. RTR.3.1

4.13 · Identify/Describe the hyoid bone. RTR.3.1

#### Week 9

5.1 · Name the regions of the vertebral column and give the number of vertebrae in each segment. RTR.3.1

5.2 · Describe normal and atypical curvatures of the spine. RTR.6.3

5.3 · Describe the development of the spine.

5.4 · Identify/Describe the main components & characteristics of the vertebral column & typical vertebral body. RTR.6.3

5.5 · Describe the articulations of a typical vertebra. RTR.3.1

5.6 · Describe the features and components of typical cervical vertebrae. RTR.3.1

5.7 · Identify the structures of the cervical spine on radiographs and cross sectional images. RTR.6.2

5.8 · Describe the features and components of cervical vertebrae #1,2 & 7 RTR.3.1

5.9 · Describe the features and components of typical thoracic vertebrae. RTR.3.1

5.10 · Identify the structures of the thoracic spine on radiographs and cross sectional images. RTR.6.2

5.11 · Describe the features and components of the atypical thoracic vertebrae (#1, 9, 10, 11, & 12)  
RTR.3.1

#### Week 10

5.12 · Describe the features of typical lumbar vertebrae, including the 5th lumbar vertebrae. RTR.3.1

5.13 · Identify typical lumbar vertebrae, including the 5th lumbar vertebrae on radiographs and cross sectional images. RTR.6.2

5.14 · Describe the articulations and structure of the sacrum and coccyx. RTR.3.1

5.15 · Identify the articulations and structures of the sacrum and coccyx on radiographs and cross sectional images RTR.6.2

5.16 · Label Vertebral column parts on a diagram RTR.3.1

#### Week 11

6.1 · Identify and describe the bony components of the thorax. RTR.3.1

6.2 · Identify/describe the location, size, and position of the heart in the thoracic cavity. RTR.3.1

6.3 · Describe the structure of the pericardium and the function of each pericardial layer. RTR.3.1

6.4 · List and describe the three layers of the heart wall; the heart cavities; and the valves. RTR.3.1

6.5 · Trace the path of blood through the heart. RTR.3.1

6.6 · Describe common heart disorders RTR.3.1

- 6.7 · List the generalized functions of the respiratory system. RTR.3.1
- 6.8 · List, identify, and describe the organs of the respiratory system. RTR.6.2
- 6.9 · Describe the structures and functions of the trachea, bronchi, bronchioles, and alveoli. RTR.3.1
- 6.1 · Identify the lobes, bronchopulmonary segments, gross surface anatomy, and generalized functions of the lungs. RTR.6.2
- 6.11 · Discuss the structures and functions of the thorax and mediastinum in respiration. RTR.3.1
- 6.12 · Discuss disorders associated with the respiratory tract. RTR.3.1

Week 12

Week 13

- 7.1 · Discuss the generalized function of the digestive system. RTR.3.1
- 7.2 · List and describe the four layers of the wall of the gastrointestinal tract. RTR.3.1
- 7.3 · Discuss the major modifications of the layers of the digestive tract. RTR.3.1
- 7.4 · List, in sequence, each of the components or segments of the alimentary canal from mouth to anus, and identify the accessory organs of digestion located within the gastrointestinal tract or that open into it. RTR.3.1
- 7.5 · List and describe the structures of the mouth. RTR.3.1
- 7.6 · Identify and compare the structures and secretions of the salivary glands. RTR.3.1
- 7.7 · Define the term deglutition; also, identify the structural divisions of the pharynx and the structure of the esophagus. RTR.3.1
- 7.8 · Discuss the size, position, divisions, curves, sphincters, layers, glands, and functions of the stomach. RTR.3.1
- 7.9 · Discuss disorders of the upper digestive tract. RTR.3.1
- 7.1 · Discuss the size, position, divisions, and wall of the small and large intestines. RTR.3.1
- 7.11 · Locate and discuss the significance of the vermiform appendix. RTR.6.2
- 7.12 · Discuss the peritoneum and its reflections. RTR.3.1
- 7.13 · Discuss the structures and functions of the liver and gallbladder. RTR.3.1
- 7.14 · Explain the relationship between cell types and their functions in the pancreas. RTR.3.1
- 7.15 · Discuss disorders of the lower digestive tract. RTR.3.1

Week 14

- 8.1 · List the major organs of the urinary system. RTR.3.1
- 8.2 · Locate or position the kidneys in the abdominal cavity and identify the gross internal structures visible in a coronal section. RTR.6.2
- 8.3 · Describe the renal blood supply and trace blood flow through the specialized vessels of the kidney. RTR.3.1
- 8.4 · Discuss and compare the structure and the functions of the ureters, urinary bladder, and urethra. RTR.3.1
- 8.5 · Explain the mechanism for micturition (urination). RTR.3.1
- 8.6 · Name the parts of a nephron and describe the role of each component in the formation of urine. RTR.3.1
- 8.7 · Discuss how the kidneys form urine, and trace the path of the urine from the point of formation to the exterior of the body. RTR.3.1
- 8.8 · Discuss urinary disorders. RTR.3.1

#### REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

---

Williamson, K.T.P.F.B.T.T. P. (2022). *Anatomy & Physiology with Brief Atlas of the Human Body and Quick Guide to the Language of Science and Medicine* (11th ed.). Elsevier - Evolve.

#### 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	ACTIVITY or TOPIC	OTHER NOTES
1	Introduction to Radiographic Anatomy & Physiology	
2	Organization of the Body and Skeletal Tissues	Organization of the body 1, Skeletal tissues 11 <b>Quiz 1 September 15</b>
3	Upper Extremity	Appendicular skeleton 13 <b>QUIZ 2 September 22</b>
4	Lower Extremity & Pelvis	Appendicular skeleton 13 <b>QUIZ 3 September 29</b>
5	Joints & Articulations	Articulations 14 <b>QUIZ 4 October 6</b>
6	<b>Exam 1</b>	
7	Skull	Axial skeleton 12
8	Skull	Axial skeleton 12 <b>QUIZ 5 October 27</b>
9	Spine	Axial skeleton 12 <b>QUIZ 6 November 3</b>

WEEK	ACTIVITY or TOPIC	OTHER NOTES
10	Thoracic Viscera, Bony Thorax	Respiratory tract 35, Heart 28
11	Thoracic viscera, bony thorax	Respiratory tract 35, Heart 28 <b>QUIZ 7 November 17</b>
12	<b>Exam 2</b>	
13	Gastrointestinal System	Upper and lower digestive tract 38 & 39 <b>QUIZ 8 December 1</b>
14	Urinary System	Urinary system 42 <b>QUIZ 9 December 8</b>
15	<b>Cumulative Final Exam</b>	

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 notice is required. Deadlines can be reviewed on the [CAL exams page](https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams). <https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams>

## EVALUATION OF LEARNING

---

DESCRIPTION	WEIGHTING
Learning Portfolio Quizzes	30%
Exam 1	20%
Exam 2	20%
Final Exam	30%
	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](https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf) policy for more information.  
<https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf>

## COURSE GUIDELINES & EXPECTATIONS

---

### Course Materials and Resources

All course lectures, required readings, activities and assignments can be accessed in D2L. You are strongly encouraged to review the resources before class each week. Print the course calendar and check in with it often to make sure you are on track. My office hours are flexible, please contact me if you would like to set up a meeting.

### Academic Integrity

You are expected to produce your own work, in your own words, upholding the academic and professional integrity expected of Camosun College students and medical radiography professionals. An incidence of academic misconduct will result in a score of zero for that assignment or test. Continued incidences of academic misconduct may result in escalated actions such as failing this course or removal from the MRAD program. Please see the Academic Integrity policy linked below for more detailed information.



## Assignments and Late Penalties

All quizzes and assignments are meant to provide an opportunity to deepen your understanding and connection with the learning materials. Assignments are expected to be submitted by dates shown on the course schedule and D2L. Learning profile quizzes are available for one week, once the quiz due date has passed, it will no longer be available and a mark of zero will be given. Please print the course calendar and check in with it often to make sure you are on track.

There will be a penalty of 10% per day applied to assignment marks. I will notify you before this penalty is applied the first time. Thereafter, it will be applied automatically if homework continues to be handed in late. After one week has passed (7 days), the assignment will no longer be accepted and a mark of zero will be given.

## 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 [camosun.ca/services](https://camosun.ca/services).

Support Service	Website
Academic Advising	<a href="https://camosun.ca/services/academic-supports/academic-advising">camosun.ca/services/academic-supports/academic-advising</a>
Accessible Learning	<a href="https://camosun.ca/services/academic-supports/accessible-learning">camosun.ca/services/academic-supports/accessible-learning</a>
Counselling	<a href="https://camosun.ca/services/health-and-wellness/counselling-centre">camosun.ca/services/health-and-wellness/counselling-centre</a>
Career Services	<a href="https://camosun.ca/services/co-operative-education-and-career-services">camosun.ca/services/co-operative-education-and-career-services</a>
Financial Aid and Awards	<a href="https://camosun.ca/registration-records/financial-aid-awards">camosun.ca/registration-records/financial-aid-awards</a>
Help Centres (Math/English/Science)	<a href="https://camosun.ca/services/academic-supports/help-centres">camosun.ca/services/academic-supports/help-centres</a>
Indigenous Student Support	<a href="https://camosun.ca/programs-courses/iecc/indigenous-student-services">camosun.ca/programs-courses/iecc/indigenous-student-services</a>
International Student Support	<a href="https://camosun.ca/international">camosun.ca/international</a>
Learning Skills	<a href="https://camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills">camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills</a>
Library	<a href="https://camosun.ca/services/library">camosun.ca/services/library</a>
Office of Student Support	<a href="https://camosun.ca/services/office-student-support">camosun.ca/services/office-student-support</a>
Ombudsperson	<a href="https://camosun.ca/services/ombudsperson">camosun.ca/services/ombudsperson</a>
Registration	<a href="https://camosun.ca/registration-records/registration">camosun.ca/registration-records/registration</a>
Technology Support	<a href="https://camosun.ca/services/its">camosun.ca/services/its</a>
Writing Centre	<a href="https://camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills">camosun.ca/services/academic-supports/help-centres/writing-centre-learning-skills</a>

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.

### Academic Integrity

Students are expected to comply with all College policy regarding academic integrity; which is about honest and ethical behaviour in your education journey. The following guide is designed to help you understand your responsibilities: <https://camosun.libguides.com/academicintegrity/welcome>

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.13.pdf> for Camosun's Academic Integrity policy and details for addressing and resolving matters of academic misconduct.

### 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:

<https://camosun.ca/services/academic-supports/accessible-learning>

### Academic Progress

Please visit <https://camosun.ca/sites/default/files/2023-02/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 <https://camosun.ca/sites/default/files/2021-05/e-2.2.pdf> for further details about course withdrawals. For deadline for fees, course drop dates, and tuition refund, please visit <https://camosun.ca/registration-records/tuition-fees#deadlines>.

### Grading Policy

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.5.pdf> for further details about grading.

### Grade Review and Appeals

Please visit <https://camosun.ca/sites/default/files/2021-05/e-1.14.pdf> for policy relating to requests for review and appeal of grades.

### 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 <https://camosun.ca/sites/default/files/2021-07/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: <https://camosun.ca/sites/default/files/2021-05/e-2.9.pdf> and [camosun.ca/services/sexual-violence-support-and-education](https://camosun.ca/services/sexual-violence-support-and-education). To contact the Office of Student Support: [oss@camosun.ca](mailto: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 <https://camosun.ca/sites/default/files/2021-05/e-2.5.pdf> to understand the College's expectations of academic integrity and student behavioural conduct.

### Looking for other policies?

The full suite of College policies and directives can be found here: <https://camosun.ca/about/camosun-college-policies-and-directives>

**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.