



**School of Health & Human Services
Medical Radiography Technology
MRAD 115 - X01
Relational Anatomy & Physiology-1
2013F**

COURSE OUTLINE

The Approved Course Description is available on the web:

<http://camosun.ca/learn/calendar/current/web/mrad.html#MRAD115>

Please note:

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

Introduction:

This course is the first of three consecutive courses examining normal human structure and function. Three approaches to anatomy are utilized: (1) an examination of selected body systems, (2) a regional approach, relating components of these systems to nearby organs, and (3) the systems and regional viewpoints are integrated into a sectional imaging approach, viewing parts of the body in all three fundamental body planes, and in oblique planes where appropriate. Conventional anatomic presentations are supplemented by images obtained from a variety of diagnostic medical imaging technologies.

Physiology is presented where it is relevant to, and contributes to an understanding of structure, the relationships among adjacent organs, to fundamental body processes, functional diagnostic imaging procedures and important clinical considerations.

Topics include a review of cell biology and homeostasis, followed by examination of the integumentary, musculoskeletal, pulmonary, cardiovascular and gastrointestinal systems.

Co-requisite: MRAD 105 is a co-requisite for this course.

Students must achieve a minimum of a C+ (65%) to use this course as a prerequisite.

1. Instructor Information

(a)	Instructor:	Brent Mekelburg B.Sc. RT (R)(MR)	
(b)	Office Hours:	Wednesday and Thursday 1230-1320	
(c)	Location:	WT 212C	
(d)	Phone:	250-370-3992	
(e)	Email:	mekelburgb@camosun.bc.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. Describe the four main tissues of the body; epithelial, connective, muscular and nervous tissues.
2. Identify and describe the components of the musculoskeletal system.
(F2.1, F3.1, F4.1, F5.1, F6.1, F7.1, F8.1, F9.1, F10.1, F11.1, F12.1, F13.1, F14.1, F15.1, F16.1, F17.1, F18.1, F19.1, F20.1, F21.1, F22.1, F23.1, F24.1, F25.1, F26.1, F27.1, F28.1, F29.1, F30.1, F31.1, F32.1, F33.1, F34.1, F35.1, F36.1, F37.1, F38.1, F39.1, F40.1, F41.1, F42.1)
3. Describe the general process of homeostasis in the physiology of organ and apply the concepts to calcium regulation within the musculoskeletal system.
(F42.1)
4. Identify the organs of each of the pulmonary, cardiovascular and gastrointestinal systems, and describe their relationships to surrounding structures.
(G2.1, G3.1, G4.1, G5.1, G6.1, G7.1, H2.1, H3.1, I2.1, K1.1, M1.1, M1.4)
5. Relate structure to function in the integumentary, skeletal, muscular, respiratory, cardiovascular and gastrointestinal systems.
(F2.1, F3.1, F4.1, F5.1, F6.1, F7.1, F8.1, F9.1, F10.1, F11.1, F12.1, F13.1, F14.1, F15.1, F16.1, F17.1, F18.1, F19.1, F20.1, F21.1, F22.1, F23.1, F24.1, F25.1, F26.1, F27.1, F28.1, F29.1, F30.1, F31.1, F32.1, F33.1, F34.1, F35.1, F36.1, F37.1, F38.1, F39.1, F40.1, F41.1, F42.1, G2.1, G3.1, G4.1, G5.1, G6.1, G7.1, H2.1, H3.1, I2.1, K1.1, M1.1)
6. Apply anatomical and physiological principles of these systems to the practice of radiographic technology.
(F2.1, F3.1, F4.1, F5.1, F6.1, F7.1, F8.1, F9.1, F10.1, F11.1, F12.1, F13.1, F14.1, F15.1, F16.1, F17.1, F18.1, F19.1, F20.1, F21.1, F22.1, F26.1, F27.1, F23.1, F24.1,

F25.1, F28.1, F28.5, F29.1, F30.1, F31.1, F32.1, F32.5, F33.1, F33.5, F34.1, F34.5, F35.1, F35.5, F36.1, F36.5, F37.1, F37.5, F38.1, F38.5, F39.1, F39.5, F40.1, F40.5, F41.1, F41.5, F42.1, F42.5, G2.1, G2.5, G3.1, G4.1, G4.9, G5.1, G5.9, G6.1, G6.10, G7.1, G7.8, H2.1, H2.5, H3.1, H3.5, I2.1, I2.5, K1.12, L1.5, M1.1)

7. Apply knowledge of anatomy and physiology to begin the identification and interpretation of conventional X-ray images and CT scans in different body planes.

(K1.1, K1.12, L1.10)

8. Describe what physiological information can be obtained by application of functional imaging techniques.

(G2.2, G3.2, G4.2, G5.2, G6.2, G7.2, H2.2, H3.2, I2.2, K1.3)

3. Learning Resources

a. Required:

Marieb, E.N. **Essentials of Human Anatomy and Physiology**, 10th Edition, (Benjamin Cummings)

Applegate, E.J. **The Sectional Anatomy Learning System: Concepts**, 3rd Edition (Saunders)

Applegate, E.J. **The Sectional Anatomy Learning System: Applications**, 3rd Edition (Saunders)

Drake, R.L., Vogl, W., Mitchell, A., **Gray's Anatomy for Students**, Current edition (Elsevier, Churchill Livingstone)

b. Recommended (on reserve in library):

Basic Anatomy and Physiology

Tortora, G.J., **Principles of Anatomy and Physiology**, Current edition (Harper and Row)

Martini, F.H., Timmons, M.J., Tallitsch, R.B. **Human Anatomy**, Current edition (Prentice Hall)

Marieb, E.N. **Anatomy and Physiology Coloring Workbook**, 9th Edition, 2008 (Benjamin Cummings)

Advanced Anatomy

Moore, K.L., **Clinically Oriented Anatomy**, Current edition (Lippincott, Williams & Wilkins)

Warwick, R., Williams, P.L., Eds., **Gray's Anatomy**, Current edition (Longman)

Advanced Physiology

Berne, R.M., Levy M.N., Eds., **Physiology**, Current edition (Mosby)

Boron, W.F., Boulpaep, E.L., Eds., **Medical Physiology**, Current edition (W.B. Saunders)

Histology

Young P., Heath J.W., **Wheater's Functional Histology**, Current edition (Elsevier, Churchill Livingstone)

Imaging and Sectional Anatomy

Weir, J. Abrahams, P.H., **Imaging Atlas of Human Anatomy**, Current edition (Mosby)

Hofer, M., **CT Teaching Manual**, Current edition (Thieme Kelley, L.L., Petersen, C.M.),
Sectional Anatomy for Imaging professionals (Mosby)

Madden, M.E., **Introduction to Sectional Anatomy**, Current edition (Lippincott, Wilkins & Williams)

4. Evaluation:

Module Quizzes	15%
Mid-term exam 1	25%
Mid-term exam 2	25%
Cumulative Final Exam	35%
TOTAL	100%

5. Course Schedule (Mon 9:30 AM – 11:20 AM; Thu 10:30 AM – 12:20 PM)

NOTE: This schedule is tentative and subject to change if deemed necessary by the instructor.

Quizzes are taken online Fri.@4:00pm → Sun.@11:59pm

Week	Week of	Module	Topics and Quizzes
1	Sept 5	1. Introduction to Cells and Tissues	Review of cellular structure and function
2	Sept 9/12	2. Skin, membranes and homeostasis 3. MSK	Structure and function Calcium Case Study Anatomy of bone and cartilage Quiz 1: Module 1+2
3	Sept 16/19	3. MSK	Bone growth and repair Intro to axial and appendicular skeleton Joints and their movements
4	Sept 23/26	3. MSK	Muscle tissue structure and function Muscle groups of the body Quiz 2: Module 3
5	Sept 30/ Oct 3	4. Upper Limb	Shoulder joint Elbow joint
6	Oct 7/10	4. Upper limb 5. Lower limb	Wrist joint Hip joint Quiz 3: Module 4
7	Oct 17	Thanksgiving 5. Lower limb	Ankle joint *** MIDTERM 1: Modules 1-4***
8	Oct 21/24	5. Lower limb 6. Thoracic cavity	Knee joint Anatomy and relative structures
9	Oct 28/31	6. Thoracic Cavity 7. Abdominal cavity	Cardiac, Great vessels, and Respiratory Boundaries, Contents, and Divisions Quiz 4: Module 5+6
10	Nov 4/7	8. Digestive system	Intro and Upper GI
11	Nov 14	Remembrance Day 8. Digestive system	Duodenum *** MIDTERM 2: Modules 5-7***
12	Nov 18/21	8. Digestive system	Small Intestine Large Intestine
13	Nov 25/28	8. Digestive system	Sigmoid colon to rectum Sectional anatomy Quiz 5: Module 7+8

14	Dec 2/5	8. Digestive system	Sectional anatomy REVIEW CLASS
15	Dec 9-13	*** FINAL EXAM ***	Cumulative Exam!

Exam Period Dec.9-13, (scheduled by registrar) - check CAMLINK.

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

6. 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	<i>Incomplete:</i> 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 death in the family.
IP	<i>In progress:</i> 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. <i>(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)</i>
CW	<i>Compulsory Withdrawal:</i> 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, worksite, or field placement.

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 inasmuch 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

- Please turn OFF cell phones and texting devices when in class/lab.
- MRAD 115 will require regular study and preparation ahead of each class. It is valuable to review your notes within 24 hours following each class to help in retention of information. You should expect to spend at least 6 hours outside of scheduled class time in the preparation of answering on-line quizzes and for general studying. Study groups are a highly effective way of learning for many students.

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. Login at <https://online.camosun.ca/> to access these materials.
- Additional resources may include, but are not limited to: lecture notes, PowerPoint slides, 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.
- 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.

Attendance

- You are expected to attend all classes, and be on time. It is your responsibility to acquire *all* information given during a missed class, including 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).
- In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with his/her instructor indicating the reason for the absence. Prolonged illness of three or more consecutive days must have a medical certificate sent to the department.

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>