CAMOSUN COLLEGE
School of Health and Human Sciences
Medical Radiography Technology

Computed Tomography Principles, MRAD 279

Winter 2017

COURSE OUTLINE

The calendar description is available on the web @
http://camosun.ca/learn/calendar/current/web/mrad.html#MRAD279

In this advanced beginner course, students build on their knowledge of imaging and accessory equipment, focusing entirely on Computed Tomography (CT). Students re-examine the digital imaging process, incorporating fundamental principles of radiographic imaging as they apply to CT. Students examine historical events significant to the invention and evolution of CT, as well as innovations in CT. Students examine Canadian standards surrounding quality assurance (QA) for CT to support their participation of QA activities and quality control (QC) procedures in their clinical practicum experience.

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

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1. Instructor Information

(a) Instructor	Solomon Adjakloe		
(b) Office hours	Thursdays 14:00-15:00		
(c) Location	MRT 212D		
(d) Phone	250-370-3182	**Alternative:**	
(e) E-mail	AdjakloeS@camosun.ca		
(f) Website	http://online.camosun.ca/		

2. Intended Learning Outcomes

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

a) Describe the components of a variety of Computed Tomography systems and explain their function.
b) Explain the process of producing sectional images using a variety of Computed Tomography systems.
c) Describe the historical events surrounding the invention and evolution of Computed Tomography and the usefulness of this discovery in medical imaging.
d) Describe the essential quality assurance (QA) practices related to the use of Computed Tomography equipment in Canada.
e) Apply the principles of quality assurance (QA) to evaluate sectional images for diagnostic acceptability and appropriateness.
f) Discuss quality assurance (QA) activities and quality control (QC) procedures pertaining to Computed Tomography.

3. Required Materials

(a) Texts

i. Romans, LE. **Computed Tomography for Technologists- A Comprehensive Text.** Wolters Kluwer Health/Lippincott Williams & Wilkins 2011.

ii. Seeram, E. **Computed Tomography. Physical Principles, Clinical Applications and Quality Control(4th Ed.) Saunders/Elsevier Inc.** 2009.

(b)Other
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.

4. Course Content and Schedule

(Can include: Class hours, Lab hours, Out of Class Requirements and/or Dates for quizzes, exams, lecture, labs, seminars, practicums, etc.)

Lecture Days/ Rm Number
MRT WT212C
Friday 08:30-11:30

Week	Dates	Lecture	Chapter Readings	Quiz
1	Jan 9-13	Introduction + Fundamentals + Scan Parameters	1 Seeram 1&2 Romans	
2	Jan 16-20	History of CT Imaging + Current Technology	1&4 Seeram	
3	Jan 23-27	Data Acquisition: Rad Production + Attenuation/Rem Beam	4 Seeram	
4	Jan 30-Feb 3	(test) + Axial + Helical	2 Romans 5 Seeram	1(20%)
5	Feb 6-10	SSCT/MSCT + Spatial Recon + Intro to Image Recon	3&8 Romans 5&11 Seeram	
6	Feb 13-17	READING WEEK No Classes		
7	Feb 20-	Linear Recon +	3&8 Romans	

	24	Analytic/Iterative Recon + Clinical Appl of Recon	5 Seeram	
8	Feb 27-Mar 3	Image Display + 3D Apps	4 Romans 8&13 Seeram	
9	Mar 6-10	(test) + Dose Descriptors+ Dose Optimization	10 Seeram	2(20%)
10	Mar 13-17	Clinical Dose Reduc+ Image Quality + Artifacts, Equipment failures	6 Romans 9&10 Seeram	
11	Mar 20-24	QC+ QC tests + QC applic	7 Romans 18 Seeram	
12	Mar 27-31	(test) + Special Procedures + special procedures 2	14,15,16,17 Seeram	3(20%)
13	Apr 3-7	Assignment due		4(10%)
14	Apr10-14	Review		
15	Apr 17-21	Final Exams		5 (20%)

5. Basis of Student Assessment (Weighting)

Attendance/Participation	10%
Quiz 1	20%
Quiz 2	20%
Quiz 3	20%
Assignment	10%
Cumulative Final Exam	20%
TOTAL	**100%**
***Students must complete all assigned work, quizzes and Final exam to successfully complete the course.**	

Attendance/Participation

It is expected that you show up on time and participate in both labs and classroom lectures. We learn from each other, and I highly encourage you to willingly contribute to our group learning environment. We highly value interaction, appreciative inquiry, and active engagement.

If you attend all of the lectures, you will get 5%. For every un-communicated or un-excused absence, you will lose a mark. If you communicate your absence and it is for a legitimate reason ahead of time, you will not lose a mark.

The participation mark is worth 5%. If you're wondering how this will be marked, here is a simple way to self-reflect and guide your level of participation: Ask yourself, when given the

opportunity to answer questions in class, share my knowledge, insights or contribute positively in a relevant manner, I participated actively:
0-never
1-rarely, if ever (1/semester)
2-sometimes (1/month)
3-consistently (1/week)
4-always (1/class)
5-always, but also constructively in a manner that deepened the discussion and furthered the level of interaction of the class with the material in a beneficial manner.

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 at the beginning of class that covers the general concepts addressed in the readings.

Quizzes
There will be 3 quizzes to assess your level of knowledge as it relates to Principles of CT scanning. The purpose of the midterm exams is to provide you with feedback about your level of knowledge **during** the term. The midterm exams are non-cumulative. Beyond a grade, I encourage you to use the exams as an assessment ***for*** learning, not simply ***of*** your learning. As such, I highly encourage you to reflect on your results by identifying areas of weakness and celebrating successful integration of knowledge. The midterm exams should provide confidence, decrease anxiety, and expose you to the type of questions you can expect on the final exam.

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

6. Grading System

(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)
(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)

[X] Standard Grading System (GPA)

☐ Competency Based Grading System

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

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, Student Services or the College web site at http://www.camosun.bc.ca

STUDENT CONDUCT POLICY

There is a Student Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.
http://www.camosun.bc.ca/policies/policies.html

A. GRADING SYSTEMS http://www.camosun.bc.ca/policies/policies.php

The following two grading systems are used at Camosun College:

1. 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+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. 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 at http://www.camosun.bc.ca/policies/E-1.5.pdf 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 death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
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, worksite, or field placement.

1. GENERAL INFORMATION

Students are expected to attend all classes and labs. If you are unable to attend the lecture it is your responsibility to acquire all information given during a missed class including notes, hand-outs, assignments, changed examination dates, etc.

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