

	<p align="center"><b>School of Health &amp; Human Services</b> Medical Radiography Technology</p>
	<p align="center"><b>Course Name: Clinical Applications in CT</b> <b>Course Number: MRAD 129</b></p>

## COURSE OUTLINE

**The Approved Course Description is available on the web:**  
<http://camosun.ca/learn/calendar/current/web/mrad.html#MRAD129>

*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 online course will provide the students with the basic skill set to perform common and specialized Computed Tomography (CT) scan examinations. Emphasis will be placed on practical application and theoretical concepts of CT imaging that are common in the clinical setting. Students will cover the patient care requirements and image acceptability criteria. Class discussions/blogs will bring relevance of theory to examinations currently performed in the clinical environment.

The students will focus on basic CT scan protocols for the head, neck, chest, abdomen, pelvis and spine. Commonly occurring pathologies will be described and identified with supporting images and referenced to normal presentations. The required patient care for prior, during and post examination will be emphasized. Anatomical considerations in axial, sagittal and coronal plants on CT images will be assessed.

There will be an overview of the CT Scanning equipment with a main focus on accessory equipment (injector pumps, patient restraints and supports), emergency support equipment and contrast media (selection, dosage, adverse reactions and patient care).

***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.***

Prerequisites: A minimum of "C+" in MRAD 105, MRAD 115; and "COM" in MRAD 120 Co-requisite: MRAD 125

### **1. Instructor Information**

(a)	<b>Instructor:</b>	<b>Stephen Kapuvari MRT(R)</b>
(b)	<b>Office Hours:</b>	Email response within 48 hours (Monday-Sunday) Virtual hours: Scheduled as needed or upon request (Collaborate web conferencing software)
(c)	<b>Location:</b>	Off Campus/ Online
(d)	<b>Phone:</b>	250-370-3996
(e)	<b>Email:</b>	Content and public inquires: Desire-to-Learn Discussions. Private matters and grading: KapuvariS@camosun.bc.ca
(f)	<b>Website:</b>	<a href="http://online.camosun.ca/">http://online.camosun.ca/</a>

## 2. Intended Learning Outcomes/Competencies

The objectives of this course are linked with the CAMRT competencies which are indicated in brackets at the end of each statement.

Upon successful completion, the student will be able to:

1. Apply CT terminology and anatomical landmarks for the following body regions: head, spine, chest/cardiac and abdomen. (K1.1)
2. Describe patient preparation for the CT examination (history taking, urinary function, allergies, existing condition/pathology) to best plan for imaging procedure. (K1.4, K1.5)
3. Interpret and demonstrate an understanding of related medical/imaging disciplines by reviewing reports and/or images of previous studies. (K1.2, K1.3)
4. Provide a non-threatening environment through patient communication of exam to be performed and procedural care (prior, during, and post), use of contrast media, and staff involvement. (K1.18, B1.1, B2.1)
5. Select and prepare the appropriate contrast media. (K1.6)
6. Assess the patient for allergic or contraindication to contrast media use. (K1.5)
7. Describe venipuncture procedure and describe and administer contrast media with or without the use of automatic injection devices as required. (K1.7, K1.9, K1.10)
8. Counsel patients with respect to post procedural care. (K1.18)
9. Perform required patient positioning and provide solutions for patient limitations due to physical and/or psychological needs. (K1.12, K1.13)
10. Select appropriate technical exposure parameters based on examination and patient needs. (K1.12)
11. Process and evaluate sectional images in axial, coronal, and sagittal planes for diagnostic acceptability and anatomical inclusion, and provide solutions as required. (K.14, K1.15)
12. Assess CT images of various anatomical areas for adequate exposure and analysis in the axial, coronal, and sagittal planes and obtain additional images as required. (K1.17)
13. Identify common pathologies demonstrated by CT for each anatomical area. (K1.1, K1.2, K1.16)
14. Evaluate resultant radiation exposure readings in keeping with current safety standards. (C2.1)
15. Identify and provide solutions for equipment malfunctions. (D2.3)
16. Use all accessory imaging equipment. (K1.12, K1.13)
17. Assist with administration of drug therapy as directed by a physician (K1.8, K1.18)

[CAMRT Medical Radiography Competency Profile](#)

## 3. Learning Resources

## Required Textbooks:

Romans, Lois (2009). *Computed Tomography for Technologists*. Wolters Kluwer – Lippincott Williams & Wilkins

Comprehensive Anatomy and Physiology reference textbooks

## Desire-to-Learn (D2L) Learning Management System

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, focus on areas beyond the scope of the required textbooks and provide direction for your learning experiences. You may need to write down additional information from various sources. Additionally, not all details can be covered in the online content, and you will be required to refer to textbook material that is not discussed specifically on D2L.

## Other Materials:

Additional resources may include, but are not limited to: online notes, PowerPoint slides, Textbook Companion Workbooks, and hyperlinks. You may prefer to download online notes ahead of time (when available) and then write your notes directly onto copies of the slides/content. The course content will not be available to you after completion of the term.

### Optional References:

Seeram, Euclid (2008). *Computed Tomography: Physical Principles, Clinical Applications and Quality Control*, 3<sup>rd</sup> edition. Saunders Elsevier

Bushong, Stewart C (2012). *Radiological Science for Technologists: Physics, Biology and Protection*, 10th edition. Mosby.

## 4. Student Assessment

<b>Quizzes (5 x 4%)</b>	20%
<b>Discussions (7x 2.86%)</b>	20%
<b>Assignment</b>	20%
<b>Cumulative Final</b>	40%
<b>TOTAL</b>	<b>100%</b>

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

## Discussions:

Discussions will occur throughout the course, as indicated by the Content

and Schedule, focusing on the topics covered that week and related topics in previous weeks. Discussions are a mandatory part of the course as indicated by the Assessment section. Discussions will be available on D2L from Monday 8am until Friday 4pm of that week. If a student's discussion is posted later than the indicated time frame, these comments will not be used in the evaluation of that week's discussion. Discussions will have an accumulated total of 20%.

Students will be grouped by the instructor in sections of 3-4 students that will change periodically during the course. This is done to ensure all members are communicating and to vary ideas and learning styles between individuals. It is expected to participate a minimum of twice per discussion, as indicated in the rubric. Please read the document for online discussions and rubric to help facilitate the learning objectives. The format for the discussions will vary but may include, but not limited to, question and answer, group case studies, small group learning assignments and opinion discussions. The instructor will be monitoring and enabling support as deemed necessary.

Exceptions to this late penalty are 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. In such situations, it is highly recommended that students attempt to arrange an extension of a discussion BEFORE the due date, if possible. Contact with the instructor is critical in these circumstances.

### **Assignment:**

The assignment will cover the introductory concepts of CT imaging. The goal of the assignment is to ground student knowledge in the technological concepts while researching and exploring for more information. An introductory proposal is mandatory and is due July 4, 2014. There are several topics to choose from and it is the student's responsibility to select a topic that will meet the required word count. The instructor will give feedback on the proposal to assist the student on creating the final paper. More information is provided on D2L.

Unless otherwise stated, the assignment will be submitted via D2L. If an assignment is handed in late, students will incur a 5% per day late penalty. It is mandatory that all assignments be submitted for class completion. The assignment will be worth 20% of total mark and due on July 28, 2014.

Exceptions to this late penalty are 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. In such situations, it is highly recommended that students attempt to arrange an extension of an assignment BEFORE the due date, if possible. Contact with the instructor is critical in these circumstances.

### **Quizzes and Exams:**

There will be quizzes to measure comprehension and enable students to achieve learning outcomes. The dates of the quizzes can be found in the Content and Schedule section. Quizzes will be available from Friday 4pm to Sunday midnight of that week. The quizzes will have an accumulated total of 20% and are cumulative in the course content. Focus will be placed on new

concepts recently discussed, but content from the beginning of the course will be testable as advanced concepts often build on foundation knowledge. Quizzes are administered online via D2L and may be accessed from any computer with internet access *during the window of availability*. The student IS NOT required to take quizzes in a proctored environment.

There is one cumulative Final exam worth 40% of total grade. The date of the examination will occur on August 22, 2014 at approximately 12:00pm. This will be in conjunction with other courses students are enrolled in during the summer semester. If this information changes, students will be notified via D2L. The examination will be in a proctored environment which will be made available at Camosun College. For students wishing to write the examination outside of the college, an approved invigilator will be at the students discretion to arrange. More information will be made available on D2L regarding this process. It is highly encouraged to begin this early in the course to avoid last minute complications. All forms for outside invigilators must be submitted by July 21, 2014 unless otherwise indicated.

In emergency circumstances, a student may write a quiz 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 family crises require the approval of the instructor. When possible, it is preferable that the student makes arrangements in advance. 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>

### Course Content and Schedule:

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

WEEK	Dates 2014	Content	Discussion	Quiz/Assignment
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1	<b>June 9-13</b>	Explore D2L, test videos and links, Complete Survey;	<i>No Discussion</i>	NO QUIZ
2	<b>June 16-20</b>	<b>CT Basics</b> ; Basic Principles and Instrumentation, Radiation Production, Data Collection, Historical Overview, Recent Advancements	<i>New Groups Discussion #1</i>	NO QUIZ
3	<b>June 23-27</b>	<b>Scanning</b> ; Scan type, Detector Configuration, Dose considerations, Advantages & Disadvantages,	Discussion #2	June 27: Quiz #1
4	<b>June 30-July 4</b> (STAT July 1st)	<b>Image Production</b> ; Image Reconstruction, Image Display, Artifacts, Image Quality, Advanced Programs, Clinical and Future Applications	<i>NO Discussion</i>	<a href="#">Proposal Due July 4</a> July 4: Quiz #2
5	<b>July 7-11</b>	<b>Patient Care</b> ; Patient Prep; Intro to Contrast, Contrast Prep, Venipuncture, Allergic Reactions and CIN;	Discussion #3	No Quiz
6	<b>July 14-18</b>	<b>Patient Care 2</b> ; Special Consideration, Review reports, Protocol overview; Phases of Contrast; Cardiac CT, Dose and CTDI	Discussion #4	July 18: Quiz #3
7	<b>July 21-25</b>	CT Chest and Neck	<i>New GROUPS Discussion #5</i>	<b>Invigilator forms for final exam (if off campus) July 21, 2014</b>  No Quiz
8	<b>July 28-Aug 1</b>	CT Abdomen and Pelvis	Discussion #6	<a href="#">Assignment Due July 28</a>  Aug 1: Quiz #4
9	<b>Aug 4-8</b> (STAT Aug 4th)	CT Head and Neck Anatomy Interventional CT	Discussion #7	No Quiz
10	<b>August 11-15</b>	CT Brain, Facial Bones, Sinus	No Discussion	Aug 8: Quiz #5
11	<b>Aug 22</b>  <b>12:00pm</b>	Final exam	No Discussion	<b>FINAL EXAM</b> Location: Camosun or off-campus

## 6. Grading System

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

<b>X</b>	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](http://camosun.ca) for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
<b>I</b>	<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.
<b>IP</b>	<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. (For these courses a final grade will be assigned to either the 3 <sup>rd</sup> course attempt or at the point of course completion.)

<b>CW</b>	<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.
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## 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.

HYPERLINK "<http://camosun.ca/learn/calendar/current/pdf/academic-policies.pdf>" Academic Policies and Procedures

HYPERLINK "<http://camosun.ca/about/policies/education-academic/e-2-student-services-&-support/e-2.5.pdf>" 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

[Camosun.ca](http://camosun.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:

HYPERLINK "[http://www.camrt.ca/abouttheprofession/codeofethics/code\\_ethics\\_letter.pdf](http://www.camrt.ca/abouttheprofession/codeofethics/code_ethics_letter.pdf)" 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.

HYPERLINK "http://camosun.ca/learn/programs/mrt/handbook.pdf"<http://camosun.ca/learn/programs/mrt/handbook.pdf>

## 8. GENERAL INFORMATION

### Suggested Study Time/Study Habits

- Successful students will probably spend at least 4 hours outside of class per week studying the content for this course to achieve full marks. This is in addition to the time it takes to navigate the online content.
- The instructor will be available during “virtual office” hours and by appointment for students needing additional support mastering the course content.
- Map out a homework schedule; include time for reading and discussion.
- Study groups are a highly effective way of learning for many students.

*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>*



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