

# CLASS SYLLABUS



COURSE TITLE: MIDS 199 – Sonography Principles 2  
CLASS SECTION: X01AB  
TERM: W2022  
COURSE CREDITS: 3  
DELIVERY METHOD(S): Blended

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](#).

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

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*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

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NAME: Dustin Pendergast  
EMAIL: [PendergastD@camosun.bc.ca](mailto:PendergastD@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

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Students investigate the physical principles and dynamics of fluid properties in diagnostic medical sonography. Students learn how relationships between volume, flow rate, density, and diameter relate to measurable anatomic variables using special calculations and techniques. Students study emerging ultrasound technologies and advanced scanning techniques to understand how these apply to future practice. Using their knowledge of factors necessary for successful image production, students examine how quality control protocols reduce conditions that can negatively affect image quality while learning how to conduct quality assurance testing and perform preventative maintenance.

PREREQUISITE(S): C+ in MIDS 139  
CO-REQUISITE(S): n/a  
PRE/CO-REQUISITE(S): n/a

## COURSE DELIVERY

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ACTIVITY	HOURS / WEEK	# OF WEEKS	ACTIVITY HOURS
Lecture	3	14	42

Seminar			
Lab / Collaborative Learning	2	14	28
Supervised Field Practice			
Workplace Integrated Learning			
Online			
	<b>TOTAL HOURS</b>		<b>70</b>

## COURSE LEARNING OUTCOMES

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

- a) explain and apply the fundamental principles of fluid properties as they pertain to generating diagnostic medical sonography images.
- b) explain the influence of changing vessel diameters, flow rates and direction, pressure variables, and laminar flow on resultant image characteristics.
- c) identify the appropriate situations in which to employ tissue harmonics, contrast, elastography, fusion, 4D, and other single purpose investigative tools; describe the principles used in obtaining images; and explain how this data is used.
- d) describe the major components of comprehensive quality assurance programs and explain the role of preventative maintenance and quality control on image quality and equipment reliability.
- e) describe the function and application of emerging technologies on sonography practice and contrast new approaches with prior investigative processes and explain how they impact patient outcomes.

## COURSE OBJECTIVES AND MAPPED PROFESSIONAL COMPETENCIES (also known as “sub-outcomes” or “learning objectives”)

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### Sonography Canada Competencies

- 4.2d Adjust instrument controls to optimize image
- 4.2h Perform sonographic examinations using 3-D imaging.
- 4.3a Understand imaging and instrumentation activities included in quality assurance testing.
- 4.3b Identify degraded instrument performance.
- 4.3c Understand basic trouble shooting.

## REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

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Kremkau, F. W. (2020) Sonography principles and instruments. St. Louis, MI: Elsevier

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

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

WEEK	DATE	TOPIC	READINGS	LEARNING OUTCOMES	SONOGRAPHY CANADA COMPETENCY
1	Jan 11, 13	1. Fundamental Principles of Fluid Properties	Chapter 5	a	
		<b>No Labs, Week 1</b>			
2	Jan 18, 20	1. Poiseuille's Equation, Volumetric Flow Rate, Continuity Rule and relating it to pathology	Chapter 5	b	
	Jan 20, 21	<b>LAB:</b> Calculations on Pressure, Resistance and Volumetric Flow Rate		a, b	
3	Jan 25, 27	1. Advanced Imaging Applications: Tissue Harmonics Imaging 2. Doppler Applications: Wall Filters in Tissue Doppler and HPRF Doppler	Chapter 4	c	
	Jan 27, 28	<b>LAB:</b> Applying Tissue Harmonics Imaging and Doppler Applications		c	
4	Feb 1, 3	<b>1. QUIZ</b> 2. Advanced Imaging Applications: Spatial Compounding, Real Time Adaptive Filters, Panoramic Imaging	Chapter 4	c	4.2d
	Feb 3, 4	<b>LAB:</b> Apply SC, RTAF and Panoramic Imaging in scan lab		c	
5	Feb 8, 10	1. Advanced Imaging Applications: Elastography and Cardiac Strain Imaging		c, e	
	Feb 10, 11	<b>LAB:</b> Apply Elastography and Strain principles		c	
6	Feb 15, 17	<b>1. Review Session</b> <b>2. Midterm Exam</b>			
	Feb 17, 18	<b>No Labs, Week 6</b>			
7	Feb 20	<b>Reading Week, No Classes</b>			
8	Mar 1, 3	1. Fusion Imaging 2. Bernouli, Poiseuille's Law Roleaux effect, Starling's Law	Chapter 5		

WEEK	DATE	TOPIC	READINGS	LEARNING OUTCOMES	SONOGRAPHY CANADA COMPETENCY
	Mar 3, 4	No Labs, Week 8			
9	Mar 8, 10	1. Quality Assurance/Quality Control of Equipment 2. <b>Cont'd</b>	Chapter 7	d	4.3a, 4.3b, 4.3c
	Mar 10, 11	<b>LAB:</b> Assess Detail and Contrast Resolution with Tissue Equivalent Phantom <b>Lab Assignment 1 Due</b>			
10	Mar 15, 17	1. Contrast Imaging, Bubble Studies (Demo in class) 2. Sensitivity, Specificity, Positive Predictive Value, Negative Predictive Value	Chapter 2	c	
	Mar 17, 18	No Labs, Week 10			
11	Mar 21, 24	1. 3D/4D Ultrasound Imaging 2. <b>Cont'd</b>	Chapter 4	c, e	4.2h
	Mar 22, 23	<b>LAB:</b> 3D/4D Imaging; Prep for Lab Assignment 2			
12	Mar 29, 31	1. Emerging Technologies in Sonography (ABUS, POCUS, A.I., Workflow in Reporting) 2. <b>Cont'd</b>		e	
	Mar 31, Apr 1	<b>LAB:</b> Guest lecture GE hands on lab demo with new technologies in ultrasound <b>(TBD)</b> <b>Lab Assignment 2 Due</b>		e	
13	Apr 5, 7	1. Elastography (strain, shearwave) 2. High Intensity Focus Ultrasound			
	Apr 7, 8	<b>LAB:</b> Shearwave			
14	Apr 12, 14	<b>Final Exam Review</b> <b>Cumulative Final*</b>			
		No Labs, Week 14			
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*\*Do not book travel or flights until the final examination schedule has been published by the registrar.*

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](http://camosun.ca/services/accessible-learning/exams.html). <http://camosun.ca/services/accessible-learning/exams.html>

## STUDENT EVALUATION

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DESCRIPTION	WEIGHTING
Quiz	15%
Lab Assignments	20%
Midterm Exam	30%
Final Exam	35%
	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>

## COURSE GUIDELINES & EXPECTATIONS

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TBD by Instructor

## SCHOOL OR DEPARTMENTAL INFORMATION

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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

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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

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