

# CLASS SYLLABUS



COURSE TITLE: MIDS 247: Cardiac Sonography 2  
CLASS SECTION: BX01A & BX01B  
TERM: S2023  
COURSE CREDITS: 3  
DELIVERY METHOD(S): Blended Learning

Camosun College campuses are located on the traditional territories of the Ləkʷəŋən 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: Matthew Barbas, Kendal Adam  
EMAIL: [BarbasM@camosun.ca](mailto:BarbasM@camosun.ca), [AdamK@camosun.ca](mailto:AdamK@camosun.ca)  
OFFICE: Click or tap here to enter text.  
HOURS: Click or tap here to enter text.

*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 continue developing their understanding of the clinical applications of cardiac sonography as a diagnostic investigation. Students observe dynamic anatomic relationships in the cardiac system while learning to recognize the abnormal sonographic appearances of the anatomy of the heart and the great vessels. Students learn to adapt and modify appropriate scanning protocols based on patient history, physiologic data, laboratory values, and complementary imaging studies.

PREREQUISITE(S): C+ in both MIDS 181 and MIDS 197  
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

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

- a) explain the significance of abnormal cardiopulmonary hemodynamics on the approach to cardiac sonography and discuss the selection of adapted protocols, transducers, and impact on resultant sonographic image quality.
- b) explain how the abnormal sonographic appearance of the heart and great vessels relate to the corresponding ECG and are differentiated across gender, age (including fetal, infant, and occult cardiac defects), and body habitus.
- c) define and apply the components of a diagnostic examination to increasingly complex cardiac sonography encounters.
- d) describe the imaging principles, utilization, and interpretation of spectral Doppler, tissue Doppler imaging (TDI), strain/ strain-rate imaging, and ultrasound contrast on optimal and non-optimal subjects.
- e) perform uncomplicated cardiac ultrasound examinations and collect images and measurements necessary to formulate a technical impression of required cardiac structures within the recommended Sonography Canada guidelines for scheduling and time allotments while scanning simulated patients, live subjects, or laboratory partners.

## COURSE OBJECTIVES AND MAPPED PROFESSIONAL COMPETENCIES

(also known as “sub-outcomes” or “learning objectives”)

### Sonography Canada Competencies

- 3.3f: Set up 3-lead electrocardiogram (ECG).
- 3.3d: Perform dynamic/provocative maneuvers (e.g., Valsalva).
- 4.1a: Select optimum system and transducer for examination considering patient’s age and size, structures being examined and specific indications for examination.
- 4.1b: Determine and select correct pre-set values.
- 4.1c: Input patient data.
- 4.2a: Orient and manipulate transducer.
- 4.2b: Perform sonographic examination of structures of interest using knowledge of sonographic principles, instrumentation and techniques listed in Appendices E.
- 4.2d: Adjust instrument controls to optimize image.
- 4.2g: Use software calculation packages.
- 4.2h: Perform sonographic examinations using 3-D imaging.
- 5.1a: Interpret history, signs & symptoms and other relevant information.
- 5.1b: Assess medical history and health status.
- 5.1c: Modify scope of examination based on clinical history.
- 5.1d: Formulate sonographic scanning strategies.
- 5.1e: Integrate knowledge of anatomy and disease processes.
- 5.3a: Select optimal acoustic window.

- 5.3b: Optimize patient position.
- 5.3c: Employ breathing techniques.
- 5.3d: Interrogate anatomy in required planes of section.
- 5.3e: Evaluate images for orientation, identification, and labeling.
- 5.3f: Evaluate images for quality.
- 5.3g: Recognize sonographic appearance of normal structures.
- 5.3h: Recognize artifacts and normal variants.
- 5.3i: Differentiate artifact and normal variants from anatomic and pathologic findings.
- 5.3j: Recognize and investigate abnormal findings.
- 5.3l: Ensure all applicable components of examination are complete.
- 5.4a: Produce diagnostic data documenting sonographic findings.
- 5.4b: Formulate impression based on findings.
- 5.4c: Understand the variables and their relationships within calculations.
- 5.4d: Use spatial reasoning to interpret images.
- 6.2b: Practice ergonomic techniques.

#### Appendix E Cardiac:

- 1 Abdominal situs
- 2 Cardiac position
- 3 Chest & thorax (adjacent, extra-cardiac)
- 4 Coronary vessels
- 5 Hepatic veins
- 6 Outflow tracts
- 7 Pulmonary veins
- 8 Wall layers (endo, myo, pericardium)
- 9 Wall segments
- 10 Arch & branches
- 11 Ascending Aorta
- 12 Descending Aorta
- 13 Root
- 14 Left Atria
- 15 Right Atria
  
- 18 Main pulmonary artery
- 19 Bifurcation
- 20 Atrial Septum
- 21 Ventricular Septum
- 22 Aortic Valve
- 23 Mitral Valve
- 24 Mitral (annulus)
- 25 Pulmonic Valve
- 26 Tricuspid Valve
- 27 Tricuspid annulus
- 28 Inferior Vena Cava
- 29 Superior Vena Cava
- 30 Left Ventricle
- 31 Right Ventricle

#### REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

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#### Required

Anderson, B. (2022). *A sonographer's guide to the assessment of heart disease*. Echotext.

**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	Date	Topic	Readings	Learning Outcomes	Learning Objectives	Sonography Canada Competency	Assessments
1	May 1, 2023	1. Ventricular Diastolic Filling and Function	Ch.3	a,d	1.0-1.14	5.4c	
		<b>LAB:</b> Diastolic Function: LA volume, Apical with Spectral Doppler (Diastology: MV Inflow, P. Veins, TDI)		c,e	2.0-2.4	3.3f, 4.1a,4.1b,4.1c, 4.2a, 4.2b <i>Appendix E:</i> 6,13,14,15,18, 20, 21,22, 23,25,26,30,31, 5.1e	
2	May 8, 2023	1. Diastolic Dysfunction	Ch.3	a,d	3.0-3.5	5.4c	Quiz 1
		<b>LAB:</b> Diastolic Function: LA volume, Apical with Spectral Doppler (Diastology: MV Inflow, P. Veins, TDI)		c,e	4.0-4.7	3.3d,3.3f, 4.1a,4.1b,4.1c, 4.2a, 4.2b <i>Appendix E:</i> 6,7,8,9, 14,15,20,21,22,23,24,26, 27,30,31 4.2g	
3	May 15, 2023	1. Aortic Stenosis	Ch. 7 pp. 177-194	a	8.0-8.8		Quiz 2
		<b>LAB:</b> Aortic Valve area assessment (PW, CW, Colour) + Echocardiogram Protocol		c,e	9.0	3.3f, 4.1a,4.1b,4.1c, 4.2a, 4.2b <i>Appendix E:</i> 6,22	
4	May 22, 2023	No class on Monday (Victoria Day)		a			Quiz 2
		<b>LAB:</b> Echo protocol review for UA sign offs		c,d,e	7.0-7.6	3.3f, 4.1a,4.1b,4.1c, 4.2a, 4.2b <i>Appendix E:</i> 8,9,15,27,30,31	Lab Assignment 1: Diastolic Function
5	May 29, 2023	1. Mitral Stenosis 2. Tricuspid and Pulmonic Stenosis	Ch. 8 pp. 215-234	a	10.0-11.6		Quiz 3

			Ch. 9 pp. 255-264, 277-283				
		LAB: Optimizing Spectral Doppler for Valves + Subcostal and SSN Spectral Doppler		c,e		Appendix E: 5,10,11,12,28	
6	June 5, 2023	1. MID-TERM 2. Principles of Valvular Regurgitation	Ch. 9 pp. 255-264, 277-283	a	10.0-11.6		MID-TERM EXAM
		LAB: Review for Scan Test #1		c,e			
7	June 12, 2023	1. Aortic Regurgitation	Ch. 7 pp. 197-213	a	12.0-13.7		Quiz 4
		LAB: Scan Test #1		c,e	14.0-14.3	3.3f, 4.1a,4.1b,4.1c, 4.2a, 4.2b Appendix E: 1, 3,5, 6,7,8,9,10,11, 12, 13,14.15,16 20,21,22,23,2 4 25,26,27,28,3 0,31, 4.2d,4.2g,5.1a ,5.1b, 5.1c,5.1d,5.1e, 5.3a, 5.3b,5.3c,5.3d, 5.3e, 5.3f,5.3g,5.3h, 5.3i, 5.3l,5.4a,5.4b, 5.4d,6.2b	Scan Test #1
8	June 19, 2023	1. Mitral Regurgitation 2. Tricuspid and Pulmonic Regurgitation	Ch. 8 pp. 235-253 Ch. 9 pp. 264-291	a	15.0-16.7		Quiz 5
		LAB: Right Ventricular Systolic Pressure Assessment + Echo Protocol		c,e			
9	June 26, 2023	1. Prosthetic Valves 2. Hypertensive and Pulmonary Heart Disease	Ch. 10 Ch. 4	a	17.0-18.5		Quiz 6
		LAB: Viewpoint Reporting, Right Ventricular Systolic		c,e	19.0-19.3	4.2 b Appendix E:	

		Pressure Assessment and Echo protocol				15,26,27,28,30,31, 4.2g	
10	July 3, 2023	1. Cardiomyopathies (Hypertrophic and Restrictive) <b>Online</b>	Ch. 6	a	20.0-20.7		Quiz 7
		<b>LAB:</b> Echo Simulator: Cardiomyopathies, Endocarditis, and cardiac masses		c,e	21.0-21.3	4.2 b Appendix E: 8,9, 14,15,26,27,28,30,31, 4.2g,5.1a,5.1c, 5.1d, 5.1e,5.3d,5.3i, 5.3j, 5.4d	Lab Assignment 2
11	July 10, 2023	1. Cardiac Masses and Potential Cardiac Source of Embolus 2. Endocarditis	Ch. 13	a	22.0-23.10		Quiz 8
		<b>LAB:</b> Systolic Function: Simpson's Bi-plane LVEF RV TAPSE, and RV TDI + Echo Protocol		c,d,e	7.0-7.1,7.4,7.6	4.2 b Appendix E: 3,5, 4.2g,5.1a,5.1c, 5.1d, 5.1e,5.3d,5.3i, 5.3j, 5.4d	
12	July 17, 2023	1. Left and Right Ventricular Systolic Function 2. Left and Right Ventricular Dysfunction	Ch. 2	a	5.0-6.3	3.3j, 4.2h	Quiz 9
		<b>LAB:</b> Viewpoint Reporting and Review for Final Scan Test		c,d,e		3.3f, 4.1a,4.1b,4.1c, 4.2a, 4.2b Appendix E: 8,9,30,31,4.2g	Lab Assignment 3
13	July 24, 2023	1. Flex Week/Review for Final Exam					
		<b>LAB:</b> Review for Final Scan Test					
14	July 31, 2023	1. Review for Final Exam		c,d,e			SCAN TEST 2
		<b>LAB:</b> Scan Test 2					
15	August 7, 2023	<b>FINAL EXAM</b>				3.3f, 4.1a,4.1b,4.1c, 4.2a, 4.2b Appendix E: 1,3,5, 6,7,8,9,10,11, 12, 13,14.15,16	

						20,21,22,23,24 25,26,27,28,30,31  4.2d,4.2g,5.1a,5.1b, 5.1c,5.1d,5.1e,5.3a, 5.3b,5.3c,5.3d,5.3e, 5.3f,5.3g,5.3h,5.3i, 5.3l,5.4a,5.4b,5.4d,6.2b	
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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 noticed is required. Deadlines scan 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
Lab Assignments	15%
Quizzes	10%
Scan Assessments (Scan Test 1 – 10%, Scan Test 2 – 20%)	30%
Midterm Exam	20%
Final Exam	25%
<b>TOTAL</b>	<b>100%</b>

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 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 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>

Support Service	Website
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.

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## COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

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### 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.