CLASS SYLLABUS

COURSE TITLE:	MIDS 197 – Cardiac Sonography 1
CLASS SECTION:	BX01A-D
TERM:	W2023
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.

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

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

NAME:	Kendal Adam
EMAIL:	AdamK@camosun.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

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

PREREQUISITE(S):	**All of:** C+ in AHLT 266; C+ MIDS 167
CO-REQUISITE(S):	N/A
PRE/CO-REQUISITE(S):	C+ in MIDS 181

COURSE DELIVERY

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

Lab / Collaborative Learning	2	14	
Supervised Field Practice			
Workplace Integrated Learning			
Online			
		TOTAL HOURS	70

COURSE LEARNING OUTCOMES

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

a) explain the significance of cardiopulmonary hemodynamics on the approach to cardiac sonography and discuss the selection of protocols, transducers, and impact on resultant sonographic image quality.
b) explain how the normal sonographic appearance of of the heart and great vessels relates to the corresponding ECG and are differentiated across gender, age, and habitus
c) define and apply the components of a diagnostic examination to routine cardiac sonography.
d) discuss the significance of obtaining accurate measurements and reliable technical impressions on reporting, long term surveillance, intervention, morbidity, and mortality for cardiac pathologies
e) perform uncomplicated cardiac ultrasound examinations and collect images and measurements necessary to formulate a technical impression of required cardiac structures 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).

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

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.

5.3l: Ensure all applicable components of examination are complete.

5.4a: Produce diagnostic data documenting sonographic 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, descending & aortic root

12 Left atrial appendage

13 Pulmonary artery & bifurcation

14 Atrial and Ventricular Septa

15 Aortic Valve

17 Mitral valve & annulus

18 Pulmonic Valve

19 Tricuspid Valve & Annulus

20 Right Ventricle

21 Left Ventricle

22 Inferior Vena Cava

Expanded Learning Outcome(s)

c-1) define and apply the following key components of an ultrasound exam: professional conduct, interpret the request, plan the procedure, establish the patient relationship, execute the procedure and conclude the procedure in relation to cardiac sonography.

REQUIRED MATERIALS & RECOMMENDED PREPARATION / INFORMATION

Required Materials:

Anderson, B. (2016). *Echocardiography: The Normal Examination and Echocardiographic Measurements*. Echotext Pty Limited.

Referenced Materials:

Anderson, B. (2016). *A Sonographer's Guide to the Assessment of Heart Disease*. Echotext Pty Limited.

Otto, C. M. (2019). Textbook of clinical echocardiography. Philadelphia, PA: Elsevier/Saunders

Lang et al. (2015). Recommendations for Cardiac Chamber Quantification by Echocardiography in Adults: An Update from the American Society of Echocardiography and the European Association of Cardiovascular Imaging. Journal of the American society of echocardiography, 28(1), pp. 1-39. http://dx.doi.org/10.1016/j.echo.2014.10.003

Ryding, A. (2013). Essential echocardiography. Edinburgh, UK: Elsevier]

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	Jan 9	Course Introduction Lesson 1: Review Cardiac Anatomy and Physiology, Echo vs General, Scan planes, ECG Timing/Cardiac Cycle	Abbreviations & Symbols page Ch 2 – pg 33-36 D2L Content		1.0-1.12	Appendix E: 7,8, 28, 29	**Quiz #1 due Sunday 11:59pm**

		LAB: Lesson 2: Intro to Cardiac Scanning & Viewpoint: (Ergonomics, Left vs Right handed scanning, Echo vs General, ECG leads in Echo, Parasternal Imaging)	Intro to Echo Protocol D2L Ergonomics	e	2.0-2.11	3.3f, 4.1a,4.2a,4.2b, Appendix E:3	Lab Practice Scanning Images #1 due (learning Viewpoint): **PLAX**
2	**Jan 16**	Lesson 3: 2D Parasternal Views (PLAX/RVIT/RVOT/PSAX) Lesson 4: M-Mode Imaging (Overview and applications in parasternal)	Ch 2 – pg 36 – 45 Ch 3 – All Ch 4 – pg 75 - 79	a	3.0-3.7, 4.0-4.7	Appendix E: 3, 6, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27	**Quiz #2 due Sunday 11:59pm**
		LAB: Lesson 5: Parasternal Long Axis Imaging + M-Mode Imaging		a, b, e	5.0-5.11		Independent Scanning Images #2 due: **PLAX (3)/RVIT/RVOT & M-Mode**
3	**Jan 23**	Lesson 6: Cardiac Hemodynamics and Pressures (Preload & Afterload) Lesson 7: Introduction to Normal/Abnormal Colour Doppler in Echo (PLAX/RVIT/RVOT/PSAX)	D2L Content Ch 7 – All Ch 8 – sections on Parasternal views	a	6.0-6.7, 7.0 – 7.10		**Quiz #3 due Sunday 11:59pm**
		LAB: Lesson 8: Parasternal Long Axis Imaging + M-Mode + Colour/Short Axis intro		a, b, e	8.0-8.11		Independent Scanning Images #3 due: **PLAX/RVIT/RVOT/ M-Mode & Colour + PSAX**
4	**Jan 30**	Lesson 9: Parasternal 2D Measurements in Echocardiography o Learning Activity: An Eye for Axis	Ch 9 – pg 153-159, 176, 179-181	c, d	9.0-9.10		**Quiz #4 due Sunday 11:59pm**
		LAB: Lesson 10: Parasternal Short Axis Views + Colour + PLAX measurements		a, b, e	10.0-10.11		Independent Scanning Images #4 due **PLAX/RVIT/RVOT/ M-Mode/Colour/Meas + PSAX/ Colour**
5	**Feb 6**	Midterm Review	D2L Content	a			**No Quiz this week**
		Scan Test 1 - Parasternal Imaging		a, b, e			**Scan Test 1 Parasternal Imaging**
6	**Feb 13**	1. Midterm Exam					
		LAB: Lesson 11: All Parasternal Imaging & Feedback Review		a, b, e	11.0		Independent Scanning Images #5 due: **All Parasternal imaging (meas too)**

7	Feb 20	Reading Week					
8	Feb 27	Lesson 12: Apical Views (AP4, AP5, AP2, AP3) Lesson 13: Ventricular Wall Segments & Coronaries	Ch 2 – pg 45 – 51 D2L Content Ch 9 – pg 166-167		12.0 -12.4 13.0 – 13.5	Appendix E: 4, 9, 16	**Quiz #5 due Sunday 11:59pm**
		LAB: Lesson 14: Apical Imaging 2D + Wall segment evaluation demo		a, b, e	14.0 – 14.7		Independent Scanning Images #6 due: **All Parasternal imaging (meas too) + Apicals**
9	Mar 6	Lesson 15: Apical 2D Measurements & Volumes Lesson 16: Normal & Abnormal Colour Doppler in Apicals	Ch 9 – pg – 161 – 175 Ch 8 – sections on Apical views	d	*15.0 - 15.6* *16.0 – 16.7*	*Appendix E: 6*	**Quiz #6 due Sunday 11:59pm**
		LAB: Lesson 17: Apical Imaging 2D + Colour + Measurements		a, b, e	17.0 -17.15	Appendix E: 30,31	Independent Scanning Images due #7: **Apicals + Colour + Measurements**
10	Mar 13	Lesson 18: 2D, Colour, Measurements in Subcostal views (Subs 4CH, Situs, Bicaval, SSAX, IVC/Hep, AO) Lesson 19: 2D & Colour in Suprasternal views (Long axis, crab view)	Ch 2 – pg – 55-58 Ch 8 – sections on Subcostal views & Suprasternal views Ch 9 – pg 182	c,d	*18.0-18.6* *19.0 – 19.5*	*Appendix E: 1,2,5, 10,11,12*	**Quiz #7 due Sunday 11:59pm**
		Scan Test 2: Apical Imaging		e			**Scan Test 2 Apical Imaging**
11	Mar 20	Lesson 20: Basics of Spectral Doppler Echocardiography o Tutorial/Lab on application and optimization) – (1st group 8 students, 2nd group 8 students)	Ch 5 - All	b, d	20.0-20.8		**Quiz #8 due Sunday 11:59pm**
		LAB: Lesson 21: Subcostal Imaging 2D + Colour + Measurements		e	21.0-21.9	Appendix E: 1,2,28,29	Independent Scanning Images #8 due: **Subcostal Imaging**
12	Mar 27	Lesson 22: Normal Spectral Doppler Flow	Ch 6 – All	a	22.0 -22.7		**Quiz #9 due Sunday 11:59pm**

		Patterns in Echocardiography o Learning activity Doppler Flow Patterns	Ch 11 – TBD**				
		LAB: Lesson 23: Suprasternal Imaging 2D + Colour		e	23.0-23.6	4.2b *Appendix E: 10,11,12*	Independent Scanning Images #9 due: **Suprasternal Imaging (Last one!)**
13	**Apr 3**	Lesson 24: Abnormal Cardiac Doppler Flow Patterns (Exposure to Valvular Regurgitation and Stenosis) – TBD ** o Learning activity Abnormal Doppler Flow Patterns – TBD**	Ch 13 – TBD D2L Content	a	24.0-24.6		**Quiz #10 due Sunday 11:59pm (Last one!)**
		LAB: None due to Good Friday		e			
14	**Apr 10**	**Online & Asynchronous Final Exam Review due to Easter Monday – TBD****	D2L Content	e			
		LAB: Final Scan Test – Subcostal & Suprasternal Imaging		e			**Scan Test #3 – Subcostal & Suprasternal Imaging**
15	**Apr 17**	**FINAL EXAM WEEK –** **** Do not book travel until final exam week schedule has been distributed by the College!****					

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

STUDENT EVALUATION

DESCRIPTION	WEIGHTING
Weekly Independent Lab Hours & Feedback	10%
Quizzes	15%
Scan Tests	25%
Mid Term	25%
Cumulative Final Exam	25%

DESCRIPTION	WEIGHTING
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 policy for more information. http://camosun.ca/about/policies/education-academic/e-1-programming-and-instruction/e-1.14.pdf

COURSE GUIDELINES & EXPECTATIONS

To be determined by Instructor

SCHOOL OR DEPARTMENTAL INFORMATION

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

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

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

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.

COLLEGE-WIDE POLICIES, PROCEDURES, REQUIREMENTS, AND STANDARDS

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. To contact the Office of Student Support: 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.