Course Syllabus

Course title: Cardiac Sonography Procedures 1
Class section: MIDS **-** 197 **-** BX01A
Term: 2025W
Course credits: 3
Total hours: 75
Delivery method: Blended

Territorial Acknowledgement

Camosun College respectfully acknowledges that our campuses are situated on the territories of the L□k□□□ŋ□n (Songhees and Kosapsum) and W□SÁNEĆ peoples. We honour their knowledge and welcome to all students who seek education here.

Instructor Details

Name: Kendal Adam
Email: AdamK@camosun.ca

Instructor Statement

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.

Instructor Office Hours

Office:	Hours:
Room # 317	Hours: By appointment

Course Description

Course 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.

Prerequisites:
All of:

- C+ in AHLT 266
- C+ in MIDS 167

Pre or Co-requisites:
All of:

- C+ in MIDS 181

Course Learning Outcomes / Objectives

Upon successful completion of this course, the learner will be able to

1. 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
2. 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
3. Define and apply the components of a diagnostic examination to routine cardiac sonography

4. Discuss the significance of obtaining accurate measurements and reliable technical impressions on reporting, long term surveillance, intervention, morbidity, and mortality for cardiac pathologies
5. 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 Competencies

Sonography Canada National Competency Profiles

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

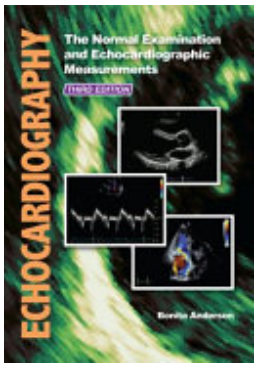
19 Tricuspid Valve & Annulus

20 Right Ventricle

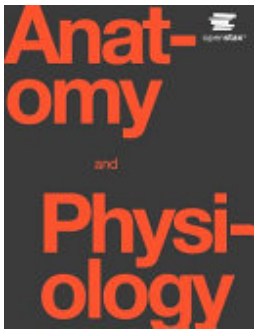
21 Left Ventricle

22 Inferior Vena Cava

Course Materials



Title: Echocardiography
Authors: Bonita Anderson
Publication Date: 2016-11-22
Edition: 3rd
Additional Information
REQUIRED TEXTBOOK



Title: Anatomy and Physiology
Authors: J. Gordon Betts, Peter DeSaix, Jody E. Johnson, Oksana Korol, Dean H. Kruse, Brandon Poe, James A. Wise, Mark Womble, Kelly A. Young
Publisher: OpenStax
Publication Date: 2013-04-25
Edition: 1
Additional Information
REQUIRED TEXTBOOK - .PDF will be provided on D2L for this open source textbook

Course Schedule, Topics, and Associated Preparation / Activity

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	Assessme
1	Jan 6	Course Introduction	Abbreviations & Symbols page	1, 2, 3	1.0-1.12	Appendix E: 7,8, 28, 29	Quiz #1 due Sunday 11:5

		Lesson 1: Review Cardiac Anatomy and Physiology, Echo vs General, Scan planes, ECG Timing/Cardiac Cycle	Ch 2 – pg 33-36 OpenStax -- pg 827 – 844 pg 850 – 864 pg 880 - 881 D2L Content				
		LAB: Lesson 2: Intro to Cardiac Scanning & Viewpoint: (Ergonomics, Echo vs General, ECG leads in Echo, Parasternal Imaging)	Intro to Echo Protocol D2L Ergonomics Lab Manual	1, 2, 3	2.0-2.11	3.3f, 4.1a,4.2a,4.2b, Appendix E:3	Lab Practice Scanning Ima #1 (learning Viewpoint) Assigned: PL
2	Jan 13	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 – 80 D2L Content	1, 2 ,3, 4	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 11:59
		LAB: Lesson 5: Parasternal Long Axis Imaging + M-Mode Imaging	Lab Manual	1, 2, 3, 4, 5	5.0-5.11		Independent Scanning Ima #2 Assigned: PLAX (3)/RVIT/RVC M-Mode
3	Jan 20	Lesson 6: Cardiac Hemodynamics and Pressures (Preload & Afterload)	Ch 7 – All Ch 8 – sections on Parasternal views	1, 2, 3, 4	6.0-6.7, 7.0 – 7.10		Quiz #3 due Sunday 11:59

		Lesson 7: Introduction to Normal/Abnormal Colour Doppler in Echo (PLAX/RVIT/RVOT/PSAX)	OpenStax -- pg 864 - 880 D2L Content				
		LAB: Lesson 8: Parasternal Long Axis Imaging + M-Mode + Colour/Short Axis intro	Lab Manual	1, 2, 3, 4, 5	8.0-8.11		Independent Scanning Ima #3 Assigned: PLAX/RVIT/F M-Mode & Co + PSAX
4	Jan 27	Lesson 9: Parasternal 2D Measurements in Echocardiography o Learning Activity: An Eye for Axis	Ch 9 – pg 153-159, 176, 179-181 D2L Content	1,2,3,4	9.0-9.10		Quiz #4 due Sunday 11:59
		LAB: Lesson 10: Parasternal Short Axis Views + Colour + PLAX measurements	Lab Manual	1, 2, 3, 4, 5	10.0-10.11		Independent Scanning Ima #4 Assigned: PLAX/RVIT/F M-Mode/Colour/ + PSAX/ Colo
5	Feb 3	Midterm Review	D2L Content	1, 2, 3, 4			No Quiz this v
		Lesson 11: All Parasternal Imaging	Lab Manual	1, 2, 3, 4, 5	11.0		Independent Scanning Ima #5 Assigned: All Parastern imaging
6	Feb 13	1. Midterm Exam					
		Skills Assessment 1 - Parasternal Imaging		1, 2, 3, 4, 5			SA #1 - Parasternal Imaging

7	Feb 17	Reading Week					
8	Feb 24	Lesson 12: Apical Views (AP4, AP5, AP2, AP3) Lesson 13: Ventricular Wall Segments & Coronaries	Ch 2 – pg 45 – 51 Ch 9 – pg 166-167 OpenStax -- pg 846 - 850 D2L Content	1, 2, 3, 4	12.0 -12.4 13.0 – 13.5	Appendix E: 4, 9, 16	Quiz #5 due Sunday 11:59
		LAB: Lesson 14: Apical Imaging 2D + Wall segment evaluation demo	Lab Manual	1, 2, 3, 4, 5	14.0 – 14.7		Independent Scanning Ima #6 Assigned: All Parasterna imaging + Ap
9	Mar 3	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 Ch 10 – pg 196 D2L Content	1, 2, 3, 4	15.0 - 15.6 16.0 – 16.7	Appendix E: 6	Quiz #6 due Sunday 11:59
		LAB: Lesson 17: Apical Imaging 2D + Colour + Measurements	Lab Manual	1, 2, 3, 4, 5	17.0 -17.15	Appendix E: 30,31	Independent Scanning Ima #7 Assigned: All previous + Apicals + Col Meas
10	Mar 10	Lesson 18: 2D, Colour, Measurements in Subcostal views (Subs	Ch 2 – pg – 55-58	1, 2, 3, 4	18.0-18.6	Appendix E: 1,2,5, 10,11,12	Quiz #7 due Sunday 11:59

		4CH, IVC/Hep/AO, Situs, Bicaval, SSAX) Lesson 19: 2D & Colour in Suprasternal views (Long axis, crab view)	Ch 8 – sections on Subcostal views & Suprasternal views Ch 9 – pg 182 D2L Content		19.0 – 19.5		
		LAB: Lesson 21: Subcostal Imaging 2D + Colour + Measurements	Lab Manual	1, 2, 3, 4, 5	21.0-21.9	Appendix E: 1,2,28,29	Independent Scanning Ima #8 Assigned: previous + Subcostal Im
11	Mar 17	Lesson 20: Basics of Spectral Doppler Echocardiography	Ch 5 – All D2L Content	1, 2, 3, 4	20.0-20.8		Quiz #8 due Sunday 11:59
		Skills Assessment 2: Apical Imaging		1, 2, 3, 4, 5			SA #2 Apical Imagin
12	Mar 24	Lesson 22: Normal Spectral Doppler Flow Patterns in Echocardiography o Learning activity Doppler Flow Patterns	Ch 6 – All D2L Content	1, 2, 3, 4	22.0 -22.7		Quiz #9 due Sunday 11:59
		LAB: Lesson 23: Suprasternal Imaging 2D + Colour	Lab Manual	1, 2, 3, 4, 5	23.0-23.6	4.2b Appendix E: 10,11,12	Independent Scanning Ima #9 Assigned: previous + Suprasternal Imaging (Last one!)
13	Mar 31	Lesson 24: Abnormal Cardiac Doppler Flow Patterns (Exposure to	Ch 12 – All Ch 13 – pg 249 - 264	1, 2, 3, 4	24.0-24.6		Quiz #10 due Sunday 11:59 (Last one!)

		Valvular Regurgitation and Stenosis) o Learning activity Abnormal Doppler Flow Patterns	D2L Content				
		LAB: Apical measurements, Subcostal & Suprasternal Imaging Review	Lab Manual	1, 2, 3, 4, 5			
14	Apr 7	Final Exam Review	D2L Content	1, 2, 3, 4			
		LAB: Final Skills Assessment – Apical measurements, Subcostal & Suprasternal Imaging		1, 2, 3, 4, 5			SA #3 – Apic measuremen Subcostal & Suprasternal Imaging
15	Apr 14	FINAL EXAM WEEK – ** Do not book travel until final exam week schedule has been distributed by the College!**					

Evaluation of Learning: Weighted

DESCRIPTION	WEIGHTING
Weekly Independent Scanning	**5%**
Quizzes	**10%**
Midterm Exam	**20%**
Cumulative Final Exam	**25%**
Skills Assessment (x3 @ 13.33% each)	**40%**
TOTAL:	**100%**

NOTE: SONO Students must achieve at least a ("C+") or COM in all program courses.

Camosun's Grading Systems
https://camosun.ca/registration-records/student-records/camosun-grading-systems

Grade Reviews and Appeals
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

The Centre for Accessible Learning (CAL) is part of Camosun's Student Affairs unit. CAL coordinates academic accommodations and provides related programs and services to students with documented disabilities.

Students who require academic accommodations are expected to request and arrange accommodations through CAL in a timely fashion. While we understand that not all accommodation needs are known to students at the beginning of a course, accommodations cannot be provided unless the proper process is followed through CAL and an accommodation letter has been released to the instructor. Students are responsible for providing CAL with the proper documentation prior to the beginning of a course.

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 can be reviewed on the CAL exams page
https://camosun.ca/services/academic-supports/accessible-learning/academic-accommodations-exams

Please consult the CAL webpage for more information:
https://camosun.ca/services/academic-supports/accessible-learning

Artificial Intelligence: A Guide for Students

Generative Artificial Intelligence (GenAI) is an evolving technology that brings potential benefits but also substantial risks. While GenAI tools have the ability to transform how we work and learn, it is essential for the college community to adapt to these changes in a thoughtful and secure way.

When using GenAI tools, students should ensure proper citation and attribution guidelines are followed. This includes acknowledging AI assistance in reports ,presentations, or any external communications. Clear citation helps build trust, ensures ethical use, and reduces the risk of misinformation or copyright issues.

For citation support visit the college's citation style guide.
https://camosun.libguides.com/cite

Artificial Intelligence: A Guide for Students
Visit the following website to learn about AI use in academic settings.

https://camosun.libguides.com/artificialintelligence/home

Course Guidelines & Expectations

Skills Assessments

Students must achieve a minimum grade of 65% on all Skills Assessments in this course to be eligible to use this course as a pre or co-requisite. Students who are unsuccessful at meeting these requirements may receive a “NC” grade and may also risk suspension or removal from the Diagnostic Medical Sonography Program.

Final Skills Assessments are not eligible for repeat assessment.

Students must also achieve a minimum of 65% for their final grade to pass the course and to use this course as a pre or co-requisite.

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.

Additional Information

**** Do not book travel until final exam week schedule has been distributed by the College!****

School or Departmental Information

Students are required to read and are accountable for the College policies (outlined below) and practicum guidelines as described in the School of Health and Human Services (HHS) and program handbooks.

SONO Program Handbook

Clinical and Practice Placements in HHS
https://camosun.ca/programs-courses/school-health-and-human-services/hhs-programs/practicums

School of Health and Human Services (HHS)
https://camosun.ca/programs-courses/school-health-and-human-services/information-health-and-human-services-students-1#top

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.

College Policies

Academic Integrity

Students are expected to follow the college's Academic Integrity policy, and be honest and ethical in all aspects of their studies. To help you understand these responsibilities review the online Academic Integrity guide.

The college's Academic Integrity policy and supporting documents detail the process for addressing and resolving matters of academic misconduct.

Academic Accommodations for Students with Disabilities

If you have a documented disability and need accommodations contact the Centre for Accessible Learning (CAL). CAL will arrange the appropriate academic accommodations so you can participate in all academic activities. Visit the CAL website for more information

Academic Progress

The Academic Progress policy details how the college monitors students' academic progress and what steps are taken if a student is at risk of not meeting the college's academic progress standards.

Acceptable Technology Use

The Acceptable Technology Use policy outlines how students are expected to use college technology resources, this includes using your own devices on the college's network. The use of

the college resources in a way that violates a person's right to study in an environment free of discrimination, harassment or sexual violation is prohibited.

Course Withdrawals Policy

For details about course withdrawal see the Course Withdrawals policy. Be aware of the deadlines for fees, course drop dates, and tuition refunds.

Grading Policy

To learn more about grading see the Grading Policy.

Grade Review and Appeals

The process to request a review of grades is outlined in the Grade Review and Appeals policy.

Medical / Compassionate Withdrawals

If you have experienced a serious health or personal issue, you may be eligible for a medical/compassionate withdrawal. The Medical / Compassionate Withdrawal Request form outlines what is required.

Sexual Violence

If you have experienced sexual violence on or off campus, you can get support from the Office of Student Support. The Office of Student Support is a safe and private place to talk about what supports are available and your options for next steps. Visit the sexual violence support and education site to learn more or email oss@camosun.ca or phone: 250-370-3046 or 250-370-3841.

Student Misconduct (Non-Academic)

Camosun expects students to conduct themselves in a manner that contributes to a positive, supportive, and safe learning environment. Review the Student Misconduct Policy to understand the college's expectations of conduct.

Looking for other policies? See Camosun College Policies and Directives

Services and Supports

Services are free and available to all students.

Academic Supports	Enrollment Supports
Centre for Accessible Learning English, Math and Science Help Centres Library Writing Centre & Learning Skills	Academic Advising Financial Aid and Awards Registration Tuition and Fees
Health and Wellness	**Applied learning**
Counseling Fitness and Recreation Office of Student Support	Co-operative Education and Career Services Makerspace

The Centre for Indigenous Education Centre and Community Connections provides cultural and academic supports for Indigenous students.

Camosun International provides supports to international students.

The Ombudsperson provides an impartial, independent service to ensure students are treated fairly. The service is a safe place for students to voice and clarify concerns and complaints.

If you have a mental health concern, contact Counselling. Counselling sessions are available at both campuses during business hours. If you need urgent support after-hours, contact the Vancouver Island Crisis Line at 1-888-494-3888 or call 911.

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 the course content or schedule. When changes are necessary the instructor will give clear and timely notice.