



Figure 1: Owens Logo.

Course Syllabus
Semester:
School of Nursing and Health Professions
Department of Sonography

Course Name:	Cardiac Sonography
Course & Section Number:	DMS 113-XXX, BXX, BXX
Meeting Day(s) & Time(s):	Lecture: Lab BXX: Lab BXX:
Credits:	3
Contact Hours:	5 (2 lecture, 3 lab)
Instructor's Name:	
Office Hours & Location:	
OCC Phone:	
OCC Email:**	

Additional Contact Information:

**Please use only Owens email for course communications.

Catalog description:

Introduces the roles and responsibilities of the cardiac sonographer as a member of the healthcare team. Patient management skills and interpersonal relationships of the imaging department will be discussed. Emphasizes embryology, normal anatomy, and physiology of the heart. Correlation of standard views and cross-sectional anatomy of the chest will be included. Introduces cardiovascular doppler and hemodynamics pertaining to the assessment of the cardiac system. Emphasizes standard views and image acquisition of the transthoracic exam through laboratory experiences while enhancing psychomotor skills.

Prerequisite/Corequisites:

Prerequisites – MIT 105, MIT 107

Course Materials:

Dewitt, Susan. Echocardiography...From a Sonographer's Perspective. Launch Printing & Promotions. 2022

Palma, Richard. Echocardiographer's Pocket Reference, Fifth Edition. Arizona Heart Foundation. 2022 ISBN: 9780578687179

If a print book, e-book, or access code is required for class, you can access the Owens Community College e-Campus Bookstore by accessing the online link, called "Find Books" on the course schedule for each course section.

What You Will Learn in the Course

Course Objectives:

This course will:

1. Discuss the professional practice standards of the cardiac sonographer and the ethical and professional issues that confront medical imagers.
2. Introduce normal anatomy, physiology, and standard scanning views of the heart.
3. Discuss Doppler imaging and hemodynamics as it applies to cardiac imaging
4. Provide patient management and scanning experiences in the laboratory setting.

Student Learning Outcomes:

Students will:

Outcome	Where Assessed
1. Identify cardiac sonographer roles and responsibilities in health care organizations.	Lecture Tests/Quizzes, In-Class Activities, Journal Article Presentation, Homework, Lab Tests, Practicals, Lab Assignments, Lab Check-Offs
2. Identify normal heart structures and explain physiology of the heart.	Lecture Tests/Quizzes, In-Class Activities, Journal Article Presentation, Homework, Image IDs, Lab Tests, Practicals, Lab Assignments, Lab Check-Offs
3. Interpret hemodynamics as it applies to cardiac imaging.	Lecture Tests/Quizzes, In-Class Activities, Journal Article Presentation, Homework, Image IDs, Lab Tests, Practicals, Lab Assignments, Lab Check-Offs
4. Apply methods for effective patient communication and interactions.	Lecture Tests/Quizzes, In-Class Activities, Journal Article Presentation, Homework, Lab Tests, Practicals, Lab Instructor Evaluation, Lab Assignments, Lab Check-Offs
5. Demonstrate basic skills in transthoracic imaging views and protocols.	Practicals, Lab Instructor Evaluation, Lab Assignments, Lab Check-Offs

Technology, Lab, and File Requirements:

Microsoft Office 365

<https://www.owens.edu/office365/>

Respondus

<https://download.respondus.com/lockdown/download.php?id=139313370>

Academic Support

Disability Services Resource Center: If you have a disability or acquire one, you may be entitled to receive reasonable accommodations intended to assure you an equal opportunity to participate in and benefit from the program. To receive more information or to register for accommodations, please contact the Disability Resource Center at 567-661-7007, email disability@owens.edu, visit <https://www.owens.edu/disability/>, or stop by College Hall 124.

Tutoring Services: Owens Community College offers academic tutoring and assistance in a variety of subjects including: accounting, computing, economics, mathematics, science, and writing. For more information go to: <https://www.owens.edu/successcenters/>.

Counseling Services: Counseling Services provides assistance to students experiencing personal, educational, interpersonal/relationship, family, social, or psychological difficulties. If you feel you may benefit from this service, please contact them at counselingservices@owens.edu. More information is at <https://www.owens.edu/counseling/>.

Campus and Community Connections: The Center for Campus and Community Connections (College Hall 123) is a walk-in office created to provide retention support through resource stability initiatives and community connections. Go here for more information: <https://www.owens.edu/connection/> or contact connections@owens.edu

Owens Library: The Owens Library offers two locations (Toledo and Findlay) as well as online resources. For more information visit <https://www.owens.edu/library/>.

Students can find more information on campus resources, student support, student life, and security at this [link](#).

General Information

Student Code of Conduct: All students are expected to follow Owens Community College's Student Code of Conduct, which includes academic honesty, encompassing plagiarism. See the Board Policy for more information.

Anti-Discrimination and Harassment & Title IX/Sexual Misconduct: All students, faculty, and staff are expected to follow Owens Community College's Anti-Discrimination and Harassment Policy and the College's Title IX Policy/Sexual Misconduct Procedures and Guidelines. The College strictly prohibits and will not tolerate harassment, discrimination, intimidation, or hostile/offensive working or learning environments.

Religious Accommodations: A student seeking an accommodation for an absence permitted under Ohio's Testing Your Faith Act must provide the instructor with a written email notice with the specific

dates for an absence, and must do so not later than fourteen (14) days after the first day of instruction. Alternative accommodations are not retroactive, and no academic penalty will be imposed for an absence under the policy*. The request for an alternative accommodation will be kept confidential. Students with questions about a religious accommodation under Ohio's Testing your Faith Act may contact the College's Office of Academic Affairs: provost@owens.edu
The policy may be found on the Owens website: [3358:11-2-63 Accommodation](#) for a Student Absence for the Observance of Religious Beliefs and Practices Policy

Document Collection: Throughout the semester, your instructors may ask for a variety of assignments including tests and/or quizzes for student learning of institutional general education competencies or program assessment. Please save all your class materials until the end of the semester.

Classroom Admittance: OCC classes shall only be attended by the officially registered OCC students or perspective students, instructor of record, guest lecturer, or substitute. Visitors are not permitted to be in the classroom and should not be invited to attend or participate in the class. See [FERPA](#) regulations for more information.

Use of AI Tools: This course permits you to use artificial intelligence (AI) tools, such as chatbots, text generators, paraphrasers, summarizers, or solvers, to get guidance on assignments, as long as you do so in an ethical and responsible manner. Essentially, you can think of these tools as ways to help you learn but not to entirely create work for assignments like discussion board posts, essays, presentation slides, and so on. AI is more like your tutor or TA, not a replacement for your independent thinking. This means that you must:

- Not use AI tools to replace your own thinking or analysis or to avoid engaging with the course content.
- Cite or explain any AI tools you use. Provide the name of the AI tool, the date of access, the URL of the interface, and the specific prompt or query you used to generate the output.
- Be transparent and honest about how you used the AI tool and how it contributed to your assignment. Explain what you learned from the AI tool, how you verified its accuracy and reliability, how you integrated its output with your own work, and how you acknowledged its limitations and biases.

You are accountable for any mistakes or errors made by the AI tool. Always check and edit the output before submitting your work. If you discover any inaccuracies or inconsistencies in the output after submission, notify the instructor immediately and correct them as soon as possible. Using AI tools in an unethical or irresponsible manner, such as copying or paraphrasing the output without citation or transparency, using the output as your own work without verification or integration, or using the output to misrepresent your knowledge or skills, is considered a form of academic dishonesty and will result in a zero grade for the assignment and possible disciplinary action. If you have any questions about what constitutes ethical and responsible use of AI tools, please consult with the instructor **before** submitting your work.

Student Responsibilities & Instructor Expectations

Student Responsibilities:

- You are expected to attend weekly classes and arrive on time. If you are going to be absent, please email your instructor before class begins. Afterward, review the assignment calendar to see what was missed and reach out if you have questions.

- You are expected to fully engage with the course material and consistently put forth your best effort in lecture and lab.
- If you are unable to complete an assignment on time, contact your instructor as soon as possible to discuss your options.
- Email is the preferred method of communication outside of office hours. Please include clear and specific details in your message so your instructors can respond efficiently.
- You are encouraged to ask questions or request clarification. Unless we hear otherwise, we will assume you understand the material. Each class builds on previous concepts, so staying current is important.
- Show respect for your instructors, classmates, and the learning environment.
- You are expected to follow all guidelines and procedures outlined in the Sonography Department Procedure Manual.
- For technical issues related to Blackboard, contact the Owens Help Desk.

Instructor Expectations:

- The instructor will be respectful of your time and begin and end class on time. If any changes to class times occur, you will be notified by email.
- Your instructor's goal is to review and return assignments that require student corrections within three days of submission. Assignments that do not require corrections or resubmission may take longer to be fully graded. If it has been more than three days and you are waiting on feedback for an assignment you believe may need revision, please email your instructor.
- Your instructor checks their email several times a day, but also has responsibilities outside of teaching this course. They will do their best to respond to your email with 24 hours on weekdays and within 72 hours on the weekends.
- Office hours are available outside of class time to support you with any questions or concerns related to the course. Please don't hesitate to make use of this time.
- Your instructor welcomes and encourages questions.
- Teaching is a two-way process, and your instructor hopes to learn from your insights, questions, and feedback throughout the course.

How Grades are Determined and Major Assignments

Grading Procedure:

Grades will be calculated on the following scale.

93% and Above	A
85% to 92%	B
76% to 84%	C
60% to 75%	D
59% or Below	F

Students must earn a passing grade of 76% in both the lab and lecture portions the course. If the percentage earned is less than 76% for lecture or lab, the student will earn a grade of “**D or F**” for the course and be removed from the program.

Breakdown of combined Course Grade:

Lecture Portion	50%
Lab Portion	<u>50%</u>
Total:	100%

LECTURE PORTION

The final grade for the lecture portion of the course will be computed using the following weights.

Comprehensive Final Exam	20%
Lecture Tests	10%
Quizzes	5%
Homework	5%
In-Class Activities	5%
Journal Article Presentation	5%
Total:	50%

****Please note that ½ point will be deducted from all homework, tests, and assignments for each spelling error. Using abbreviations will also result in a ½ point deduction unless otherwise specified.****

Comprehensive Final Exam

One comprehensive final exam will be given and will include all lecture content covered in DMS 113. It will be worth 20% of the total course grade. Any student who is tardy to the exam will receive a five (5) point deduction on the exam. The exam will still end at the scheduled time. Any student who is unable to take the exam as scheduled must notify the course instructor at least 30 minutes prior to the start of the exam to receive full credit. If no notification is received prior to missing the test, a ten (10) point deduction will be taken from the score of the make-up test. Make-up tests will be taken in the testing center within three (3) days of the original test date.

Tests

Two written tests will be given and averaged for 10% of the total course grade. Any student who is tardy to the test will receive a five (5) point deduction on the test. The test will still end at the scheduled time. Any student who is unable to take the test as scheduled must notify the course instructor at least 30 minutes prior to the start of the test to receive full credit. If no notification is received prior to missing the test, a five (5) point reduction will be taken from the score of the make-up test. Make-up tests will be taken in the testing center within three (3) days of the original test date.

Quizzes

Quizzes are worth 5% of the course grade and will be given online through Blackboard. Late quizzes will be accepted at half credit up to 24 hours past the due date. Beyond 24 hours after the due date, late quizzes will not be accepted without prior approval from the instructor.

Homework

Homework assignments will be worth 5% of the course grade. Homework assignments can be found on Blackboard. Late homework will be accepted at half credit up to 24 hours past the due date. Beyond 24 hours after the due date, late homework will not be accepted without prior approval from the instructor.

In-Class Activities

In-class activities will be worth 5% of the course grade. Attending class and being an active learner will elevate student success in the course. Most weeks there will be an in-class activity to be completed and reviewed as a class. Students must submit the assignment on Blackboard by midnight on the day of class to receive points for in-class activities. Any student who is unable to attend class for the week must notify the course instructor at least 30 minutes prior to the start of class to be eligible for a make-

up assignment. If no notification is received, then the student will forfeit the in-class participation points from the activity for the week.

Journal Article Presentation

Students will choose an interesting article from the Journal of the American Society of Echocardiography to review. Students will submit a one-page typed paper about the article and give a 3–5-minute presentation to teach the class about the article. Please see Blackboard for requirements and grading rubric. No late assignments will be accepted without prior approval from the instructor. This will be worth 5% of the total course grade.

LABORATORY PORTION

Laboratory Content Breakdown:

Image ID Tests	7.5%
Written Lab Tests	7.5%
Comprehensive Final Image ID	10%
Comprehensive Final Written Exam	10%
Lab Instructor Evaluation	5%
Lab Assignments	5%
Lab Check-Offs	5%
<u>Practicals</u>	<u>0%</u>
Total:	50%

****Please note that ½ point will be deducted from all homework, tests, and assignments for each spelling error. Using abbreviations will also result in a ½ point deduction unless otherwise specified. ****

Image ID Tests

Two Image ID tests will be given and averaged for 7.5% of the total course grade. Image ID Tests must be passed with a 76% or higher or the student will be given a repeat Image ID with reduced total points possible. Please refer to Procedure 4.002 in the Department of Sonography Procedure Manual regarding the lab testing sequence. Any student who is unable to take the test must notify the course instructor at least 30 minutes prior to the due date/time to receive full credit. If no notification is received prior to missing the test, a five (5) point deduction will be taken from the score of the make-up test. The make-up test will be taken within three (3) days of the original test date.

Written Lab Tests

Two Written Lab Tests will be given and averaged for 7.5% of the total course grade. Written Lab Tests must be passed with a 76% or higher or the student will be given a repeat test with reduced total points possible. Please refer to Procedure 4.002 in the Department of Sonography Procedure Manual regarding the lab testing sequence. Any student who is unable to take the test must notify the course instructor at least 30 minutes prior to the due date/time to receive full credit. If no notification is received prior to missing the test, a five (5) point deduction will be taken from the score of the make-up test. The make-up test will be taken within three (3) days of the original test date.

Comprehensive Final Image ID

A Comprehensive Final Image ID will be given covering all topics presented throughout DMS 113 and will be worth 10% of the total course grade. Any student who is tardy to the exam will receive a five

(5) point deduction on the exam. The exam will still end at the scheduled time. Any student who is unable to attend class to take the exam must notify the course instructor at least 30 minutes prior to the class period to receive full credit. If no notification is received prior to missing the test, a ten (10) point deduction will be taken from the score of the make-up test. The make-up test must be taken in the testing center within three (3) days of the original test date.

Comprehensive Final Written Exam

A Comprehensive Final Written Exam will be given covering all topics presented in DMS 113 and will be worth 10% of the total course grade. Any student who is tardy to the exam will receive a five (5) point deduction on the exam. The exam will still end at the scheduled time. Any student who is unable to attend class to take the exam must notify the course instructor at least 30 minutes prior to the class period to receive full credit. If no notification is received prior to missing the test, a ten (10) point deduction will be taken from the score of the make-up test. The make-up test must be taken in the testing center within three (3) days of the original test date.

Lab Instructor Evaluation

The lab instructor will complete a final evaluation on Trajecsys prior to final exams assessing the student's knowledge-based skills (20%), scanning proficiency (50%), and professional conduct (30%) demonstrated throughout the course. The score on the evaluation will be worth a maximum of 100 points. This evaluation will be worth 5% of the grade.

Lab Assignments

Lab assignments will be worth 5% of the total course grade and can be found in the Lab Assignments folder on Blackboard. Images must be submitted through StudyCast by assigning the reading group to the instructor and updating the status to "Preliminary" for grading. In addition, students must mark the assignment as "Ready to Grade" in Blackboard. Both steps are required for the assignment to be graded. If either step is completed after the deadline, the assignment will be considered late.

Students should use the Self-Review Checklist for guidance when completing assignments as well as to review their images and self-critique. A submission without the following items counts as a first submission and will be returned to the student without grading:

- Patient history
- All required images
- Images in protocol sequence
- Correct and complete labeling of views

Lab assignments should be submitted prior to the due date, giving the instructor ample time to grade and possibly return for corrections. It should be expected that a student may need to complete corrections, therefore, it is highly recommended that you do not wait until the last minute to submit these assignments.

Once lab assignment corrections are given to a student, they will need to return to the lab to practice the skill or technique and retake the specified images. Images that are dated prior to the emailed corrections will not be accepted for the assignment.

Students will not be permitted to take their practical until all lab assignments are complete and of acceptable image quality.

Each lab assignment will be worth 5 points (see breakdown below).

Completion of Assignment	3 points
Completion of Assignment by the Due Date	1 point
Completion of Assignment by 2 nd submission	1 point
Total Points Possible	5 points

Lab Check-Offs

Lab check-offs are worth 5% of the overall course grade and can be completed with any credentialed supervising sonographer during supervised lab, open lab (ensure instructor availability to review), or instructional lab review weeks. These are not required to be completed to sit for practicals or passing of the course, however any check-off that is not completed by the due date will earn a 0 in the gradebook.

The following check-offs can be earned in this course:

- Parasternal Long Axis
- Parasternal Short Axis
- Apical
- Subcostal and Suprasternal Notch

Please refer to the “Lab Check-off Guidelines” on Blackboard. Deadline for completion is **DATE**.

Practicals

First attempt practicals will be given during the student’s regularly scheduled instructional lab. **The student will need to arrive 15 minutes prior to their scheduled time ready to take the practical.** A patient will be provided.

The student will have a set number of images to acquire in 20 minutes. All practicals are comprehensive and may include any information that has been presented in the course up to that point. The student will be given five minutes to set up the room and prepare for the practical. The 20-minute scan time will begin when the transducer is placed on the patient. If the student would like a five-minute warning, please make the evaluator aware. If the student has finished before time has expired, please consider repeating and improving images to receive a higher grade.

The first attempt at a scanning practical must be passed with an 85%. If the student does not pass the practical, a total of two (2) repeat practicals will be given and must be passed with a 90%. An unsuccessful 3rd practical attempt will result in the student not being allowed to proceed in the program. The student must pass all practicals by the deadline of **DATE**. If the deadline is not met, the student will not pass the course.

Refer to Procedure 4.003 of the Sonography Procedure Manual for more information regarding practicals.

Lecture Assignment Calendar

Week	Class Prep Reading Assignment	Topic	Assignments (Due by 11:59pm)	SLO
One	DeWitt Ch 3	Syllabus Cardiac Image Acquisition Principles (2D, M-Mode, 3D) Anatomy & Physiology of the Heart and Great Vessels Intro to Standard Windows & 2D Views of an Echo Patient Positioning	Week 1 Pre-Class Quiz- Due In-Class Activity- Due DeWitt Workbook Chapter 3- Due	1-4
Two	DeWitt Ch 1	Anatomy & Physiology of the Heart and Great Vessels In-Class Cardiac A&P Group Activity-Come prepared!	Week 2 Pre-Class Quiz- Due In-Class Activity- Due DeWitt Workbook Chapter 1- Due	1-4
Three	DeWitt Ch 4a-pages 61-82 Palma pages 42-45, 54-55, 512	Parasternal Window Assessment-2D Views, Measurements, M-Mode, Color Doppler and Spectral Doppler	Week 3 Pre-Class Quiz- Due In-Class Activity- Due Parasternal Protocol Assignment- Due	1-4
Four		Review		
Five	*STUDY*	Test 1 – Cardiac A&P, Standard Echo Windows and Acquisition Principles, Parasternal Window Assessment		1-4
Six	DeWitt Ch 4a-pages 83-94 Palma pages 46-48	Apical Window Assessment-2D Views, Measurements, M-Mode, Color Doppler and Spectral Doppler	Week 6 Pre-Class Quiz- Due In-Class Activity- Due Apical Protocol Assignment- Due	1-4
Seven		Cardiac Sonographer Role Clinical Indications for Cardiac Testing Patient History Taking and Physical Examination Patient Care, Safety and Limitations	In-Class Activity- Due Week 7 POST-Class Quiz- Due	1-4
Eight	DeWitt-pages 134, 35, 137 Palma pages 140-146	Wall Segments and Coronary Artery Distribution	Week 8 Pre-Class Quiz- Due In-Class Activity- Due Wall Segment Assignment- Due	1-4
Nine		Review	In-Class Activity- Due 10/21/25	1-4
Ten	*STUDY*	Test 2 – Apical Window Assessment, Cardiac Testing Considerations, Wall Segments, Coronary Artery Distribution		1-4
Eleven	DeWitt Ch 4a-pages 95-100	Subcostal & Suprasternal Notch Assessment-2D Views, Measurements, Color Doppler and Spectral Doppler	Week 11 Pre-Class Quiz- Due In-Class Activity- Due Subc/SSN Protocol Assignment- Due	1-4
Twelve		No Class – Veteran’s Day		
Thirteen	DeWitt Ch 4b Palma pages 80-92, 397-403	Diastology, Agitated Saline and Ultrasound Enhancing Agents	Week 13 Pre-Class Quiz- Due In-Class Activity- Due DeWitt Workbook Chapter 4a/b- Due	1-4
Fourteen		Review		
Fifteen	*STUDY*	Comprehensive Final Exam		1-4
Sixteen		Journal Article Presentations	Journal Article Written Assignment- Due In-Class Activity- Due	1-4

Lab Assignment Calendar

Week	Class Prep Reading Assignment	Topic	Assignments	SLO
One	ASE TTE Guidelines PDF Section II: Nomenclature (pg 4-7), Section IV: 2D Imaging Protocol-PLAX & PSAX (pg 23-26) Palma-Pages 32-52 Guide to Parasternal Views Pwpt	Syllabus Parasternal Long Axis Views-2D, M-Mode, Color & Spectral Doppler	PLAX Lab Assignment- Due	1-5
Two		Continue PLAX views		
Three	Guide to Parasternal Views Pwpt	Parasternal Short Axis Views-2D, Color & Spectral Doppler	PSAX Views Lab Assignment- Due	1-5
Four		Parasternal Scanning Review	<i>Written Test #1</i> and <i>Image ID Test #1</i> Both due	1-4
Five	Practical #1			1-5
Six	ASE TTE Guidelines PDF Section IV: 2D Imaging Protocol-Apical Views (pg 26-31) Guide to Apical Views Pwpt	Apical 4 & 5 Chamber Views Review Parasternal Views	Apical 4C/5C Lab Assignment- Due	1-5
Seven	Guide to Apical Views Pwpt	Apical 2 & 3 Chamber Views Review Previous Views	Apical 2C/3C Lab Assignment- Due	1-5
Eight	No Class – Accreditation Site Visit			
Nine		Apical Scanning Review	<i>Written Test #2</i> and <i>Image ID Test #2</i> Both due	1-4
Ten	Practical #2			1-5
Eleven	ASE TTE Guidelines PDF Section IV: 2D Imaging Protocol-SC and SSN Views (pg 31) Guide to Subcostal & Suprasternal Views Pwpt	Subcostal and Suprasternal Notch View	Subc & SSN Lab Assignment- Due	1-5
Twelve		Subcostal and Suprasternal Notch Scanning Review		
Thirteen		Comprehensive Scanning Review		
Fourteen	No Class – HOLIDAY AS NEEDED			
Fifteen	Comprehensive Final Practical			1-5
Sixteen	Comprehensive Final Written Exam and Comprehensive Final Image ID All students on campus DATE			1-4

***Students will be required to attend the 1st year Interprofessional Education (IPE) event. The date is TBD and more details will be given at a later date. Missing this event will result in an**

incomplete for the course until a make-up assignment is completed and turned in to the course instructor.

Disclaimer: The instructor reserves the right to amend this syllabus as deemed necessary and will communicate such amendment to the students in the course. Please note that while unlikely, there is a possibility courses might need to change the delivery method due to external issues like public health concerns, weather issues, etc. If this happens, the college will communicate any changes via email and/or other communication methods.