JACKSON COLLEGE

2019

CARDIAC SONOGRAPHY

CLINICAL MANUAL

A GUIDE FOR STUDENTS AND CLINICAL INSTRUCTORS

Commission on Accreditation
of Allied Health Education Programs

Jackson College 2111 Emmons Rd. Jackson, MI 49201 www.jccmi.edu

INTRODUCTION

The Cardiac Sonography Program is one of three **CAAHEP** (Commission on Accreditation of Allied Health Education Programs) **Accredited** Sonography specialties offered at Jackson College.

The cardiac sonography courses are formatted for online presentation. This means that the student signs onto a course management system through JC's website for their lecture, discussion, and assessments. Students will also review videos, discuss case studies, and learn from educational websites on the Internet. Not to be confused, ***clinical courses*** are not performed online. Each student will obtain a total of 1136 hours over a span of nine (9) months in a qualified clinical education center.

With courses being formatted for online presentation, we can reach students in various parts of the country that lack the existence of an Associate Degree accredited cardiac sonography program. Clinical sites are established for these students and they receive an equivalent education as our local students here in the Jackson area.

All students are required to attend a pre-clinical course, DMS 196, which prepares them for hands-on scanning skills in the hospital setting. This course runs for nine (9) weeks, and the student will accumulate 105 hours of training within this time. In this lab course, students are scanning with experienced registered cardiac sonographers. Pre-clinical competencies that assess technical skills as well and affective domain properties are a requirement in this course.

The curriculum of the Cardiac Sonography program is based on the educational outlines set by the American Society of Echocardiography (ASE) and the American Registry for Diagnostic Medical Sonographers (ARDMS). It is meant to provide a structured, comprehensive education for the student.

CARDIAC SONOGRAPHY PROGRAM

Philosophy Statement

The philosophy of the Cardiac Sonography Program is unified by common goals, which include thoughtful and intentional course design, role modeling, and classroom and clinical experiences that provide the student with the knowledge, skills, and attitudes of an entry-level cardiac sonographer. The educational process conveys caring for the whole person and promotes a balance of knowledge, technical skills, spiritual awareness, emotional intelligence, and physical health in performing professional services. The program has set common goals for students; and upon successful achievement of these goals, program outcomes are fulfilled. Graduates of this program are prepared for entry-level cardiac sonographer positions, and have proven competence to:

- Demonstrate the ability to operate cardiovascular ultrasound equipment, and determine proper technique to produce quality sonographic images (psychomotor).
- Demonstrate the ability to obtain, assess, and analyze cardiovascular sonographic images for the purpose of physician diagnosis (cognitive).
- Demonstrate the ability to recognize normal and abnormal cardiovascular anatomy, and recognize cardiovascular pathologic conditions (cognitive).
- Demonstrate the ability to anticipate and provide basic patient care and comfort during sonographic procedures (affective).
- Display behaviors and attitudes that show sensitivity and acceptance of individual and cultural differences---respecting diversity (affective).
- Demonstrate readiness to sit for national board exams by meeting or exceeding measureable didactic and clinical benchmarks (cognitive and psychomotor)

TABLE OF CONTENTS

JACKSON COLLEGE CARDIAC SONOGRAPHY PROGRAM

The Jackson College Cardiac Sonography Program was established using the Standards and Guidelines published by the Commission on Accreditation of Allied Health Education Programs (CAAHEP), which acts upon the recommendations of the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS). The Program has been CAAHEP accredited since 2004.

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MISSION STATEMENT

The philosophy of the Cardiac Sonography Program is unified by common goals, which include thoughtful intentional course design, role modeling, and classroom and clinical experiences that provide the student with the knowledge, skills, and attitudes of an entry-level cardiac sonographer. The educational process conveys caring for the whole person and promotes a balance of knowledge, technical skills, spiritual awareness, emotional intelligence, and physical health in performing professional services. The program has set common goals for students that include but are not limited to the following **program goals**:

- Prepare students through a comprehensive, quality curriculum to become competent entry-level cardiac sonographers.
- Provide students with a program that meets or exceeds professional standards and guidelines of CAAHEP accreditation.
- Prepare students for successful completion of American Registry for Diagnostic Medical Sonographers (ARDMS) credentialing exams.
- Encourage and prepare students to be analytical thinkers.
- Prepare students for employment as staff cardiac sonographers within current and future healthcare systems.
- Prepare and assist students for transfer into four-year institutions and baccalaureate completion options.
- Prepare students to be caring and effective communicators within healthcare delivery systems and among patients of normal and altered states, other healthcare team members and paraprofessionals.

- Help students become safe, knowledgeable, caring health professionals
- Prepare students to appropriately respond efficiently and effectively to emergency situations.
- Encourage students to care for their patients and themselves as whole persons with physical, emotional and mental needs.
- Prepare students to be active contributing participants in professional organizations and their community.

CLINICAL INSTRUCTOR

Responsibilities

Although students will work with many sonographers in the clinical setting, a **clinical instructor (CI)** shall be designated as the primary contact for the student and the program director or program coordinator. The clinical instructor must be available to students whenever he or she is assigned to a clinical site, provide appropriate clinical supervision, and be responsible for student clinical evaluation.

Qualifications

The designated clinical instructor must hold the RDCS (through the ARDMS) credential or the RCS (through CCI) credential and have appropriate education and experience to fulfill the responsibilities of the position.

CRITICAL THINKING AND SPATIAL ABILITY

Spatial Abilities

Possession of spatial abilities is a critical component to master success in all facets of scanning the echocardiogram. To possess the ability to conceptualize structures without actually seeing them, but knowing their location due to the structures that ARE visualized is a necessity for succeeding in cardiac sonography. Students must display spatial abilities.

Critical Thinking Evaluation Guide For Students and Clinical Instructors

Successfully performing a complete echocardiogram requires a combination of required and/or innate skills and individual traits. These skills are used to **acquire, assess, and analyze the echocardiogram**. All three must be mastered in this cardiac sonography program. At various points in the program, certain objectives must be mastered in order to move on to more advanced areas. Inability to progress to these more advanced levels within a defined timeframe will result in failure of clinical. This failure can happen at any time in the program. Sometimes a student is successful in early competencies, but is not successful in the more advanced competencies. Sometimes a student can acquire and assess the echo, but cannot demonstrate and apply critical thinking skills that are required for completing a study. A student might be successful until the final semester, only to fail due to lack of required higher-level critical thinking skills, or from a lack of understanding every facet of obtaining and comprehensively analyzing the echocardiogram. A student cannot be a graduate of the program and released into the profession without mastering the objectives.

A. Examples of skills required to **acquire images and clips.**

1. Skilled at maneuvering transducer appropriately.
2. Skilled at adjusting patient position to obtain and optimize image
3. Skilled at using machine functions to optimize images.
4. Skilled at obtaining images in a 2D plane, then constructing/conceptualizing a 3D image.
5. Innate or acquired spatial recognition skills (ability to know where structures are, in adjacent to visualized structures, and the ability to locate and image them if needed).

B. Examples of skills required to **assess images and clips**.

1. Skill and ability to learn and retain information.
2. Knowledge and skills to apply normal values, abnormal values, and equations.
3. Skilled at correct placement of 2D cursor placement, correct placement of Doppler gate, and correctly displaying color map and scale.
4. Skilled at obtaining and visualizing anatomy in a 2D plane, then constructing/conceptualizing a 3D image.
5. Innate or acquired spatial recognition skills.

C. Examples of skills required for **analyzing images and clips**.

1. Skilled at recognizing and verbalizing abnormal 2D, M-mode, Doppler, or Color Doppler images.
2. Skilled at reconstructing/conceptualizing 2D image planes into 3D structures.
3. Skilled at knowing/recognizing/verbalizing when the echo needs additional images.
4. Skilled at knowing/recognizing/verbalizing when further investigation is needed due to what is seen on routine imaging.
5. Skilled at application of learned information to the interpretation of the echo.
6. Skilled at asking appropriate questions to the teaching sonographer to learn.
7. Demonstrates inquisitive nature.
8. Skilled at recognizing and verbalizing a problem.
9. Skilled at problem solving.
10. Skilled at obtaining and visualizing anatomy in a 2D plane, then constructing/conceptualizing 3D images.

To demonstrate success at the above objectives and skill requirements, the following outcomes must be achieved.

1. Student must receive a passing grade on all Scanning Task Sheets.
2. Student must receive a passing grade on all Mid-term and Final Evaluation Forms.
3. Student must receive a passing grade on all Affective Evaluations.
4. Student must receive a passing grade on Critical Thinking Evaluations.

Any student who does not meet minimum requirements in any of the above four (4) assessment areas will fail clinical and not be able to continue in the program. As mentioned above, it is possible to fail at any time in the program as skills are built as building blocks, and sometimes a student cannot achieve the advanced level skills that are presented toward the end of the program.

Examples of situations that can result in **failure of clinical** are listed below. This is not a complete list, but this contains scanning and critical thinking requirements. Student demonstrates:

1. Ability to acquire images, but cannot (routinely) assess or analyze images.
2. Ability to acquire and assess images, but cannot critically analyze the images (single image, or combination of images) to create a complete diagnostic echocardiogram that is to be interpreted by the student for a preliminary report, and by the physician for a formal report.
3. Inability to routinely recognize echo abnormalities.
4. Inability to recognize the need to extend the exam upon discovery of echo abnormalities.
5. Inability to retain information and mentor's teachings for application to the hands-on performance.
6. Inability to (or does not) apply didactic learning to hands-on practice.

CLINICAL COURSE POLICIES

Clinical Attire and Grooming:

Students will dress according to their assigned clinical site's guidelines. Aside from the dress requirements, students are required to appear presentable and professional. Clinical attire includes:

- Scrubs-well fitting, clean and wrinkle free
- A plain, fitted long-sleeved shirt under scrub top may be worn
- Appropriate comfortable shoes-clean, and socks worn
- Name tag-either provided by the clinical site or the student
- Jewelry-limited to rings on fingers (not excessive in size or number), small pierced earrings, short necklace, wristwatch
- Fingernail polish if allowed by clinical site, to be clear or pale in color; clean and trimmed nails, no nail extensions
- No excessive makeup, perfume/cologne or perfumed lotions as patients with asthma, allergies, or other lung conditions may be sensitive
- Hair-clean and well groomed, pulled back if long to avoid violation of the principles of medical asepsis
- Student may be sent home if dress attire and/grooming is inappropriate.
- If there are any questions regarding the clinical attire, please contact the Program Director or Program Clinical Coordinator.

Allowable Time Off:

Students are allowed two sick days (16 hours) and four vacation days (32 hours) during the program.

Absence:

Attendance at clinical assignments is part of the clinical grade. One (1) absence of eight (8 hours) is allowed in each of the second and third semesters of the program.

Students are in clinicals for four (4) days per week. This allows one (1) full day each week for any doctor appointments, dentist appointments etc. Students are expected to schedule outside commitments on days other than clinical days.

Students are expected to treat their clinical externship as an employment (or an extended interview) at the clinical site. Tardiness and attendance issues are taken very seriously. Your display of good or poor habits is being closely observed by your clinical instructor as well as your mentors at the clinical site, and these habits are indicative of your future work ethic.

Any absences beyond the allowed must be made-up within the same semester that the absence occurred. Vacation days can be substituted for make-up time.

A 'Clinical Time-Off Request' must be submitted to the clinical instructor and the Program Director for verification of the absence and make-up day. Lunchtime cannot be used for make-up time. You must make-up the missed time on your clinical 'day off'.

More than one (1) absence per semester may affect the student's clinical grade and will result in the student warning process being initiated.

Vacation Hours:

A 'Clinical Time-off Request' form must be completed and approved by the clinical instructor and the Program Director within four (4) weeks of the requested time off. **Vacation hours are to be taken during the months of June through November.**

Unscheduled Absence (Sick Day):

If an unforeseen situation results in the student being absent from a clinical day, the student must notify the clinical site/clinical instructor **and** the Program Director at least 30 minutes prior to the designated start time of the workday. Contact must be by phone to the clinical instructor, and contacting the Program Director can be by phone or via email. Failure to notify the clinical site and the Program Director will count as a 'no-call, no-show' occurrence. One such occurrence will result in the Student Warning process.

Tardiness:

Being tardy means: not being available to work at the designated start-time of the day. If your start-time is 8 am, then you should arrive well enough prior to 8 am to store your personal items etc., and be present in the echo lab at 8 am. More than one (1) tardy accrued in a four-week period will count as a four hour (4) absence. This absence will need to be made up within the semester that the tardies occurred.

More than one (1) tardy accrued in a four-week period will result in the warning process being initiated.

If a pattern of tardiness becomes apparent, and/or persists across semesters, the student will attend a student/faculty consultation, and the student warning process may result in dismissal from the program.

Student Responsibilities at the Clinical Site

Student must follow all established rules or regulations of the clinical site.

Student must at all times maintain a professional appearance and attitude, as well as display appropriate behavior and work ethic. This is a fundamental expectation of the profession (SDMS Code of Ethics) and of the JC Cardiac Sonography Program.

Student is expected to arrive at their clinical site echo lab in proper attire and ready to scan at the time their shift begins. If the student's shift begins at 8:00 a.m., then the student is expected to be ready to scan at 8:00 a.m. Please see the tardiness policy above.

Students are not permitted to skip lunch in order to leave their shift prior to the end time unless their Clinical Instructor approves the request.

All time accrued beyond the end-time of the day will be noted, but cannot be used for taking time-off or completing the program early. Students are expected to stay beyond their end-time to finish an exam that was started or to finish department housekeeping duties, as any employee of the lab would also do. This is recognized as good work ethic.

Students may only log a maximum of 32 hours per week at clinical.

Any re-arrangement of clinical hours within the day or within the week must have been discussed and pre-approved by the CI (clinical instructor) **and** the Program Director. **Any** re-arrangement in the student's designated clinical schedule without consultation with the CI and the Program Director will warrant an initiation of the Student Warning Process. No exceptions.

Cell phones are to be kept with student belongings in a secure place. Cell phones are to be turned off or set to silent. Student can check cell phone for messages during designated breaks and lunchtime. Student should provide family and childcare providers with the clinical site's echo lab phone number for cases of emergency. If there are extenuating circumstances, on a case-by-case basis, this policy can be modified. For modification to this policy, student shall first contact the CI and the Program Director, explain the situation, and a decision will then be made.

Students that do not follow the cell phone policy are in jeopardy of clinical dismissal and dismissal from the program through the student warning process.

Computer Access: Students are not allowed to use the hospital/clinical site computer for any reason except hospital/clinical business, and then only with prior permission given by their clinical instructor.

Studying at the clinical site during clinical time is ONLY permitted if there are no patients, all housekeeping duties have been completed, AND the student has permission from the clinical instructor or the attending sonographer. Study location must be in an area that student can monitor whether a patient has arrived, or their presence is needed for other duties.

Materials to Have On-Site

Student must have the following materials available at their clinical site:

- Pocket sized notebook and pen
- Terry Reynold's Reference Book
- Student Clinical Book (scanning competencies, competency schedule)
- Copy of mid-term and end-semester evaluations
- Log sheets
- Calendar
- Program Director's contact information and fax number

Clinical Record Keeping

Students are required to maintain documentation of clinical performance using forms provided. Completeness and accuracy of these records is part of the clinical grade. These records become part of the student's official academic file upon completion of the program.

Calendar: Student must record exact start and end times for the clinical day. Each week the total hours are tallied, written, and each week is signed by the student's CI. At the end of each month, and at the end of each semester, the student will upload their calendar via the online course management system. The calendar must be signed by the student, and the total hours for the month must be written and circled. ONLY hours within the month can be counted in this total.

Log Sheets: Student must record all cases observed or scanned during scheduled clinical days on the Case Log Sheet. Documentation includes type of exam and pathology seen. At the end of each month, and at the end of each semester, student is required to upload the case log sheet for that month via the online course management system.

Evaluations and Comps: Student is responsible for following the directions of the Clinical Competency Schedule and the Clinical Evaluation Form for grading purposes. Student is required to notify and submit evaluations and competencies to their clinical instructor two weeks prior to the due dates of such evaluations. Waiting until the final week of the semester to be checked off on scanning task sheets, or to have semester evaluations completed by the CI is discourteous, unprofessional, and can result in initiation of the Student Warning Process. Complete documentation of required competencies that are submitted beyond the designated due date may result in the successful student receiving an 'Incomplete' (I) for their semester grade. This action keeps the student from progressing to the next clinical course. Evaluations and competencies will be uploaded via the online course management system.

Clinical Schedule and College Calendar

Clinical schedules do not follow along with the Jackson College academic calendar. It is the student's responsibility to be aware of their weekly and semester schedule regarding clinical days, holidays, and vacation time. Always refer to the clinical calendar provided.

Inclement Weather

Should Jackson College be closed due to inclement weather, the student will continue to follow the clinical schedule provided to them by the Program Director. In the case of inclement weather in the student's geographical area, the student should use good judgment and attempt to arrive at their clinical site on time if at all possible, but without placing risk on personal safety. Absence from a clinical rotation due to severe weather must be made up in the semester that it occurred. Extreme weather circumstances will be handled on a case-by-case basis. As with any absence, the student must notify the CI and the Program Director.

Compensation

Students are not allowed to receive wages for their time at the clinical site as a student of the Jackson College Cardiac Sonography program.

Professional Organizations

Students are strongly encouraged to become a member of the professional societies that benefit education and career. The SDMS (Society for Diagnostic Medical Sonographers) and the ASE (American Society of Echocardiographers) are the professional societies for cardiac sonography students. Students are also encouraged to become a member of their local society for echocardiographers.

Student Safe Clinical Practice

Patient safety is a right and a need. Students must practice and adhere to safe practices.

Unsafe clinical practice, if demonstrated by the student, which threatens or violates the physical or emotional safety of the patients, caregivers, staff, or the student themselves, will result in implementation of the Student Warning Process as outlined in the JC DMS Handbook. If the practice warrants, a student may encounter immediate dismissal from clinical, which results in removal from the program. Following are examples of unsafe behaviors. This is not an all-inclusive list.

- Inappropriate use of side rails, wheelchairs, or other equipment
- Lack of proper protection of the patient which could result in a fall or other injury
- Failure to correctly identify patient prior to initiating care

- Failure to perform safety checks of equipment or other devices prior to procedure
- Failure to adhere to universal precautions
- Failure to have appropriate supervision for performing tasks
- Student attends clinical while contagiously ill
- Student fails to recognize the need, or seek help when needed
- Student threatens or makes a patient, or any other person, fearful
- Student displays unstable emotional behaviors
- Student performs actions without appropriate supervision
- Student provides diagnostic information to patient or family
- Behavior non-becoming to the profession (see SDMS code of ethics)
- Verbal or non-verbal language, actions, or voice inflections which compromise rapport and working relations with patients, family members, staff, or physicians, or may compromise contractual agreement and/or working relations with clinical affiliates, or constitute violations of legal/ethical standards
- Violation of HIPAA regulations
- Falsifying data in a patient health record
- Not owning errors
- Leaving the clinical area without notification of faculty and clinical staff or supervisor

Health Information Confidentiality Policy: Health Insurance Portability and Accountability Act (HIPAA)

Students must maintain strict confidentiality of all health information of patients at clinical affiliate sites during and after the course of their clinical education. Students may neither use nor disclose health information of patients to which they have access, other than as expressly authorized by the clinical affiliate. Students may not record any patient identifiable information on their personal documents (clinical logs, case studies). Students must be familiar with and adhere to their clinical site HIPAA policy. Any HIPAA violation automatically results in permanent dismissal from the clinical site and therefore dismissal from the program.

Academic Performance

The Cardiac Sonography student must maintain a grade of 2.0 or higher in all courses in order to remain and continue on in the program. A student will be dismissed from the program if a required course in the program is unsatisfactorily completed.

Attendance of Conferences or Seminars

Jackson College and the Cardiac Sonography Program encourage continuing sonographic education. Students may wish to attend local, regional, or out-of-state conferences/seminars. Clinical credit will be given for each hour of conference courses attended. The Program Director

MUST approve each conference prior to the student attending, if the student is seeking clinical credit hours. Maximum hours for credit allowed are sixteen (16).

CLINICAL OBJECTIVES (Subject to Modification)

DMS 142 Clinical I Weeks 1-4

- Student will begin pre-scanning, post-scanning or scanning with assistance.
- Students will learn names of fellow workers.
- Students will know emergency code system, emergency protocols and procedures.
- Students will know location of CRASH CART.
- Students will establish knowledge of where other departments within their clinical institution are located (Emergency dept., pharmacy, cardiac cath lab, intensive care units).
- Students will learn department policies and procedures (phone etiquette, scheduling protocols, exam preps, study documentation procedures, exam protocols, filing systems and required medical history acquisition).
- Students will demonstrate and practice good body mechanics.
- Students will observe staff sonographer testing of patients whenever possible.
- Students will keep a log of all exams observed, post examined by student and performed by student; keeping track of categories. This practice continues throughout all clinical courses.
- Student will aid sonographer in as many ways as possible, including transporting patients, restocking supplies and linens, refilling gel bottles, etc.
- Student will observe and recognize the standard windows and views used for visualizing the heart.
- Student will demonstrate knowledge of basic anatomy of the heart by recitation before, during, or after the exam (depending on supervising sonographer's preference).
- Student will learn and apply proper positioning techniques for echo exam (including supine, lateral decubitus, LPO, RPO).
- Student will learn proper draping (protecting patient's modesty) and gel application.
- Student will apply safe practices regarding patient care and comfort.
- Student will apply knowledge in proper EKG lead placement.
- Student will practice proper aseptic practices and personal hygiene throughout the entire clinical course.
- Student will recognize appropriate scan planes and the manipulation of the transducer.

Weeks 4-7

- Student will utilize various machine controls and functions for obtaining the proper echo image.
- Student will continue to pre-scan, post-scan and scan with assistance.
- Student will show ability to obtain proper images and views using the accompanying acoustic windows.
- Student will perform m-mode or 2D on AORTA/LA structures and apply measurements according to protocol, as well as recite normals.
- Student will perform m-mode or 2D measurements on RV/LV structures according to department protocol, as well as recited normal.
- Student will perform m-mode on the mitral valve apparatus.
- Student will continue to observe sonographer testing of exams.
- Student will become more successful at: obtaining proper image planes in 2D, correct m-mode alignment for accurate measurements.
- Student will demonstrate ability to set up a patient for exam, including complete history taking, proper EKG lead placement, correct patient positioning and patient entry into the machine.
- With aid of supervising sonographer, student will review patient's history and other chart records as needed to correlate with present exam.
- Student will continue to maintain proper interpersonal skills, patient care, attitude and professionalism in their clinical course.

DMS 148 Clinical II Weeks 1-8

- Student will continue to practice and perfect objectives assigned to them in DMS 142, Clinical I.
- Student will become more aware of patient rights and responsibilities as stated by their practicing institution.
- Student will optimize the 2D image using depth, gain, DGC, zoom, and harmonics.
- Student will perform ejection fraction calculations using 2D or m-mode images and correlating its accuracy with the 2D real time study.
- Student will perform Doppler studies using correct placement of Doppler gate for each valve study.
- Student will perform with assistance, the Doppler and Color Doppler application for calculation of aortic and mitral stenosis, and all valvular insufficiencies. These include pressure half time, deceleration time, Bernoulli and continuity equation.
- Student will recognize abnormal Doppler patterns such as valvular stenosis and regurgitation.
- Student will recognize the aliasing pattern and perform correction using baseline or velocity scale.
- Student will demonstrate knowledge of normal Doppler values for valves.

- Student will continue to recognize and acquire the routine imaging planes and anatomy for the complete echo. This will include not only the "easy to scan patient", but also the minimally difficult to scan patient.
- Student will recognize varying respiratory patterns in the IVC in the subcostal window, and apply these patterns to giving an estimation of RA pressure.
- Students will recognize common abnormal m-mode patterns, such as LAE, LVE, RVE, LVH, decreased mitral leaflet mobility, aortic leaflet calcification and decreased mobility.
- Student will demonstrate ability to take a visual look at the echo and recognize its attributes to being a normal vs abnormal study.

Weeks 8-15

- All of the above objectives for weeks 1-6.
- Student will continue to apply their knowledge and skills for patient care and communication.
- Student will continue to help sonographer in any way possible; such as patient transfer, portable scanning, and department maintenance.
- Continued confidence in scanning
- Student will be more proficient in Doppler and formulas, and acquire the ability to perform these calculations more independently
- Student will recognize wall motion abnormalities and decreased global systolic function.
- Student will perform wall motion index studies if the clinical site performs this task.
- Student will always remain professional and possess a positive attitude toward themselves, coworkers, physicians, and most important---the patients

DMS 244 Clinical III Weeks 1-8

- Continue to practice and perfect objectives assigned to them in DMS 142 Clinical I, and DMS 148 Clinical II.
- Scan all TTE's with minimal assistance.
- Recognize and label abnormal patterns of the ECG
- Continue to recognize and acquire the routine imaging planes and anatomy for the complete echo. This will include all types of patients, including the 'difficult to scan' patient.
- Explain the abnormal appearances of the M-mode
- Analyze reasons for differences in the M-mode exam vs the 2D exam
- Evaluate and explain cardiac hemodynamic information using Color Doppler
- Explain procedure for evaluation of diastolic dysfunction

- Recognize abnormal cardiac appearance and pathology: right and left chamber enlargement, LVH, cardiomyopathies, tumors or masses, ASD, VSD.
- Perform independently, the Doppler and Color Doppler application for calculation of aortic and mitral stenosis, and all valvular insufficiencies. These include pressure half time, deceleration time, Bernoulli and continuity equation.
- Demonstrate knowledge of normal Doppler values for valvular flow
- Recognize varying respiratory patterns in the IVC in the subcostal window, and apply these patterns to giving an estimation of RA pressure.
- Assist the physician and/or the sonographer during the stress echo and TEE procedure.
- Demonstrate knowledge of the reasons "why" the stress echo or TEE is performed.

Weeks 8-15

- Continue performance of the above objectives for weeks 1-8.
- Student will continue to apply their knowledge and skills for patient care and communication.
- Student will continue to help sonographer in any way possible; such as patient transfer, portable scanning, and department maintenance.
- Student will demonstrate continued confidence in scanning
- Student will demonstrate entry level skills for their 2D and M-mode scanning
- Student will demonstrate entry level skills in routine Doppler/Color interrogation and calculation of formula
- Student will apply information and knowledge of additional pathological cardiac states as learned in DMS 240.
- Student will always remain professional and possess a positive attitude toward themselves, coworkers, physicians, and most important---the patients

CARDIAC SONOGRAPHY ASSOCIATE DEGREE SCHEDULE

1st Year - Gen-Ed Core

Winter 15 Weeks

HOC 130	Introduction to Health Occupation	3 credits
BIO 132	Human Biology	4 credits*
ENG 131	Writing Experience	3 credits
PHY 131/145	General Physics	4 credits
		14 credits

Spring 15 Weeks

MAT 131	Intermediate Algebra	4 credits
DMS 100	Intro to Diagnostic Medical Imaging	3 credits
MOA 120	Medical Terminology	3 credit
		10 credits

Fall 15 Weeks

DMS 104	Intro to Sonographic Instrumentation	3 credits
HUM 131	Cultural Connections	3 credits
PSY 140	Introduction to Psychology	4 credits
COM 231or 240	Communications, Speech	3 credits
		13 credits

2nd Year - Echo Core

Winter 15 Weeks

DMS 140	Echo Orientation and Technique	3 credits
DMS 141	Adult Echo I	4 credits
DMS 142	Echo Clinical I	2 credits
DMS 196	Intro to Cardiac Clinical	5 credits
		14 credits

Spring 15 Weeks

DMS 144	Cardiovascular Principles	3 credits
DMS 148	Echo Clinical II	7 credits
DMS 206	Sonographic Instrumentation	4 credits
		14 credits

Fall 15 Weeks

DMS 240	Adult Echo II	4 credits
DMS 244	Echo Clinical III	6 credits
		10 credits

*Or BIO 132, or BIO 253 and 254

Required Texts

- Reynolds, Terry, *The Echocardiographer's Pocket Reference*, Fourth Edition 2013, ISBN 978-0615768359, Arizona Heart Foundation.

- Otto, Catherine M. *Textbook of Clinical Echocardiography*, Sixth Edition 2018, ISBN 978-0323480482, Elsevier Saunders. www.elsevier.com
  *Textbook Zero! This textbook is available in a digital format from amazon.com (Kindle). You can also check with the JC bookstore or your local library regarding possible digital formats.

- Anderson, Bonita, Echocardiography, *The Normal Examination and Echocardiography Measurements,* Third Edition 2017, ISBN 978-0992322212, MGA Graphics, Australia, www.echotext.com, www.amazon.com

- Harry, Mark J. *Essentials of Echocardiography: An Illustrative Guide*. Fourth Edition 2013, ISBN: 978-0989428002, Cardiac Ultrasound Consulting. www.cardiotextpublishing.com

- Feigenbaum, Armstrong, Ryan, *Feigenbaum's Echocardiography*. Eighth Edition 2010, ISBN 978-1451194272, Lippincott Williams & Wilkins.
  *Textbook Zero! E-book (Kindle) option available. www.amazon.com

CLINICAL SCHEDULE 2019

Winter semester 2019 Three (3) 8.5* hour days per week x 3 weeks and four (4) 8.5 hour days x 5 weeks.	March 25 thru May 29 Total **280 hrs**

*Student may count only 8 hrs daily. Cannot include **.5** hr lunch into clinical hrs.

Spring semester 2019 Four 8.5 hour days per week x 15 weeks	May 30 thru September 2 Total **424 hours**

Fall semester 2019 Four 8.5 hour days per week x 15 weeks	September 3 thru December 13 Total **464 hours**

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Total clinical hours = 1168 (vacation and sick days included)

Holidays

Memorial Day, July 4, Labor Day, Thanksgiving and day after.

DIDACTIC COURSES

Jackson College
DMS 140 Sonographic Orientation and Technique
3 Credit hours
Online Delivery
Winter 2019

Students should not hesitate to contact me as needed. The best method is through the JC email. I will reply within 24-36 hours unless notice is otherwise given.

Course Description

In this course, students learn the principles of application of ultrasound as it pertains to the echocardiographic exam. Topics of study include: windows and views, anatomy and physiology of the heart and great vessels, Doppler techniques, nomenclature of cardiac structures per ASE guidelines, LV assessment and function, as well as clinical indications for the echo. These studies are for preparation of applying correct techniques in the acquisition of sonographic cardiac images.

Prerequisite(s)

Acceptance into the program.

Co-requisite(s)

DMS 141, DMS 142, and DMS 196

Course Goals

The philosophy of the Cardiac Sonography Program is unified by common goals, which include thoughtful intentional course design, role modeling, and classroom and clinical experiences that provide the student with the knowledge, skills, and attitudes of an entry-level cardiac sonographer. The educational process conveys caring for the whole person and promotes a balance of knowledge, technical skills, spiritual awareness, emotional intelligence, and physical health in performing professional services. The program has set common goals for students that include but are not limited to the following **program goals**:

- Prepare students through a comprehensive, quality curriculum to become competent entry-level cardiac sonographers.
- Provide students with a program that meets or exceeds professional standards and guidelines of CAAHEP accreditation.
- Prepare students for successful completion of American Registry for Diagnostic Medical Sonographers (ARDMS) credentialing exams.
- Encourage and prepare students to be analytical thinkers.

- Prepare students for employment as staff cardiac sonographers within current and future healthcare systems.
- Prepare and assist students for transfer into four-year institutions and baccalaureate completion options.
- Prepare students to be caring and effective communicators within healthcare delivery systems and among patients of normal and altered states, other healthcare team members and paraprofessionals.
- Help students become safe, knowledgeable, caring health professionals
- Prepare students to appropriately respond efficiently and effectively to emergency situations.
- Encourage students to care for their patients and themselves as whole persons with physical, emotional and mental needs.

- Prepare students to be active contributing participants in professional organizations and their community.

Course Objectives

- Demonstrate knowledge of cardiac windows and views
- Describe the events of the cardiac cycle
- Explain how Doppler has its purpose in the echocardiogram

Textbook

- Reynolds, Terry, *The Echocardiographer's Pocket Reference*, Fourth Edition 2013, ISBN 978-0615768359, Arizona Heart Foundation.
- Otto, Catherine M. *Textbook of Clinical Echocardiography*, Sixth Edition 2018, ISBN 978-0323480482, Elsevier Saunders. www.elsevier.com

  *Textbook Zero! This textbook is available in a digital format from amazon.com (Kindle). You can also check with the JC bookstore or your local library regarding possible digital formats.
- Anderson, Bonita, Echocardiography, *The Normal Examination and Echocardiography Measurements,* Third Edition 2017, ISBN 978-0992322212, MGA Graphics, Australia, www.echotext.com, www.amazon.com
- Harry, Mark J. *Essentials of Echocardiography: An Illustrative Guide*. Fourth Edition 2013, ISBN: 978-0989428002, Cardiac Ultrasound Consulting. www.cardiotextpublishing.com
- Armstrong, Ryan, *Feigenbaum's Echocardiography*. Eighth Edition 2018, ISBN 978-1451194272, Lippincott Williams & Wilkins.

  *Textbook Zero! This textobook is available in a digital format from www.amazon.com E-book (Kindle) option available and through the JC Bookstore.

Grading Procedure

ONLINE QUIZZES, TESTS, EXAMS: You must have a reliable internet connection to be successful in this course. If you do have Internet problems, you will need to take your assessments at the JC testing center, local library, or a college-testing center near you. Tests, quizzes and exams cannot be reset if

you should lose your connection while taking your exam. The resetting of exams diminishes the integrity of the exam. If you have any questions regarding this, please speak to me ASAP.

5 quizzes total	129 pts
Vocabulary	10 pts
Vocabulary II	10 pts
Article Quizzes	65 pts
LV worksheet	15 pts
Doppler worksheet	32 pts
Harry Questions	25 pts
Code of Ethics	10 pts
Mid-Term	219 pts
Final	250 pts
Test	99 pts
Total	864 pts

Grading Scale

GPA	GRADE RANGE
4.0	95-100%
3.5	90-94%
3.0	84-89%
2.5	80-83%
2.0	75-79%
1.5	70-74%

1.0 65-69%

Failure

GRADE POLICY: STUDENT MUST RECEIVE A 2.0 OR HIGHER IN ALL CORE CURRICULUM COURSES TO REMAIN IN THE PROGRAM. STUDENTS WHO EARN BELOW A 2.0 WILL BE UNABLE TO CONTINUE FURTHER COURSEWORK AND WILL BE REMOVED FROM THEIR CLINICAL EDUCATION CENTER.

A 2.0 is a passing grade. Only courses with passing grades count toward graduation. Other colleges transfer in only courses with passing grades. Many financial aid sources, including most employers, require passing grades. Additionally, earning less than a 2.0 in a class results in not being able to participate in the next level of courses in a discipline that requires this course as a prerequisite. If you attempt to register for the next course sequence and have not passed the prerequisite course, you will be dropped from that class.

Academic Honesty Policy

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

Plagiarism is defined as the failure to give credit for the use of material from outside sources. Plagiarism includes but is not limited to:

1. Submitting other's work as your own
2. Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
3. Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

Cheating is defined as obtaining answers/material from an outside source without authorization. Cheating includes, but is not limited to:

1. Plagiarizing in any form
2. Using notes/books/electronic material without authorization
3. Copying
4. Submitting others' work as your own or submitting your work for others
5. Altering graded work
6. Falsifying data
7. Exhibiting other behaviors generally considered unethical
8. Allowing your work to be submitted by others

Course Management

If a student feels they are struggling or may be unable to complete the course, they must contact the instructor/program director as soon as possible to discuss options for moving forward in the program.

Grades will be changed only for incomplete grades or faculty/clerical error. The last grade earned will be used in computing a student's cumulative grade point average. All grades will remain on the student's academic records and any grade not used to compute a student's GPA will be designated. The complete credit hours will be counted only once for each degree/certificate purposes.

The DMS student must complete all course/program requirements for graduation within a maximum of two (2) years.

Makeup Policy

No late assignments will be accepted unless prior arrangements have been made**.**

Help

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the office of Learning Support Services at 787-0800, extension 8415 as soon as possible to ensure that such accommodations are implemented in a timely fashion.

It is important to contact a Center for Student Success professional prior to the start of the semester in order to receive accommodations in a timely manner. While we will make every effort to coordinate accommodations in a timely manner, failure to self-identify prior to the start of the semester may delay notification to instructors and timeliness of acquiring accommodations. Accommodations do not automatically carry over to the next semester.

https://www.jccmi.edu/center-for-student-success/accommodations-for-students-with-disabilities/

Calendar

Reading assignments should be completed prior to each week's lesson in order to maximize learning. See JetNet for assignment instructions and due dates. Reading assignments and/or assessments may be modified to enhance student learning.

***Syllabus is subject to modification as needed throughout the course. See JetNet for assignment instructions and due dates. Reading assignments and/or assessments may be added to enhance learning.*

WEEK #	DATE	TOPIC	HOMEWORK
1	Jan 14 - 20	Intro to Echo (History) Windows and Views	*Otto* 10-13, 33-52, *Feig* 1-8, 91-114, 120, *Anderson* 33-70, *Reynolds* 321-322

			Introduce yourself on JetNet View videos ***Vocabulary Part I – DUE JAN 20***
2	Jan 21 -27	Windows and Views-more Anatomy on 2D images Wall segment introduction	View videos, ppt. and all links ***Quiz 1 – DUE JAN 27***
3	Jan 28 – Feb 3	M-mode	*Harry* (M-mode images on these pages. Use accompanying images for correlation) pgs 73, 75, 76, 77, 84. *Otto* 49-53, *Anderson* 71-81, *Reynold's* 318-320, View all videos and links. ***Quiz 2 – DUE FEB 3***
4	Feb 4 - 10	Assessment left chambers ASE Wall Segments	*Anderson* 187-189, *Otto* 144-163 *Harry* 43, 90, 91, *Feig* 123-128 ***LV Worksheet and Test I – DUE FEB 10***
5	Feb 11 - 17	Machine knobology Doppler	*Anderson* 10-18, 83-95, 97-103, 105-128, *Harry* 23-29 Cardiac Articles & Quizzes ***Vocabulary Part II – DUE FEB 18***
6	Feb 18 - 24	Doppler and the Doppler exam	*Anderson* 83 – 103 ***Doppler Worksheet and Quiz 3 – DUE FEB 24***
7	Feb 25 – Mar 3	Color Doppler, Clinical Indications for the Echo Patient care, Quality assurance and Clinical prep	*Otto* 61-65 (including tables), 120 – 130, 133 – 141 (including tables), *Anderson* 129 – 137, Review for Midterm, Review ASE Documents

8	Mar 4 - 10	Midterm	Midterm Exam
9	Mar 11 - 17	Winter Break	***Cardiac Quizzes - DUE MARCH 17***
10	Mar 18 - 24	Diastology-Filling and Function Intro to Stress Echo Code of Ethics	*Anderson* pgs. 295-315, *Harry* 219-229 (PDF link), *Reynold's* Handbook 177-188, 367-376, *Feigenbaum* 159-175, *Otto* 178-198, 200 - 202 ***Quiz 4 – DUE MARCH 24*** ***Harry Diastology Assignment 230-237 (pdf link) (assignment due following week)***
11	Mar 25 - 31	TEE SDMS Code of Ethics	*Otto* 67-93, *Feig* 114-120 ***Harry Diastology Assignment – DUE APRIL 1***
12	April 1 - 7	Terms and Definitions HIPAA	
13	April 8 -14	ECG	See PowerPoint Lesson ***Quiz 5 – DUE APRIL 14***
14	April 15 - 21	Assessment Techniques for LV Systolic Function WRMSDs and Sonography, Sonographer Responsibilities	It's Everyone's Responsibility PDF
15	April 22 - 28	Final Exam Review	Study Guide, BBB Review Session
16	April 29 –May 5	Final Exam	***Proctored Final Exam – Opens April 24 and closes May 3***

Important Dates: Winter 2019

DATE	EVENT
JAN 14, 2019	DAY AND EVENING CLASSES BEGIN
JAN 14 – MAY 5, 2019	SEMESTER DATES
FEBRUARY 1, 2019	IN-SERVICE DAY. NO CLASSES
	PATHWAY SHOWCASES DAY. NO CLASSES
MARCH 11 – 15, 2019	WINTER BREAK. NO CLASSES
MAY 5, 2019	END OF FALL SEMESTER
MAY 7, 2019	GRADES DUE

Student Responsibilities

To be available and ready for each session to cover the necessary topics and to demonstrate their ability to meet performance objectives. It is expected by the instructor that all assignments and readings will be completed on time prior to class so that the student may have the best opportunity to understand the lecture material and make inquiries of difficult topics. The very nature of this program makes it very difficult for one to catch up once they have gotten behind.

It is also the student's responsibility to possess a secure Internet connection for testing purposes. If the students' ISP kicks them off the Internet during a test, the student will not be allowed to take test again and will receive a zero for that test. Students can find secure Internet connection at their local library or community college.

Expectations and Requirements of Students

Courtesy toward everyone (instructor and fellow students) is expected and will be monitored and maintained at all times. Online forums are a place for learning, sharing, and communication with one another. If there is disagreement, that's fine, but we handle it with professionalism and courtesy.

Instructor Responsibilities

To facilitate learning, provide and explain the necessary materials for each student to understand the assignments and develop course performance objectives to a near mastery level.

Attendance Policy

In compliance with Federal Title IV funding requirements, as well as college initiatives, reporting of student participation in classes will occur at three designated times each semester. Instructors will assign

one of three non-transcripted letter symbols to each student during each reporting period (see below). Students identified as no longer participating will be dropped or administratively withdrawn from the class, and students identified as needing academic assistance will be contacted.

Participation/Progress Symbols

- H – The student is not doing acceptable work and needs **H**elp to be successful.
- Q – The student has not participated and the instructor believes they have unofficially withdrawn (**Q**uit). These students will be dropped/withdrawn from the class.
- V – The instructor **V**erifies that the student is participating and doing acceptable work.

Jackson College
DMS 141 Adult Echo I
4 Credit hours
Online Delivery
Winter 2019

Course Description

In this course, students learn fundamentals of the cardiac pressures, cardiac cycle, and the cardiac conduction system. Studies include: cardiac valves - normal and abnormal conditions, flow abnormalities, and physiological complications from these conditions. These studies are for preparation of applying correct techniques in the acquisition of sonographic cardiac images.

Prerequisite(s)

Acceptance into the program.

Co-requisite(s)

DMS 140, DMS 142 and DMS 196

Course Objectives

- Demonstrate understanding of fundamental of the ECG and its patterns
- Describe mitral and aortic valve normal and abnormal conditions
- Recognize valve regurgitation
- Describe the process to perform the complete echocardiographic exam

Grading Procedure

ONLINE QUIZZES, TESTS, EXAMS: You must have a reliable internet connection to be successful in this course. If you do have Internet problems, you will need to take your assessments at the JC testing

center, local library, or a college-testing center near you. Tests, quizzes and exams cannot be reset if you should lose your connection while taking your exam. The resetting of exams diminishes the integrity of the exam. If you have any questions regarding this, please speak to me ASAP.

4 quizzes	75 pts.
Mitral Worksheet	25 pts.
2 tests at approx 100 pts. each	198 pts.
1 mid-term exam	191 pts.
1 final exam	222 pts.
Mark Harry x 2	20 pts
Total points possible	731 pts.

Grading Scale

GPA	GRADE RANGE
4.0	95-100%
3.5	90-94%
3.0	84-89%
2.5	80-83%
2.0	75-79%
1.5	70-74%
1.0	65-69%

Calendar

Reading assignments should be completed prior to each week's lesson in order to maximize learning. See JetNet for assignment instructions and due dates. Reading assignments and/or assessments may be modified to enhance student learning.

***Syllabus is subject to modification as needed throughout the course. See JetNet for assignment instructions and due dates. Reading assignments and/or assessments may be added to enhance learning.*

WEEK #	DATE	TOPIC	HOMEWORK
1	Jan 14 - 20	Orientation, Anatomy of the chest and heart. Cardiac cycle	No reading this week ***Quiz 1 – DUE JAN 20***
2	Jan 21 - 27	Cardiac Conduction	Harry pgs 15-16, 20, & 22 ***Quiz 2 – DUE JAN 27***
3	Jan 28 - Feb 3	Systole and Diastole, Normal cardiac physiology, and Coronary vessels.	
4	Feb 4 - 10	Catch up and odds and ends Review pressures, diastole, systole, IVRT, IVCT, Wigger's Diagram. Coronary arterial and venous circulation.	***Test I – DUE FEB 10***
5	Feb 11 - 17	Valves, M-mode and 2D	*Anderson* 75-81, *Otto* 36-49 and images, *Feigenbaum* DVD (see instructions in lesson), View all videos please.
6	Feb 18 - 24	The complete Exam and Regurgitation (what is it and what does it look like)	*Anderson* 33-81 *Harry* 72-104
7	Feb 25 - Mar 3	Aortic Valve Aortic Stenosis	*Otto* 288-305, *Feigenbaum* 263-280, *Mark Harry* 105-113, 115-120, *Mark Harry* PDF extra reading on JetNet ***Quiz 3-Aortic WS DUE MAR 3*** ***Case studies on Harry AS Worksheet. (skip 21,22 on pg145) – DUE MAR 3***

8	Mar 4 - 10	Midterm	***Midterm Exam – DUE MAR 10***
9	Mar 11 - 17	Winter Break	
10	Mar 18 - 24	Continue week of Aortic Valve and Aortic Stenosis	***Quiz 4 – DUE MAR 24***
11	Mar 25 - 31	Mitral Valve Part I	*Otto* 305-315, 324-336, 345-359, *Anderson* 244-247, *Feig* 295-310, 330-335, *Harry* 149-161 ***Mitral WS and Mark Harry Q&A WS - DUE MAR 31***
12	April 1 - 7	Mitral Valve Part II	***Test II – DUE APRIL 7***
13	April 8 - 14	Regurgitation, Prolapse and Pressures	*Otto* 296-297, *Feigenbaum* 310-326 Images and captions, *Feigenbaum* 280-293 Images and captions, *Feigenbaum* 326-330 *Harry* 121-125, 127-133, 163-169, 171-176
14	April 15 - 22	ASE Guidelines for Native Valvular Regurge Webinar and ASE MR in MVP Case presentation	
15	April 22 - 28	Review for Final Exam	***BBB Review Session - TBD***
16	April 29 – May 5	Final Exam	***Proctored Final Exam – Opens April 24 and closes May 3***

DMS 144 Cardiovascular Principles
3 Credit hours
Online Delivery
Spring 2019

Course Description

This course is a study of cardiac anatomy and physiology, cardiac hemodynamics, principles of Doppler, and ECG interpretation. Problem solving, evaluation, and echo interpretation will be emphasized in this

course. This course contains materials and instruction that will prepare the student in meeting the program's final objective of independent performance and evaluation of the complete adult echocardiogram.

Prerequisite(s)

DMS 140, DMS 141

Co-requisite(s)

DMS 148

Course Objectives

- Describe various cardiac pathologies and their effect on the heart and state of health of the patient.
- Describe the correlation between auscultation findings with cardiac hemodynamic abnormalities.
- Explain how normal and abnormal hemodynamic situations affect cardiac physiology.

Grading Procedure

You must have a reliable internet connection to be successful in this course. If you do have internet problems, you will need to complete your assessments at the JC testing center, local library, or a college testing center near you. Tests, quizzes and exams cannot be reset if you should lose your connection while taking your exam. The resetting of exams diminishes the integrity of the exam. If you have any questions regarding this, please speak to me ASAP.

Grading System

Quiz 1	32 pts
Quiz 2	24 pts
Quiz 3	36 pts
Quiz 4	22 pts
Quiz 5	30 pts
Test I	136 pts
Test II	107 pts

Test III	100 pts
Harry AR Worksheet	27 pts
Harry Rt Heart Worksheet	14 pts
CAD Worksheet	33 pts
Q & A Worksheet	25 pts
Color Doppler Worksheet	25 pts
Total points	611 pts

ONLINE QUIZZES, TESTS, EXAMS: You must have a reliable internet connection to be successful in this course. If you do have Internet problems, you will need to complete your assessments at the JC testing center, local library, or a college testing center near you. Tests, quizzes and exams cannot be reset if you should lose your connection while taking your exam. The resetting of exams diminishes the integrity of the exam. If you have any questions regarding this, please speak to me ASAP.

Grading Scale

GPA	GRADE RANGE
4.0	95-100%
3.5	90-94%
3.0	84-89%
2.5	80-83%
2.0	75-79%
1.5	70-74%
1.0	65-69%

Calendar

Reading assignments must be completed prior to each class to maximize learning.

***Syllabus is subject to modification as needed throughout the course. See JetNet for assignment instructions and due dates. Reading assignments and/or assessments may be added to enhance learning.*

WEEK #	DATE	TOPIC	HOMEWORK
1	May 23	Aortic Insufficiency, Tricuspid and Pulmonic Regurgitation	Otto 318-325, 335-339. Anderson 249-275, pg 121 'Doppler Examination of the Descending Aorta, pg 73 Fg 3.5 Feigenbaum 280-292, 348-353, 232 top image. This reading is put together better than what Otto did for AI. You should view images, captions and video clips found within this reading. Mark Harry all of Chapter 7 Lesson 1 – Read Harry AR PDF pg 147-166. Work AR Case Study WS questions 1-13, 21-24, 29-36, 46-47 ***DUE JUNE 3*** ***Quiz 1 – DUE JUNE***
2	May 28	Pulmonary Hypertension	Otto 155-160 (no alternate appr), 247-250, 296 Pulmonary HTN, 298-301 Feigenbaum 752 -757 Harry RT Heart PDF pg 101-106 Questions 6-8 on pg 115 and Questions 20-30 on pgs 120-122 - ***DUE JUNE 3*** ***Quiz 2 - DUE JUNE 3***
3	June 4	Coronary Artery Disease Myocardial Infarction Cardiac Catheterization	Otto 197-207, 209-217 Feigenbaum 427-436, 438-445, 448-471, 473-493. Feigenbaum Images, captions, and video clips.

		Stress Echo I	It is to your benefit that you watch the DVD video clips during your reading. ***Worksheet CAD - DUE JUNE 10*** ***Quiz 3 - DUE JUNE 10***
4	June 11	Heart Sounds/Auscultation	Website: http://www.blaufuss.org/tutorial/# Follow through with the Heart Sounds Tutorial ***Quiz 4 – DUE JUNE 17***
5	June 18	Test I	***Test I*** – ***DUE JUNE 24***
6	June 25	Embryology Adult Congenital ASD, VSD Cardiac Physiology	Otto 443-472 Feigenbaum 585-602, All images, captions and video clips Quiz 5 – ***DUE JULY 1***
7	July 2	Hemodynamics I Doppler Characteristics of Flow	***Q & A Worksheet - DUE JULY 8***
8	July 9	Test II	***Test II – DUE JULY 15***
9	July 16	Hemodynamics II Wall motion detection	Anderson page 129 and 203 – 210 ***Color Doppler Worksheet - DUE JULY 22***
10	July 23	Related Modalities	Videos, Q and A, Review
11	July 30	TBA	
12	August 6	Test III	***Test III – DUE August***

Jackson College
DMS 240 Adult Echo II
4 Credit Hours
Online Delivery
Fall 2019

Course Description

In this course, students will focus their studies on the abnormal heart. Valvular disease, coronary artery disease, diseases of the myocardium, cardiac masses and tumors. Pericardial disease, and diseases of the aorta are some of the topics to be studies. Students will learn the various appearances of congenital heart disease in the adult heart. This advanced course contains materials and instruction that will assist the student in meeting the final objective of independent performance and evaluation of the complete adult echocardiogram.

Prerequisite(s)

DMS 144

Co-requisite

DMS 244

Course Objectives

- Describe various cardiac pathologies and their effect on the heart and state of health of the patient.
- Describe the correlation between auscultation findings with cardiac hemodynamic abnormalities.
- Explain how normal and abnormal hemodynamic situations affect cardiac physiology.

Grading Procedure

You must have a reliable internet connection to be successful in this course. If you do have internet problems, you will need to complete your assessments at the JC testing center, local library, or a college testing center near you. Tests, quizzes and exams cannot be reset if you should lose your connection while taking your exam. The resetting of exams diminishes the integrity of the exam. If you have any questions regarding this, please speak to me ASAP.

GRADING SYSTEM:
Quiz 1 = 40 pts
Quiz 2 = 22 pts
Quiz 3 = 10 pts
Quiz 4 = 32 pts
Quiz 5 = 25 pts
Quiz 6 = 10 pts
Harry Assignment at 10 pts.
1 Test at 55 pts
1 Midterm (part I) Case Video Worksheet at 25 pts.
1 Midterm (part II) exam at 166 pts

1 Final Exam at 292 pts

Total points – 687 pts

Grading Scale

GPA	GRADE RANGE
4.0	95-100%
3.5	90-94%
3.0	84-89%
2.5	80-83%
2.0	75-79%
1.5	70-74%
1.0	65-69%

Calendar

Reading assignments must be completed prior to each class to maximize learning.

***Syllabus is subject to modification as needed throughout the course. See JetNet for assignment instructions and due dates. Reading assignments and/or assessments may be added to enhance learning.*

WEEK #	DATE	TOPIC	HOMEWORK
1	September 3-9	Cardiomyopathy; Dilated and Hypertrophic	Otto pgs 221-238, 508, 515, 517-518 Otto LV non-compaction pg, 241 and figure 9-29 Feigenbaum pgs 507-537, 539-554, Feigenbaum Images and Video Clips pgs 507-537, 539-554
2	September 10-16	Cardiomyopathy; Restrictive	Otto pgs 238-241, Ischemic CM pgs 216-217 Feigenbaum pgs 554-560 including images and videos on DVD

		Hypertensive Heart Disease, Pulmonary Hypertension, Pulmonary Heart Disease	Otto pgs 231-234, 235-238 ***Harry HCM Reading Assignment and Questions Due September 16th*** ***Quiz 1 Myopathies and Pulmonary Heart Disease Due September 16th***
3	September 17-23	Test I	***Test I Due September 23rd***
4	September 24-30	Pericardial Disease	Otto pgs 254-268, 519 Feigenbaum pgs 241-261 including images and videos ***Quiz 2 Pericardial disease Due September 30th***
5	October 1-7	Cardiac Tumors and Masses Endocarditis	Otto pgs 395-414, 531-432 Feigenbaum pgs 711-738 including images videos on DVD Otto pgs 372-391 Feigenbaum pgs 361-383 including images and videos on DVD
6	October 8-14	Congenital Heart Disease and Evaluation of the adult with CHD	Otto pgs 443-472, 535 Feigenbaum pgs 561-632 ***Quiz 3 CHD*** ***Due October 14th***
7	October 15-21	Midterm Exam	***Part I Case Video #4 Worksheet and Part II Midterm Exam*** ***Due October 21st***
8	October 22-28	Cardiac Transplantation and LVAD	Cardiac Transplantation Otto pgs, 243-245 Feigenbaum pgs 527-530 including images and videos on DVD Cardiac Transplantation Feigenbaum 538-540 LVAD Otto pgs 242-243, Feigenbaum pgs 530-534 including images and videos on DVD
9	October 29-Nov 4	Prosthetic Heart Valves	Otto pgs 342-369, 526-527

			Feigenbaum pgs 385-420 including images and video on DVD ***Quiz 4 Prosthetic Valves and Cardiac Transplant*** ***Due November 4th***
10	November 5-11	Diseases of the Great Vessels	Otto pgs 418-440 Feigenbaum pgs 633-664 including images and video on DVD ***Quiz 5 Diseases of Great Vessels*** ***Due November 11th***
11	November 12-18	TEE, Ultrasonic Enhancing Agents, Clinical Indications for Echo, Cardiac Resynchronization Therapy (CRT), ICE, Point-of-Care	TEE - Otto pgs 65-87 UEAs - Otto pgs 103-108 Clinical Indications for Echo - Otto pgs 112-123 CRT - Feigenbaum pgs 523-527 ICE - Otto pg 105-108 Point-of-Care-Handheld - Otto pgs 108-109 **Q & A**
12	November 19-25	Right Heart	Otto pgs 150-160, 183-187
13	November 26-Dec 2	3D Echo, Strain and Strain Rate	3D Echo - Otto pgs 90-98, Feigenbaum pgs 55-61, 131-133 Strain - Otto pgs 98-102 Anderson pgs 287-293 Feigenbaum pgs 148-156, 437-438 and figure 16.23 ***Quiz 6 Strain*** ***Due December 2nd***
14	December 3-9	Review, Study for Final	Big Blue Button Session TBA
15	December 10-18	Final Exam	***FINAL EXAM – Part I and II (both exams open December 3rd)*** ***Due December 18th***

Jackson College
Cardiac Sonography Program
Clinical Log Sheet **Name:**

DATE	EXAM e.g. TTE, TEE, Contrast, etc.	Observed	Pre/Post Scanned	With Assistance	Independent	PATHOLOGY

JACKSON COLLEGE
CARDIAC SONOGRAPHY 2018
CLINICAL TIME OFF FORM

Student name _____ Date _____

Date of absence (sick) _____

Scheduled absence (Vacation) _____ Four weeks prior notice required.

Semester: DMS 142 _____ DMS 148 _____ DMS 244 _____

Clinical Education Center _____

Reason for Absence:

_____

_____

Is this the first absence in this semester? _____Y _____ N

Is this the first clinical absence this year? _____Y _____ N

This is my 1st 2nd 3rd 4th 5th 6th 7th absence this calendar year.

If not the first absence in this semester, state plans for make-up day _____

_____

_____

Student's signature _____

Student name (print) _____

Clinical Instructor signature _____

Clinical Instructor name (print) _____

This Clinical Manual for Clinical Site Instructors and students of the Jackson College Cardiac Sonography Program shall not take the place of the Diagnostic Medical Sonography Handbook that is given to students of all DMS Programs. Upon situations where policies are duplicated, the policy in **this** manual shall take precedence.

Student Acknowledgement of Receipt of the DMS Cardiac Clinical Manual

I hereby acknowledge that I have received, read and understand the Jackson College DMS Cardiac Clinical Manual. I further agree to follow all policies and procedures within the manual.

I understand while attending the clinical site of the DMS Cardiac program, I am expected to follow all reasonable rules and regulations of policies and procedures of the assigned clinical site.

I understand that failure to abide by these rules and regulations may result in dismissal from the DMS Cardiac Sonography program.

DATE: _____

NAME: _____

SIGNATURE: _____

This acknowledgement form needs to be completed and submitted to the Allied Health Office (JW 231) within **ten days after receipt** of the DMS Student Handbook.