

JACKSON COLLEGE DMS-206 SONOGRAPHIC INSTRUMENTATION COURSE SYLLABUS
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INSTRUCTOR:**SANDRA BROWN MA, RDMS, RVT**

University of Michigan Health System

E-mail: sabr@med.umich.edubrownsandral@jccmi.edu

Phone: 734-647-2319 (O) or 517-768-7351 (H)

COURSE DESCRIPTION: Students explore the mechanics of A-mode, B-mode, M-mode, Doppler, and real time equipment. Accessory equipment such as cameras, transducers, phased, annular and linear arrays, and all types of hard copy documentation instruments are investigated. Multiple methods of preventative maintenance and quality control are presented. Laboratory reinforces learning activities.

Pre-requisites Required: MTH 131, DMS 104

TEXTBOOK: ~~TEXTBOOK:~~ Miele, F. Ultrasound Physics & Instrumentation, Fifth Edition, Pegasus Lectures, Inc., Texas 2013. ISBN: 978-0-9885825-0-7

ADDITIONAL TEXT: Edelman, S.K., Understanding Ultrasound Physics, Fourth Edition, ESP, Inc., China 2012 ISBN: 0-9626444-5-5.

Office Hours:

The best way to contact me is via e-mail, message area or my virtual office. For urgent matters please call.

Center for Student Success: Tutors (plus additional services for academic success) can be accessed by calling 796-8415 or by stopping by the Center for Student Success, Bert Walker Hall Room 123. Students requiring special assistance (including those affected by the Americans with Disabilities Act) should contact the Center for Student Success. This is the first step in acquiring the appropriate accommodations to facilitate your learning.

SCHEDULE OF ASSIGNMENTS**SESSION 1****Take Test 1 by 6/3/18**

Lesson: Mathematics

Chapter 1 Level 1

Chapter 1 Level 2

Reading Assignment: p. 1-6, 497-524

Do Exercises: 2.1, 3.1, 6.1, 7.2, 8.1, 8.3, 9.3, 9.6, 9.8, 9.11, 9.12, 11.1, 12.3, 15.2, 15.3

Study Lecture Notes

SESSION 2**Take Test 2 by 6/24/18**

Lesson: Waves

Chapter 2 Level 1

Chapter 2 Level 2

Reading Assignment: read pages: 7 - 42

Do Exercises: 10, 13.7, 14.3

Conceptual Questions: 4, 7, 9, 10

Study Lecture Notes

SESSION 3**Take Test 3 by 6/24/18**

Lesson: Attenuation

Chapter 3 Level 1

Chapter 3 Level 2

Reading Assignment: read pages: 43 - 73

Do Exercises: 11, 12

Conceptual Questions:

Study Lecture Notes

Complete Lab Assignment 1 in Course Documents

SESSION 4**Take Test 4 by 6/24/18**

Lesson: Pulsed Wave Operation

Chapter 4 Level 1

Chapter 4 Level 2

Reading Assignment: read pages: 75-98

Do Exercises: 13

Conceptual Questions:

Study Lecture Notes

SESSION 5**Take Test 5 by 7/8/18**

Lesson: Transducers

Chapter 5 Level 1

Chapter 5 Level 2

Reading Assignment: read pages: 99 - 145

Do Exercises: 11, 28

Conceptual Questions:

Study Lecture Notes

Complete Lab Assignment 2 in Course Documents and Transducer Table (EC)

SESSION 6**Take Test 6 by 7/8/18**

Lesson: System Operation

Chapter 6 Level 1

Chapter 6 Level 2

Reading Assignment: read pages: 147-222

Do Exercises: 7, 26

Conceptual Questions:

Study Lecture Notes

Complete Lab Assignment 3 in Course Documents

SESSION 7**Take Test 7 by 8/15/18**

Lesson: Doppler

Chapter 7 Level 1

Chapter 7 Level 2

Reading Assignment: read pages: 223-274

Do Exercises: 1.8

Conceptual Questions: 5, 33

Study Lecture Notes

Complete Lab Assignment 4 in Course Documents

SESSION 8**Take Tests 8 & 9 by 8/15/18*****Please note 2 lessons this week***

Lesson: Artifacts Chapter 8

Reading Assignment: read pages: 275-300

Conceptual Questions: 8

Study Lecture Notes

Complete Lab Assignment 5 in Course Documents

Lesson: Bioeffects Chapter 9

Reading Assignment: read pages: 301-324

Do Exercises: 7

Conceptual Questions: 14

Study Lecture Notes

Complete Lab Assignment 6 in Course Documents

SESSION 9**Take Tests 10 & 11 by 8/15/18*****Please note 2 lessons this week***

Lesson: Contrast and Harmonics Chapter 10

Lesson: Quality Assurance Chapter 11

Reading Assignment: read pages: 325-347

Reading Assignment: read pages: 349-376

Do Exercises: 12

Study Lecture Notes

Complete Lab Assignment 7 in Course Documents

Complete Lab Assignment 8 in Course Documents

SESSION 10**Take Test 12 by 8/15/18**

Lesson: Physiology & Fluid Dynamics

Reading Assignment: read pages: 377-416, 421-434

Conceptual Questions:

Study Lecture Notes

Complete Lab Assignment 9 in Course Documents

Hemodynamics Assignment 1

SESSION 11**Take Tests 13 & 14 by 8/15/18****Please note 2 lessons this week**

Lesson: Venous Hemodynamics

Reading Assignment: read pages: 417-421

Do Exercises:

Conceptual Questions:

Study Lecture Notes

Complete Lab Assignment 10 in Course Documents

Hemodynamics Assignment 1

Lesson: Vascular Physical Principles

Reading Assignment: read pages: 403-434

Do Exercises:

Conceptual Questions:

Study Lecture Notes

Hemodynamics Assignment 1

SESSION 12**FINAL EXAM Due by 8/15/18 5 pm****GRADING SYSTEM**

Item	Each Worth	Points Available
14 Tests	20 points	280 points
10 Lab Assignments	10 points	100 points
3 Hemodynamics Assignments	10 points	30 points
1 Final Exam	200 points	200 points
Totals		610 points

4.0=95-100%

3.5=90-94%

3.0=85-89%

2.5=80-84%

2.0=75-79%

Lecture: Due to the instrumental differences within each machine, some tangents in lecture are necessary. It is the student's responsibility to make correlations from lecture material to the clinical setting.

Lab Assignments: Each lab assignment is designed to get students familiar with the instrumentation of their ultrasound equipment. Most labs will require many images to explore the knobology. It is the student's responsibility to research the machine and find ALL instrumentation applicable to the lab assignment. Since each machine is different, some students will have different instrumentation to manipulate. It is most beneficial when these labs are performed on the machines at your clinical site to get the most of these assignments.

Instructor's 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.

Student's responsibilities: to be ready 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 so that the student may have the best opportunity to understand the lecture material and make inquires of difficult topics. The very nature of this course makes it very difficult for one to catch up once they have gotten behind.

Expectations and requirements of students: All written assignments are to be emailed or mailed (4947 Ledgerock St. Jackson, MI 49201) to the instructor ASAP.

Academic Honesty Policy Summary:

Academic dishonesty is generally an instructional and teachable opportunity for faculty to guide students and for students to learn from their actions and/or behavior. The Academic Honesty policy provides guidance for determining the level and severity of academic dishonesty, establishes how to track and report violations, and defines consequences to students.

Definitions:

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:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation

- 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:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

Collaboration While JC encourages students to collaborate in study groups, work teams, and with lab partners, each student should take responsibility for accurately representing his/her own contribution.

Consequences/Procedures Faculty members who suspect a student of academic dishonesty may penalize the student by taking appropriate action up to and including assigning a failing grade for the paper, project, report, exam, or the course itself. Instructors should document instances of academic dishonesty in writing to the Dean of Faculty.

Student Appeal Process In the event of a dispute, both students and faculty should follow the Conflict Resolution Policy. This policy is presented in Student Rights and Responsibilities (Student Handbook) and the Master Agreement.

Student Complaints/Academic

A student complaint is any non-civil rights related complaint generated by an individual student concerning the work-related activities of any faculty member (such as grade disputes). Academic Complaints can include, but are not limited to the following: an evaluation of academic work (e.g. grade dispute, exam retakes), failure of a faculty member to follow college policies in the conduct of classes or examinations, etc.

Each student complaint is processed separately unless the instructor involved agrees to meet with multiple students.

The following steps outline the requirements of students, as well as the timeline for the Academic Complaint Process:

1. Student Meets with Instructor

Students must initiate a scheduled conference with the instructor with whom they have a complaint no later than the end of the fourth week of the semester following the relevant incident/dispute. A face-to-face meeting is strongly preferred, but electronic formats that allow for multiple participants are acceptable. One representative, who must be from Jackson College (a current student, instructor or administrator) may be requested by

each party to participate in this scheduled informal meeting. At this conference the student must identify the concern(s) and propose a resolution. If the instructor is no longer employed by the College, the student will meet with the Department chair.

2. Student Puts complaint in Writing

If the conflict isn't resolved in the conference between the student and instructor, the student, if he/she chooses to pursue the matter further must put the complaint in writing using the form provided and submit it to the Student Ombudsman. The complaint should contain (at a minimum): the date and time of the alleged conflict or action, the date and time of the Step 1 meeting, a summary of the complaint along with any relevant documentation and the specific resolution or outcome the student is seeking. The form and any accompanying documentation should be submitted within 10 business days of the Step 1 meeting.

3. Department Chair Holds an Informal Hearing

The Department Chair contact the instructor and student to arrange a meeting within a reasonable timeframe following the guidelines in the faculty manual. The department chair will conduct any necessary investigation prior to the meeting. A face-to-face meeting is strongly preferred, but electronic formats that allow for multiple participants are acceptable. One representative, who must be from Jackson College (a current student, instructor or administrator) may be requested by each party to participate in this scheduled informal meeting. The department chair's role in this meeting is a neutral mediator. The department chair will make a written recommendation within 5 business days from the meeting, the recommendation will be forwarded to the student, instructor and student ombudsman.

4. Complaint Submitted to Dean

If the student or instructor is unsatisfied with the results of the meeting with the department chair, they must request that the Student Ombudsman send the complaint to the supervising Academic Dean. The Student ombudsman will then forward the formal written complaint and any supporting documents, including the Department Chair's written recommendation. The Dean shall promptly provide the instructor and the Association President with a true and complete copy of the student's written statement(s).

5. Dean Holds a Hearing

Within five (5) business days of the time the instructor and the Association should have received the copies of the student's written statement(s), the Dean shall contact the student, instructor and the Association President to arrange a formal hearing. A face-to-face meeting is strongly preferred, but electronic formats that allow for multiple participants are acceptable. Parties of interest shall include the student, the student ombudsman (if the student so desires), the instructor, his/her Association representative and the Department Chair. Other individuals may be present at the hearing but they may not participate in the proceedings.

6. Dean Issues a Resolution

Within five (5) business days after the hearing, the Dean will distribute a written resolution of the complaint to the student, instructor, the Association President and the Student Ombudsman. The written resolution will state the facts as assessed by the Dean and indicate that appropriate action will be taken.

7. Appeal to the Provost

In the event the student or the instructor is not satisfied with the Dean's disposition of the complaint, the disposition may be appealed to the Provost. A Provost appeal will only be considered if it meets one of the following criteria:

- There is substantive new evidence that was not previously available at the time of the Dean's hearing which could have materially affected the outcome.
- There were procedural errors in the case that substantively impacted the fairness of the hearing.

If the student or instructor has grounds for the appeal as delineated above they must submit a letter to the Provost outlining the grounds for their appeal with five (5) business days of the receipt of the supervising Academic Dean's written resolution. The Provost may request all relevant documentation from the supervising academic dean and the student ombudsman. The Provost will decide within five (5) business days of the receipt of all relevant documents whether a formal appeal hearing is warranted.

If the Provost determines that a formal appeal hearing is warranted he/she shall contact the student, instructor, and the Association President to arrange a formal hearing within a reasonable time frame. Parties of interest that may attend the hearing shall include the student, instructor, the student ombudsman (if the student so desires), Association representative and the Department Chair. The provost may include a non-participating Academic Dean in the appeal process. A face-to-face meeting is strongly preferred, but electronic formats that allow for multiple participants are acceptable.

8. Provost issues an Appeals Resolution

Within five (5) days after the hearing, the Provost will distribute a written resolution of the appeal to the student, instructor, the Association president, the supervising Academic Dean and Student Ombudsman. The written resolution will state the facts as assessed by the Provost and indicate that appropriate action will be taken. This the ultimate step in the Academic Student Complaint Process and the decision of the Provost is final.

******Students must have a minimum 2.0 in this course to continue in the DMS program**

Students should be advised that some revisions during the course might be necessary due to school closing policies, facilitator illness or injury, or any other improbable interruptions of the course.