

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.

ADO 7 Rubric for Critical Thinking

1. Students who successfully complete the Sonographic Instrumentation course will demonstrate competencies in all aspects of ultrasound instrumentation. Through exploration in lab assignments.
2. Students who successfully complete the Sonographic Instrumentation course demonstrate competencies in understanding all aspects of signal production and processing and can identify advantages and disadvantages to each method
3. Students who successfully complete the Sonographic Instrumentation course will demonstrate competencies in all aspects of ultrasound instrumentation as it applies to the ALARA principle and benefits versus risk in medical imaging.

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 5/29/16

Lesson: Mathematics

Chapter 1 Level 1

Chapter 1 Level 2

Reading Assignment: read pages

Do Exercises: 1.5, 2.1, 3.1, 6.1, 7.2, 8.1, 8.3, 9.3, 9.6, 9.8, 9.11, 9.12, 11.1, 13.3, 12.3, 15.2, 15.3, 17.2

Study Lecture Notes

SESSION 2

Take Test 2 by 6/5/16

Lesson: Waves

Chapter 2 Level 1

Chapter 2 Level 2

Reading Assignment: read pages Ch2, 7 - 42

Do Exercises: All

Conceptual Questions: All

Study Lecture Notes

SESSION 3

Take Test 3 by 6/12/16

Lesson: Attenuation

Chapter 3 Level 1

Chapter 3 Level 2

Reading Assignment: read pages: 43 - 73

Do Exercises: All

Conceptual Questions: All

Study Lecture Notes

Complete Lab Assignment 1 in Course Documents

SESSION 4

Take Test 4 by 6/19/16

Lesson: Pulsed Wave Operation

Chapter 4 Level 1

Chapter 4 Level 2

Reading Assignment: read pages: 75-98

Do Exercises: all

Conceptual Questions: all

Study Lecture Notes

SESSION 5

Take Test 5 by 6/26/16

Lesson: Transducers

Chapter 5 Level 1

Chapter 5 Level 2

Reading Assignment: read pages: 99 - 145

Do Exercises: all

Conceptual Questions: all

Study Lecture Notes

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

SESSION 6**Take Test 6 by 7/3/16**

Lesson: System Operation

Chapter 6 Level 1

Chapter 6 Level 2

Reading Assignment: read pages: 147-222

Do Exercises: all

Conceptual Questions: all

Study Lecture Notes

Complete Lab Assignment 3 in Course Documents

SESSION 7**Take Test 7 by 7/10/16**

Lesson: Doppler

Chapter 7 Level 1

Chapter 7 Level 2

Reading Assignment: read pages: 223-299

Do Exercises: all

Conceptual Questions: all

Study Lecture Notes

Complete Lab Assignment 4 in Course Documents

SESSION 8**Take Tests 8 & 9 by 7/17/16*****Please note 2 lessons this week***

Lesson: Artifacts Chapter 8

Reading Assignment: read pages: 275-299

Conceptual Questions: all Study Lecture Notes

Complete Lab Assignment 5 in Course Documents

Lesson: Bioeffects Chapter 9

Reading Assignment: read pages: 301-324

Do Exercises: all

Conceptual Questions: all

Study Lecture Notes

Complete Lab Assignment 6 in Course Documents

SESSION 9**Take Tests 10 & 11 by 7/24/16*****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: all

Study Lecture Notes

Complete Lab Assignment 7 in Course Documents

Complete Lab Assignment 8 in Course Documents

SESSION 10**Take Test 12 by 7/31/16**

Lesson: Physiology & Fluid Dynamics

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

Conceptual Questions: all

Study Lecture Notes

Complete Lab Assignment 9 in Course Documents

Hemodynamics Assignment 1

SESSION 11**Take Tests 13 & 14 by 8/7/16*****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:

Do Exercises:

Conceptual Questions:

Study Lecture Notes

Hemodynamics Assignment 1

SESSION 12**FINAL EXAM Due by 8/14/16 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 the student concerning the work-related activities of any member of the bargaining unit (such as grade disputes). Instructors shall not be subject to any disciplinary action as a result of a student grievance over strictly academic issues. The following steps are required of students wishing to file a complaint:

1. Student Meets with Instructor

Students must initiate a conference with the instructor with whom they have a complaint no later than the end of the fourth week of the Fall or Winter/Spring semester following the relevant incident/dispute. One representative, who must be from JCC (a current student, instructor or administrator) may be requested by each party to participate in this informal meeting.

2. Student Puts complaint in Writing

If the conflict isn't resolved in the meeting 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 appropriate Department Chair.

3. Department Chair Holds an Informal Hearing

The Department Chair will convene a meeting with the student and the instructor following the guidelines in the faculty manual. The department chair will conduct any necessary investigation prior to the meeting.

4. Complaint Submitted to Dean

If the student or instructor is unsatisfied with the results of the meeting with the department chair, the formal written complaint and the instructor's written statement of facts as he/she understands them will be submitted to the supervising Dean. 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) work 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 instructor and the Association President to arrange a formal hearing. Parties of interest shall include the student, the 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) work days after the hearing, the Dean will distribute a written resolution of the complaint to the student, instructor and the Association President. The written resolution will state the facts as assessed by the Dean and indicate that appropriate action will be taken. No statement of disciplinary action will be disclosed to the student until final resolution of the complaint. If the College plans to discipline the instructor, as a result of this complaint, the instructor and the Association President will be notified, in writing, accompanying the written resolution of the complaint.

7. Appealed to the Executive Vice President

In the event that either the student or the instructor is not satisfied with the Dean's disposition of the complaint, the disposition may be appealed to the Executive Vice-President within five (5) work days.

8. Executive Vice President Holds a Meeting

Within five (5) days of the Executive Vice-President's receipt of an appeal, he will arrange a meeting with the parties of interest and their respective representatives in an attempt to resolve the matter.

9. Executive Vice President Rules on the Appeal

Within five (5) work days after the meeting with the Executive Vice-President, the Executive Vice-President shall give a written disposition of the matter.

10. Appeal through Grievance

The disposition of the Executive Vice- President may be the subject of a grievance, initiated at Step 2 under the grievance procedure contained in the Master Agreement. 2005-2008 Agreement between JC and JCCFA

Procedures for online or other students unable to travel to JCC offices.

1. Meetings between students, faculty, department chairs, Academic Deans and other parties of interest will be held by conference call originating from JC.
2. Written documents submitted by all parties must be sent by registered mail to verify receipt. Documents may be sent electronically for convenience but receipt of these will not be verified.
3. Students can find the Academic Complaint Form online at <http://www.jccmi.edu/administration/deans/Forms/AcadComplaintForm.html>
Student signature on complaint form must be notarized.
4. Timelines begin on date documents are received as verified by registered mail.

*******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.