

## JCC OFFICIAL COURSE OUTLINE

### Course number, title and credits; total time allocation

Course Number	<b>DMS206</b>	Credits	<b>4</b>	Title	<b>Sonographic Instrumentation</b>	
Lecture/Discussion	<b>45</b> hrs/semester	Lab	<b>15</b> hrs/semester	Clinical	hrs/semester	

### Catalog description and Pre- and Co-requisites (Same as taxonomy and catalog)

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 .

### Knowledge, skills and abilities Students Acquire from this Course (Educational Objectives)

1. Students who successfully complete the Sonographic Instrumentation course will demonstrate competencies in all aspects of ultrasound instrumentation.
2. Students who successfully complete the Sonographic Instrumentation course will demonstrate competencies in all aspects of applied ultrasound physics.
3. Students who successfully complete the Sonographic Instrumentation course will demonstrate competencies in all modes of ultrasound such as: M-mode, C-mode, B-mode and Doppler.
4. Students who successfully complete the Sonographic Instrumentation course will demonstrate competencies in understanding all aspects of ultrasound induced bioeffects.
5. Students who successfully complete the Sonographic Instrumentation course demonstrate competencies in understanding all aspects of signal production and processing.

### Associate Degree Outcomes Addressed in this Course (These must appear in course syllabus)

1. ADO 7
2. OCC 1
3. ADO 2

### Units/topics of Instruction

1. Elementary Principles
2. Propagation of Ultrasound through Tissue
3. Ultrasound Transducers
4. Pulse Echo Instruments
5. Principles of Pulse Echo Imaging
6. Images, Storage, and Display
7. Doppler
8. Image Features and Artifacts
9. Quality Assurance of Ultrasound Instruments
10. Bioeffects and Safety
11. Physiology & Fluid Dynamics
12. Venous Hemodynamics
13. Vascular Physical Principles

### Instructional Use of Computer or Other Technology

Computers technology is used for multimedia presentations, delivery of online content and managing student interaction.

### Instructional Materials and Costs to Students

Computer, projection equipment, educator software and ultrasound machine.

### Skills and abilities students should bring to the course

Able to read	Able to compute
<input type="checkbox"/> a limited amount of material	<input type="checkbox"/> basic, pre-algebraic problems
<input checked="" type="checkbox"/> an average amount of material	<input checked="" type="checkbox"/> simple algebraic problems
<input type="checkbox"/> an above average amount of material	<input type="checkbox"/> higher order mathematical problems
<input type="checkbox"/> relatively easy material	<input checked="" type="checkbox"/> short compositions

Able to read	<input type="checkbox"/> moderately difficult material	Able to write	<input type="checkbox"/> medium length compositions
	<input checked="" type="checkbox"/> technical or sophisticated material		<input type="checkbox"/> lengthy compositions
Able to use technology	<input checked="" type="checkbox"/> keyboard skills/familiar with computer	Other necessary abilities	<input type="checkbox"/>
	<input checked="" type="checkbox"/> computer application		<input type="checkbox"/>
	<input checked="" type="checkbox"/> web navigation		<input type="checkbox"/>

**The course is usually scheduled**

Day:       Fall       Winter       Spring

Evening:     Fall       Winter       Spring

Prepared by **S. Geiersbach**

Date 9/19/12

Approved by Dept. 

Date 10/4/12

Approved by Dean

Date

Approved by Curriculum Committee

Date

(last names, please)