Course Number, title and credits; total time allocation

<table>
<thead>
<tr>
<th>Course Number</th>
<th>DMS206</th>
<th>Credits</th>
<th>Title</th>
<th>Sonographic Instrumentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture/Discussion</td>
<td>45 hrs/semester</td>
<td>4</td>
<td>Lab</td>
<td>Clinical</td>
</tr>
</tbody>
</table>

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. Various 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

<table>
<thead>
<tr>
<th>Able to read</th>
<th>Able to compute</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ a limited amount of material</td>
<td>□ basic, pre-algebraic problems</td>
</tr>
<tr>
<td>□ an average amount of material</td>
<td>□ simple algebraic problems</td>
</tr>
<tr>
<td>□ an above average amount of material</td>
<td>□ higher order mathematical problems</td>
</tr>
<tr>
<td>□ relatively easy material</td>
<td>□ short compositions</td>
</tr>
</tbody>
</table>

DMS206 Course Outline: Revised: 09/19/12
<table>
<thead>
<tr>
<th>Able to read</th>
<th>□ moderately difficult material</th>
<th>☑ technical or sophisticated material</th>
<th>Able to write</th>
<th>□ medium length compositions</th>
<th>□ lengthy compositions</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ keyboard skills/familiar with computer</td>
<td>☑ computer application</td>
<td>☑ web navigation</td>
<td>☑ Other necessary abilities</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

**The course is usually scheduled**

Day: ☑ Fall ☑ Winter ☑ Spring  
Evening: ☑ Fall ☑ Winter ☑ Spring

Prepared by S. Geiersbach
Approved by Dept.  
Approved by Dean
Approved by Curriculum Committee (last names, please)

Date 9/19/12  
Date 12/4/12