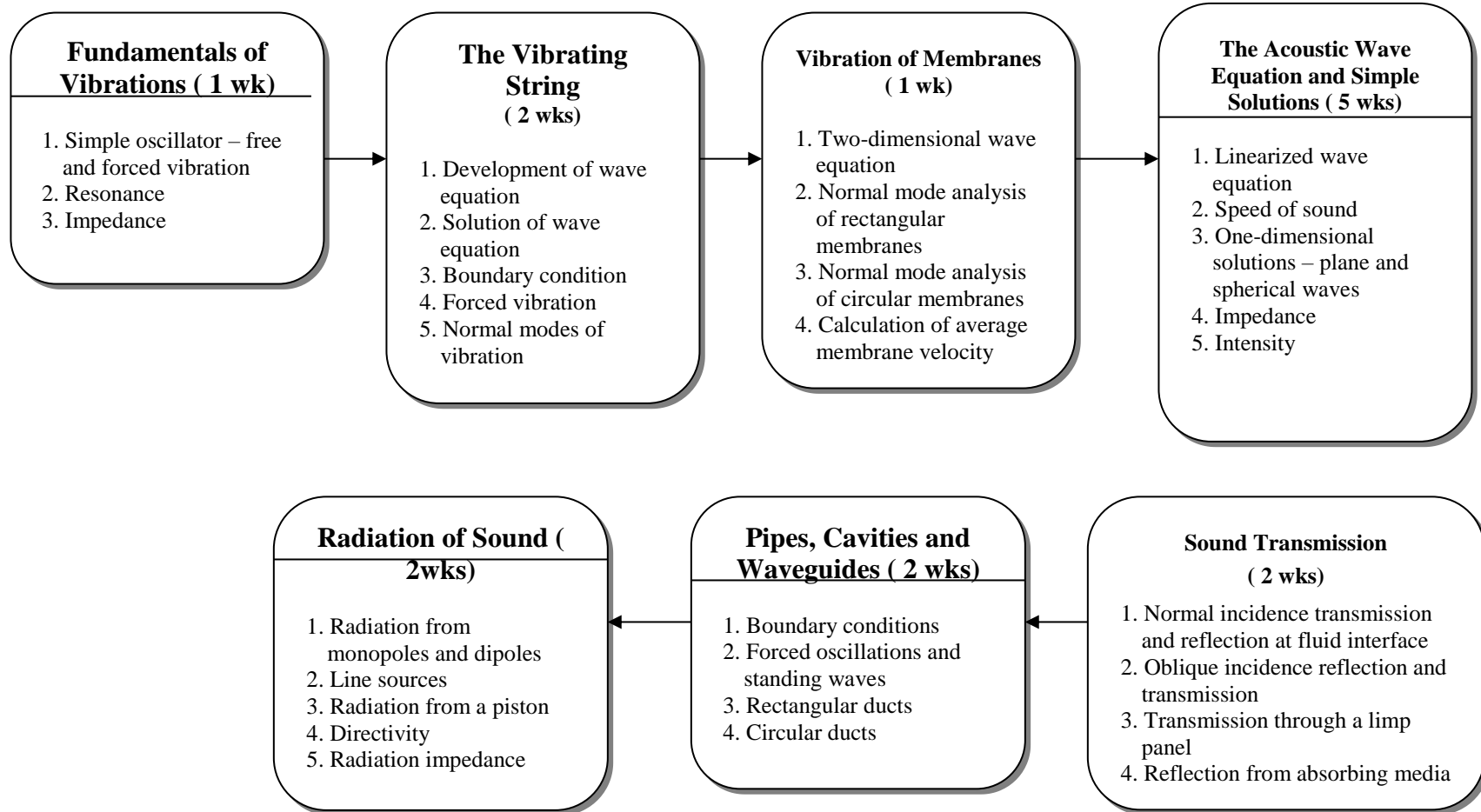


**ME 513**  
**ENGINEERING ACOUSTICS**

**Course Outcomes** [Related ME Program Outcomes in brackets]

1. Introduce the fundamentals concepts of *acoustical analysis* to engineers with an emphasis on the *wave approach*. [1]
2. Study *wave propagation, sound radiation, absorption and transmission*. [1]
3. Apply fundamental concepts to *noise control practice*. [2]



<b>COURSE NUMBER:</b> ME 513		<b>COURSE TITLE:</b> Engineering Acoustics	
<b>REQUIRED COURSE OR ELECTIVE COURSE:</b> Elective		<b>TERMS OFFERED:</b> Fall	
<b>TEXTBOOK/REQUIRED MATERIAL:</b> L.E. Kinsler, A.R. Frey, A.B. Coppens and J.V. Sanders, <i>Fundamentals of Acoustics</i> , 4 <sup>th</sup> ed., , John Wiley & Sons, 1999.		<b>PRE-REQUISITES:</b> First Semester Senior Standing	
<b>COORDINATING FACULTY:</b> J.S. Bolton		<b>COURSE OUTCOMES</b> [Related ME Program Outcomes in brackets]:  <ol style="list-style-type: none"> <li>1. Introduce the fundamental concepts of <i>acoustical analysis</i> to engineers with an emphasis on the <i>wave approach</i>. [1]</li> <li>2. Study <i>wave propagation, sound radiation, absorption</i> and <i>transmission</i>. [1]</li> <li>3. Apply fundamental concepts to <i>noise control</i> practice. [2]</li> </ol>	
<b>COURSE DESCRIPTION:</b> The simple oscillator, lumped acoustical elements. Wave motion in strings and membranes. Introduction to linear acoustics through derivation of the wave equation and simple solutions. Plane and spherical waves. Acoustic intensity. Plane wave transmission through fluid layers and simple barriers. Sound absorption. Modeling of acoustical sources: monopoles, dipoles, quadrupoles. Mechanisms of sound generation and directionality. Sound propagation in one-dimensional systems: e.g., ducts and mufflers. Introduction to room acoustics.			
<b>ASSESSMENTS TOOLS:</b> <ol style="list-style-type: none"> <li>1. Bi-weekly homework.</li> <li>2. One mid-term exam.</li> <li>3. One comprehensive final exam.</li> </ol>		<b>RELATED ME PROGRAM OUTCOMES:</b> <ol style="list-style-type: none"> <li>1. Engineering fundamentals</li> <li>2. Engineering design</li> <li>3. Communication skills</li> <li>4. Ethical/Prof. responsibilities</li> <li>5. Teamwork skills</li> <li>6. Experimental skills</li> <li>7. Knowledge acquisition</li> </ol>	
<b>PROFESSIONAL COMPONENT:</b> <ol style="list-style-type: none"> <li>1. Engineering Topics: Engineering Science – 3 credits (100%)</li> </ol>			
<b>NATURE OF DESIGN CONTENT:</b> N/A			
<b>COMPUTER USAGE:</b> Matlab or equivalent for numerical analysis.			
<b>COURSE STRUCTURE/SCHEDULE:</b> <ol style="list-style-type: none"> <li>1. Lecture – 3 days per week at 50 minutes.</li> </ol>			
<b>PREPARED BY:</b> J.S. Bolton		<b>REVISION DATE:</b> June 10, 2019	