AME/CE/EM 606: Elastic Wave Propagation in Solids

Class Hour: T-Th 3:30-4:45  
Room: Haury Anthro Bldg, Room 219  
Office Hour: Tu-Th 2:00-3:15

Instructor: T. Kundu (tkundu@email.arizona.edu), Office: CE 324D, Phone 520-621-6573.

Grading Policy:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Home Work</td>
<td>30%</td>
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<tr>
<td>Mid Term Exam</td>
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<td>Final Exam - Wednesday, May 9 (3:30 to 5:30 pm)</td>
<td>40%</td>
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Textbook:

(this textbook will be closely followed)  
or  

Syllabus

Background Materials: Fundamentals of the Theory of Elasticity / Continuum Mechanics  

New Materials:

One-Dimensional Dynamic Problems  
Stokes-Helmholtz Decomposition  
Two-Dimensional Problems – P wave and S wave  
Interaction between Plane Waves and Stress-Free Plane Boundary  
Out-of-Plane or Anti-Plane Problems – SH Wave  
Interaction of P and SV Waves with Plane Interface  
Rayleigh Wave in a Homogeneous Half Space  
Love Wave  
Anti-plane Waves in a Plate – Anti-plane Plate Wave  
In-plane Waves in a Plate - Lamb Waves  
Phase Velocity and Group Velocity  
Wave Propagation in Fluids  
Relation between Pressure and Velocity, Reflection and Transmission of Plane Waves at the Fluid-Fluid Interface, Plane Wave Potential in a Fluid  
Reflection and Transmission of Plane Waves at a Fluid-Solid Interface
Reflection and Transmission of Plane Waves by a solid plate immersed in a fluid
Rayleigh Wave in a Layered Half Space
Modeling of Wave Propagation Problems – Distributed Point Source Method (DPSM)

Applications: Ultrasonic Nondestructive Testing and Evaluation (NDT&E)