Class Schedule - Fall 2019

Theoretical and Applied Mechanics

TAM 598  Advanced Special Topics  credit: 1 TO 4 hours.
Subject offerings of new and developing areas of knowledge in theoretical and applied mechanics intended to augment the existing curriculum. See Class Schedule or departmental course information for topics and prerequisites. May be repeated in the same or separate terms if topics vary to a maximum of 12 hours.

<table>
<thead>
<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>69007</td>
<td>Lecture</td>
<td>HTJ</td>
<td>02:00 PM - 03:50 PM</td>
<td>TR</td>
<td>105 - Talbot Laboratory</td>
<td>Johnson, H</td>
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<tr>
<td>71725</td>
<td>Lecture</td>
<td>KM</td>
<td>10:00 AM - 11:50 AM</td>
<td>TR</td>
<td>225A - Talbot Laboratory</td>
<td>Matlack, K</td>
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</tbody>
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Credit Hours: 4 hours
Atomistic Solid Mechanics
Restricted to Graduate - Urbana-Champaign.
Advanced solid mechanics topics based on an atomistic perspective; empirical, semi-empirical, and first-principles atomistic total energy descriptions; atomistic stress, strain, and displacement definitions; atomistic elasticity theory and fitting of interatomic potentials; algorithms for total energy minimization; boundary value problems involving point, line, and planar defects.

Credit Hours: 4 hours
Phononics and Metamaterials
This course introduces fundamental concepts of acoustic and elastic wave propagation in metamaterials and periodic media. Theoretical, computational, and experimental approaches for analyzing wave propagation in such media will be discussed, as well as fabrication methods and engineering applications. Topics may include: elastodynamics of lattice materials, Bloch-Floquet theorem and Brillouin zones, acoustic/elastic band gap materials, damped and nonlinear phononic materials, transformation-based methods, and active systems. Prerequisites: (1) TAM 541, and (2) ONE of the following: TAM 551, TAM 413, TAM 518, TAM 514, AE 522, or permission from instructor.