### 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>
</table>
| 64903| Conference | 211     | 12:00 PM - 01:50 PM | M    | 252 - Mechanical Engineering Bldg | Kersh, M  
|      |         |         |                    |      |                               | Mercier, E    |
|      | Conference | 211     | 02:00 PM - 02:50 PM | F    | 252 - Mechanical Engineering Bldg | Kersh, M  
|      |         |         |                    |      |                               | Mercier, E    |
| 64904| Conference | 212     | 12:00 PM - 01:50 PM | M    | 252 - Mechanical Engineering Bldg | Mercier, E  
|      |         |         |                    |      |                               | West, M       |
|      | Conference | 212     | 04:00 PM - 04:50 PM | F    | 252 - Mechanical Engineering Bldg | Mercier, E  
|      |         |         |                    |      |                               | West, M       |
| 64906| Conference | 251     | 12:00 PM - 01:50 PM | M    | 252 - Mechanical Engineering Bldg | Mercier, E  
|      |         |         |                    |      |                               | Sohn, M       |
|      | Conference | 251     | 03:00 PM - 03:50 PM | F    | 252 - Mechanical Engineering Bldg | Mercier, E  
|      |         |         |                    |      |                               | Sohn, M       |
| 62172| Online  | IJ1     | ARRANGED -         | -    | -                             | Jasiuk, I      |

Credit Hours: 1 hours  
Statics TA Training  
Departmental Approval Required

Credit Hours: 1 hours  
Dynamics TA Training  
Departmental Approval Required

Credit Hours: 1 hours  
Solids TA Training  
Departmental Approval Required

Credit Hours: 4 hours  
Adv Modeling Bio Materials  
Restricted to MS: Civil Engr - Online - UIUC, MCS:Computer Sci Online -UIUC, MS:Mechanical Engineering -UIUC, MS: Aerospace Engr-Online-UIC, NDEG:Grad Nondegree-CE-UIC, or MCS: Computer Sci Online-UIC.
Restricted to online grad non-degree, online MSAE, online MCS, online MSME, and online MSCEE students. Center for Innovation in Teaching & Learning (CITL) restrictions and assessments apply, see http://www.oce.illinois.edu. For more details on this course section, please see http://engineering.illinois.edu/online/courses/.

OCE Tuition $1034.00 per Bill Hour, and OCE Fees $50.00 per Bill Hour.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Lecture-Type</th>
<th>Instructor</th>
<th>Time</th>
<th>Location</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>65097</td>
<td>Lecture-Discussion</td>
<td>IJG</td>
<td>01:00 PM - 02:50 PM</td>
<td>241 - Everitt Elec &amp; Comp Engr Lab</td>
<td>Jasiuk, I</td>
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<tr>
<td>60164</td>
<td>Lecture-Discussion</td>
<td>RE</td>
<td>01:00 PM - 02:50 PM</td>
<td>1214 - Siebel Center for Comp Sci</td>
<td>Ewoldt, R</td>
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<tr>
<td>65348</td>
<td>Lecture-Discussion</td>
<td>UQ</td>
<td>09:00 AM - 09:50 AM</td>
<td>335 - Mechanical Engineering Bldg</td>
<td>Freund, J</td>
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</tbody>
</table>

Credit Hours: 4 hours
Adv Modeling Bio Materials
Restricted to Graduate - Urbana-Champaign.
TAM 598 IJG 65097 meets with TAM 498 IJU 65098. Students may not receive credit for both TAM 498 IJU and TAM 598 IJG.

Credit Hours: 4 hours
Non-Newt Fl. Mech. & Rheology
This course will provide a basic foundation in the mechanics and rheology of structurally complex liquids whose behavior can be modeled as a continuum but cannot be modeled as Newtonian with constant viscosity. Key ideas include rheological property measurement, tensorial constitutive models, flow calculations, basic structure-property relations, and design with nonlinear viscoelastic properties. Concepts will apply to a diverse range of materials such as polymer solutions, polymer melts, colloidal suspensions, emulsions, foams, pastes, biological fluids, biological gels, hydrogels, active soft matter, nano-composites, and inks. PREREQUISITES A general knowledge of ordinary and partial differential equations is required. Introductory coursework in mechanics (fluid, solid or continuum) is necessary. Intermediate fluid dynamics is strongly suggested (e.g. TAM 435).

Credit Hours: 4 hours
Uncertainty Quantification