Class Schedule - Fall 2018

Theoretical and Applied Mechanics

Mechanical Science and Engineering
Department Head: Anthony M. Jacobi
Department Office: 144 Mechanical Engineering Building, 1206 West Green, Urbana
Phone: 217-333-1176, MechSE-Undergrad@illinois.edu
www.mechse.illinois.edu

Subjects associated with this department include: Mechanical Engineering (ME) and Theoretical and Applied Mechanics (TAM).

TAM 195  Mechanics in the Modern World  credit: 1 hours.
Freshman introduction to engineering mechanics and its role in modern engineering analysis and design. Project activity.

<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>30960</td>
<td>Lecture-Discussion</td>
<td>U</td>
<td>04:00 PM - 05:20 PM</td>
<td>T</td>
<td>153 - Mechanical Engineering Bldg</td>
<td>Dankowicz, H</td>
</tr>
</tbody>
</table>

This course is not a Discovery Course this semester.

TAM 199  Undergraduate Open Seminar  credit: 1 TO 5 hours.
May be repeated.

<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>10204</td>
<td>Independent Study</td>
<td>ARRANGED -</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Instructor Approval Required

TAM 201  Mechanics for Technol & Mgmt  credit: 3 hours.
Engineering mechanics (statics, dynamics, solid mechanics, and fluid mechanics) and the role that mechanics plays in engineering analysis and design. For Technology and Management majors only.

<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>59890</td>
<td>Lecture</td>
<td>G</td>
<td>03:30 PM - 04:50 PM</td>
<td>TR</td>
<td>3001 - Business Instruction Fac</td>
<td>Downing, S</td>
</tr>
</tbody>
</table>

Restricted to Technology and Management minor(s).

TAM 210  Introduction to Statics  credit: 2 hours.
Forces, moments, couples; resultants of force systems; equilibrium analysis and free-body diagrams; analysis of forces acting on members of trusses, frames, etc.; shear-force and bending-moment distributions; Coulomb friction; centroids and center of mass; applications of statics in design. Credit is not given for both TAM 210 and TAM 211. Prerequisite: PHYS 211; credit or concurrent registration in MATH 241.
Meets with TAM 211. A non-standard term course during the first 2/3 of the term. Students must register for one discussion and one lecture section.

<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>33377</td>
<td>Discussion/Recitation</td>
<td>ADA</td>
<td>10:00 AM - 10:50 AM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Gao, S</td>
</tr>
<tr>
<td>33414</td>
<td>Discussion/Recitation</td>
<td>ADB</td>
<td>11:00 AM - 11:50 AM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Gao, S</td>
</tr>
<tr>
<td>33477</td>
<td>Discussion/Recitation</td>
<td>ADC</td>
<td>02:00 PM - 02:50 PM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Bonyadi, S</td>
</tr>
<tr>
<td>33516</td>
<td>Discussion/Recitation</td>
<td>ADD</td>
<td>03:00 PM - 03:50 PM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Chan, F</td>
</tr>
<tr>
<td>34911</td>
<td>Discussion/Recitation</td>
<td>ADE</td>
<td>04:00 PM - 04:50 PM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Chan, F</td>
</tr>
<tr>
<td>34947</td>
<td>Discussion/Recitation</td>
<td>ADG</td>
<td>09:00 AM - 09:50 AM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Kuntumalla, G</td>
</tr>
<tr>
<td>34949</td>
<td>Discussion/Recitation</td>
<td>ADH</td>
<td>10:00 AM - 10:50 AM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Kuntumalla, G</td>
</tr>
<tr>
<td>34951</td>
<td>Discussion/Recitation</td>
<td>ADI</td>
<td>11:00 AM - 11:50 AM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Nazir, Q</td>
</tr>
<tr>
<td>34954</td>
<td>Discussion/Recitation</td>
<td>ADJ</td>
<td>12:00 PM - 12:50 PM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Nazir, Q</td>
</tr>
<tr>
<td>CRN</td>
<td>Session Type</td>
<td>Instructor</td>
<td>Days</td>
<td>Time</td>
<td>Location</td>
<td>Instructor Name</td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
<td>------------</td>
<td>------</td>
<td>--------------------</td>
<td>---------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>34956</td>
<td>Discussion/Recitation</td>
<td>ADK</td>
<td>W</td>
<td>09:00 AM - 09:50 AM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Kuntumalla, G</td>
</tr>
<tr>
<td>34958</td>
<td>Discussion/Recitation</td>
<td>ADL</td>
<td>W</td>
<td>10:00 AM - 10:50 AM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Gao, S</td>
</tr>
<tr>
<td>34961</td>
<td>Discussion/Recitation</td>
<td>ADM</td>
<td>W</td>
<td>02:00 PM - 02:50 PM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Alidoost, K</td>
</tr>
<tr>
<td>34964</td>
<td>Discussion/Recitation</td>
<td>ADN</td>
<td>W</td>
<td>03:00 PM - 03:50 PM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Alidoost, K</td>
</tr>
<tr>
<td>34966</td>
<td>Discussion/Recitation</td>
<td>ADO</td>
<td>W</td>
<td>04:00 PM - 04:50 PM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Alidoost, K</td>
</tr>
<tr>
<td>35262</td>
<td>Discussion/Recitation</td>
<td>ADQ</td>
<td>R</td>
<td>09:00 AM - 09:50 AM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Inampudi, S</td>
</tr>
<tr>
<td>35273</td>
<td>Discussion/Recitation</td>
<td>ADR</td>
<td>R</td>
<td>10:00 AM - 10:50 AM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Inampudi, S</td>
</tr>
<tr>
<td>64907</td>
<td>Discussion/Recitation</td>
<td>ADS</td>
<td>R</td>
<td>11:00 AM - 11:50 AM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Inampudi, S</td>
</tr>
<tr>
<td>64908</td>
<td>Discussion/Recitation</td>
<td>ADT</td>
<td>R</td>
<td>12:00 PM - 12:50 PM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Nazir, Q</td>
</tr>
<tr>
<td>64909</td>
<td>Discussion/Recitation</td>
<td>ADU</td>
<td>F</td>
<td>09:00 AM - 09:50 AM</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Bonyadi, S</td>
</tr>
</tbody>
</table>
TAM 211  **Statics**  credit: 3 hours.

Forces, moments, and couples; resultants of force systems; equilibrium analysis and free-body diagrams; analysis of forces acting on members of trusses, frames, etc.; shear-force and bending-moment distributions; Coulomb friction; centroids, center of mass, moment of inertia, polar moment of inertia, and product of inertia; virtual work; hydrostatic pressure; applications of statics in design. Credit is not given for both TAM 211 and TAM 210. Prerequisite: PHYS 211; credit or concurrent registration in MATH 241.

Students must register for one discussion and one lecture section.

<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>33292</td>
<td>Discussion/Recitation</td>
<td>ADA</td>
<td>10:00 AM - 10:50 AM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Gao, S</td>
</tr>
<tr>
<td>33379</td>
<td>Discussion/Recitation</td>
<td>ADB</td>
<td>11:00 AM - 11:50 AM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Gao, S</td>
</tr>
<tr>
<td>33519</td>
<td>Discussion/Recitation</td>
<td>ADC</td>
<td>02:00 PM - 02:50 PM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Bonyadi, S</td>
</tr>
<tr>
<td>34912</td>
<td>Discussion/Recitation</td>
<td>ADD</td>
<td>03:00 PM - 03:50 PM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Chan, F</td>
</tr>
<tr>
<td>33479</td>
<td>Discussion/Recitation</td>
<td>ADE</td>
<td>04:00 PM - 04:50 PM</td>
<td>M</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Chan, F</td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td>Code</td>
<td>Instructor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>------</td>
<td>------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:00 AM - 09:50 AM</td>
<td>Discussion/Recitation</td>
<td>ADG</td>
<td>Kuntumalla, G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 AM - 10:50 AM</td>
<td>Discussion/Recitation</td>
<td>ADH</td>
<td>Kuntumalla, G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00 AM - 11:50 AM</td>
<td>Discussion/Recitation</td>
<td>ADI</td>
<td>Nazir, Q</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00 PM - 12:50 PM</td>
<td>Discussion/Recitation</td>
<td>ADJ</td>
<td>Nazir, Q</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:00 AM - 09:50 AM</td>
<td>Discussion/Recitation</td>
<td>ADK</td>
<td>Kuntumalla, G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 AM - 10:50 AM</td>
<td>Discussion/Recitation</td>
<td>ADL</td>
<td>Gao, S</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02:00 PM - 02:50 PM</td>
<td>Discussion/Recitation</td>
<td>ADM</td>
<td>Alidoost, K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03:00 PM - 03:50 PM</td>
<td>Discussion/Recitation</td>
<td>ADN</td>
<td>Alidoost, K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04:00 PM - 04:50 PM</td>
<td>Discussion/Recitation</td>
<td>ADO</td>
<td>Alidoost, K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09:00 AM - 09:50 AM</td>
<td>Discussion/Recitation</td>
<td>ADQ</td>
<td>Inampudi, S</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TAM 212  **Introductory Dynamics**  
Credit: 3 hours.  
Kinematics and dynamics of the three-dimensional motion of particles; kinematics and dynamics of the plane motion of rigid bodies; methods of work energy and impulse momentum; moving reference frames. Prerequisite: TAM 210 or TAM 211.

<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>35268</td>
<td>Lecture</td>
<td>AL1</td>
<td>08:00 AM - 08:50 AM</td>
<td>F</td>
<td>102 - Electrical &amp; Computer Eng Bldg</td>
<td>Hsiao-Wecksler, E</td>
</tr>
<tr>
<td>35221</td>
<td>Lecture</td>
<td>AL2</td>
<td>09:00 AM - 09:50 AM</td>
<td>MW</td>
<td>1002 - Electrical &amp; Computer Eng Bldg</td>
<td>Hsiao-Wecksler, E</td>
</tr>
<tr>
<td>71289</td>
<td>Lecture</td>
<td>ZJU</td>
<td>08:00 AM - 08:50 AM</td>
<td>F</td>
<td>-</td>
<td>Hsiao-Wecksler, E</td>
</tr>
<tr>
<td>35220</td>
<td>Lecture</td>
<td>AL1</td>
<td>12:00 PM - 12:50 PM</td>
<td>MWF</td>
<td>112 - Gregory Hall</td>
<td>Keane, R</td>
</tr>
<tr>
<td>35221</td>
<td>Lecture</td>
<td>AL2</td>
<td>01:00 PM - 01:50 PM</td>
<td>MWF</td>
<td>1002 - Electrical &amp; Computer Eng Bldg</td>
<td>Chang, W</td>
</tr>
</tbody>
</table>

Departmental Approval Required  
Restricted to ZJU Institute
<table>
<thead>
<tr>
<th>Section</th>
<th>Discussion/Recitation</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructors</th>
</tr>
</thead>
<tbody>
<tr>
<td>32956</td>
<td>AD1</td>
<td>01:00 PM - 01:50 PM</td>
<td>R</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Matlack, K</td>
</tr>
<tr>
<td>32958</td>
<td>AD2</td>
<td>02:00 PM - 02:50 PM</td>
<td>R</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Keivan Esfahani, D</td>
</tr>
<tr>
<td>32960</td>
<td>AD3</td>
<td>03:00 PM - 03:50 PM</td>
<td>R</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Keivan Esfahani, D</td>
</tr>
<tr>
<td>32962</td>
<td>AD4</td>
<td>04:00 PM - 04:50 PM</td>
<td>R</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Keivan Esfahani, D</td>
</tr>
<tr>
<td>32964</td>
<td>AD5</td>
<td>05:00 PM - 05:50 PM</td>
<td>R</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Zhang, X</td>
</tr>
<tr>
<td>52452</td>
<td>AD6</td>
<td>11:00 AM - 11:50 AM</td>
<td>F</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Patil, G</td>
</tr>
<tr>
<td>60723</td>
<td>AD7</td>
<td>12:00 PM - 12:50 PM</td>
<td>F</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Patil, G</td>
</tr>
<tr>
<td>61995</td>
<td>AD8</td>
<td>01:00 PM - 01:50 PM</td>
<td>F</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Patil, G</td>
</tr>
<tr>
<td>32966</td>
<td>AE1</td>
<td>03:00 PM - 03:50 PM</td>
<td>MWF</td>
<td>100 - Materials Science &amp; Eng Bld</td>
<td>Lee, C</td>
</tr>
</tbody>
</table>

**TAM 251  Introductory Solid Mechanics**  credit: 3 hours.
Relationship between internal stresses and deformations produced by external forces acting on deformable bodies, and design principles based on mechanics of solids: normal stresses, shear stresses, and deformations produced by tensile, compressive,
torsional, and bending loading of members; beam deflections; elastic energy and impact; multi-dimensional stress states; buckling of columns. Prerequisite: TAM 210 or TAM 211.

<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>33294</td>
<td>Discussion/Recitation</td>
<td>ADA</td>
<td>01:00 PM - 01:50 PM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Madhukar, A</td>
</tr>
<tr>
<td>33381</td>
<td>Discussion/Recitation</td>
<td>ADB</td>
<td>02:00 PM - 02:50 PM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Madhukar, A</td>
</tr>
<tr>
<td>33482</td>
<td>Discussion/Recitation</td>
<td>ADC</td>
<td>03:00 PM - 03:50 PM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Margotta, A</td>
</tr>
<tr>
<td>33532</td>
<td>Discussion/Recitation</td>
<td>ADD</td>
<td>04:00 PM - 04:50 PM</td>
<td>T</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Margotta, A</td>
</tr>
<tr>
<td>34924</td>
<td>Discussion/Recitation</td>
<td>ADF</td>
<td>11:00 AM - 11:50 AM</td>
<td>W</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Poss, M</td>
</tr>
<tr>
<td>52451</td>
<td>Discussion/Recitation</td>
<td>ADG</td>
<td>12:00 PM - 12:50 PM</td>
<td>W</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Poss, M</td>
</tr>
<tr>
<td>64897</td>
<td>Discussion/Recitation</td>
<td>ADH</td>
<td>01:00 PM - 01:50 PM</td>
<td>W</td>
<td>252 - Mechanical Engineering Bldg</td>
<td>Livingston, E</td>
</tr>
<tr>
<td>35217</td>
<td>Lecture</td>
<td>AL1</td>
<td>09:00 AM - 09:50 AM</td>
<td>MWF</td>
<td>100 - Gregory Hall</td>
<td>Hilgenfeldt, S</td>
</tr>
</tbody>
</table>

**TAM 270  Design for Manufacturability**  credit: 3 hours.
Same as ME 270. See ME 270.

<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>70018</td>
<td>Laboratory</td>
<td>AB1</td>
<td>09:00 AM - 10:50 AM</td>
<td>M</td>
<td>1318 - Mechanical</td>
<td>Dancholvichit, N</td>
</tr>
<tr>
<td>Course Code</td>
<td>Time</td>
<td>Location</td>
<td>Instructor</td>
<td>Course Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------</td>
<td>----------</td>
<td>------------</td>
<td>----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70019</td>
<td>11:00 AM - 12:50 PM</td>
<td>AB2</td>
<td>Raghavan, B</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70020</td>
<td>01:00 PM - 02:50 PM</td>
<td>AB3</td>
<td>Pagano, A</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70021</td>
<td>03:00 PM - 04:50 PM</td>
<td>AB4</td>
<td>Pagano, A</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70022</td>
<td>05:00 PM - 06:50 PM</td>
<td>AB5</td>
<td>Lee, C</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70023</td>
<td>09:00 AM - 10:50 AM</td>
<td>AB6</td>
<td>Lee, C</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70024</td>
<td>11:00 AM - 12:50 PM</td>
<td>AB7</td>
<td>Lee, C</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70025</td>
<td>01:00 PM - 02:50 PM</td>
<td>AB8</td>
<td>Sabet, F</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70026</td>
<td>05:00 PM - 06:50 PM</td>
<td>AB9</td>
<td>Raghavan, B</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70027</td>
<td>12:00 PM - 01:50 PM</td>
<td>ABA</td>
<td>Raghavan, B</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70028</td>
<td>02:00 PM - 03:50 PM</td>
<td>ABB</td>
<td>Pagano, A</td>
<td>1318 - Mechanical Engineering Lab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRN</td>
<td>Type</td>
<td>Section</td>
<td>Time</td>
<td>Days</td>
<td>Location</td>
<td>Instructor</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------</td>
<td>---------</td>
<td>---------------------</td>
<td>------</td>
<td>-----------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>68342</td>
<td>Independent Study</td>
<td>ARRANGED-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Advisor Approval Required

**TAM 297  Introductory Independent Study**  credit: 1 TO 3 hours.
Independent study and/or individual projects related to engineering mechanics. Approved for Letter and S/U grading. May be repeated to a maximum of 6 credit hours for letter grade; no limit for S/U grade mode. Prerequisite: Consent of Instructor.

<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>33355</td>
<td>Laboratory</td>
<td>AB1</td>
<td>10:00 AM - 11:50 AM</td>
<td>M</td>
<td>201 - Talbot Laboratory</td>
<td></td>
</tr>
</tbody>
</table>

**TAM 324  Behavior of Materials**  credit: 4 hours.
Same as CEE 300. See CEE 300.
Students must register for one lab and one lecture section.
### TAM 335  Introductory Fluid Mechanics  credit: 4 hours.

Fluid statics; continuity, momentum, and energy principles via control volumes; ideal and real fluid flow; introduction to the Navier-Stokes equation; similitude; laminar and turbulent boundary layers; closed-conduit flow, open-channel flow, and turbomachinery. Prerequisite: TAM 212.

Labs will not meet until the first full week of class. Students must register for one lab and one lecture section.

<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>33316</td>
<td>Laboratory</td>
<td>ABA</td>
<td>12:00 PM - 01:50 PM</td>
<td>M</td>
<td>126 - Talbot Laboratory</td>
<td>Zaman, M</td>
</tr>
<tr>
<td>33329</td>
<td>Laboratory</td>
<td>ABB</td>
<td>08:00 AM - 09:50 AM</td>
<td>M</td>
<td>126 - Talbot Laboratory</td>
<td></td>
</tr>
<tr>
<td>33347</td>
<td>Laboratory</td>
<td>ABC</td>
<td>10:00 AM - 11:50 AM</td>
<td>T</td>
<td>126 - Talbot Laboratory</td>
<td>Chae, S</td>
</tr>
<tr>
<td>33357</td>
<td>Laboratory</td>
<td>ABD</td>
<td>01:00 PM - 02:50 PM</td>
<td>T</td>
<td>126 - Talbot Laboratory</td>
<td>Salami, A</td>
</tr>
<tr>
<td>33359</td>
<td>Laboratory</td>
<td>ABE</td>
<td>03:00 PM - 04:50 PM</td>
<td>T</td>
<td>126 - Talbot Laboratory</td>
<td>Salami, A</td>
</tr>
<tr>
<td>33360</td>
<td>Laboratory</td>
<td>ABF</td>
<td>03:00 PM - 04:50 PM</td>
<td>W</td>
<td>126 - Talbot Laboratory</td>
<td>Hong, L</td>
</tr>
</tbody>
</table>

Restricted to Civil Engineering or Engineering Mechanics major(s).
### TAM 413  **Fund of Engrg Acoustics**  credit: 3 OR 4 hours.
Same as ECE 473. See ECE 473.

<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>36982</td>
<td>Discussion/Recitation</td>
<td>G4</td>
<td>02:00 PM - 02:50 PM</td>
<td>MWF</td>
<td>3015 - Electrical &amp; Computer Eng Bldg</td>
<td>Oelze, M</td>
</tr>
<tr>
<td>36979</td>
<td>Discussion/Recitation</td>
<td>U3</td>
<td>02:00 PM - 02:50 PM</td>
<td>MWF</td>
<td>3015 - Electrical &amp; Computer Eng Bldg</td>
<td>Oelze, M</td>
</tr>
</tbody>
</table>

Restricted to Graduate - Urbana-Champaign.

Credit Hours: 3 hours
TAM 416  **Intro to Nonlinear Dyn & Vib**  credit: 4 hours.
Single- and multi-degree-of-freedom oscillators; asymptotic methods; forced, internal and combination resonances; time-discrete dynamical systems (maps); complex dynamics; parametric vibrations and resonances; introduction to nonlinear localization and nonlinear targeted energy transfer; nonlinear vibrations of elastic continua; application in mechanics and engineering. 4 undergraduate hours. 4 graduate hours. Prerequisites: MATH 285 OR MATH 441; MATH 415; TAM 212.

<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>62710</td>
<td>Lecture-Discussion</td>
<td>A</td>
<td>01:00 PM - 02:50 PM</td>
<td>MW</td>
<td>243 - Mechanical Engineering Bldg</td>
<td>Ahsan, Z</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vakakis, A</td>
</tr>
</tbody>
</table>

TAM 424  **Mechanics of Structural Metals**  credit: 3 hours.
Micromechanisms at the atomic, single-crystal, and polycrystal levels and their use in explaining the deformation and failure characteristics of metals; elastic deformation, dislocation mechanics, plastic deformation and strengthening mechanisms, fracture mechanics and fracture mechanisms, fatigue, and creep; design criteria; special topics. 3 undergraduate hours. 3 graduate hours. Prerequisite: CEE 300 or ME 330.

<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>49317</td>
<td>Lecture-Discussion</td>
<td>G</td>
<td>03:00 PM - 03:50 PM</td>
<td>MWF</td>
<td>153 - Mechanical Engineering Bldg</td>
<td>Tawfick, S</td>
</tr>
</tbody>
</table>


TAM 428  **Mechanics of Composites**  credit: 3 hours.
Same as AE 428 and MSE 456. See MSE 456.

<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>35291</td>
<td>Lecture-Discussion</td>
<td>F</td>
<td>11:00 AM - 12:20 PM</td>
<td>TR</td>
<td>243 - Mechanical Engineering Bldg</td>
<td>Sottos, N</td>
</tr>
</tbody>
</table>

TAM 435  **Intermediate Fluid Mechanics**  credit: 4 hours.
Analytical solution methods for problems involving ideal and real fluids: potential flow theory, boundary-layer theory; surface waves, vortex dynamics, and compressible flows. 4 undergraduate hours. 4 graduate hours. Prerequisite: One of AE 312, ME 310, TAM 335.

<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>30963</td>
<td>Lecture-Discussion</td>
<td>A</td>
<td>03:00 PM - 04:50 PM</td>
<td>MW</td>
<td>3217 - Everitt Laboratory</td>
<td>Ewoldt, R</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sen, S</td>
</tr>
</tbody>
</table>
TAM 451  **Intermediate Solid Mechanics**  credit: 4 hours.
Analysis of stress and strain (definitions, transformation of axes, equilibrium equations, and symmetry of the stress tensor); linear materials, Hooke's law; strain energy, potential energy, energy principles and methods; two-dimensional problems in elasticity (torsion, axisymmetric problems); the finite-element method for two- and three-dimensional boundary-value problems in linear elasticity; plasticity (introduction, yield criteria, elastic-plastic behavior, and limit-load calculations); linear-elastic fracture mechanics (introduction, Griffith's approach, stress intensity factor, and energy release rate). 4 undergraduate hours. 4 graduate hours. Prerequisite: TAM 251.

<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>30962</td>
<td>Lecture</td>
<td>C</td>
<td>10:00 AM - 11:50 AM</td>
<td>MW</td>
<td>305 - Materials Science &amp; Eng Bld</td>
<td>Annevelink, E</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Johnson, H</td>
</tr>
</tbody>
</table>

TAM 461  **Cellular Biomechanics**  credit: 4 hours.
Mechanics of biological cells and tissues: cell structure; mechanics of biomembranes; the cytoskeleton and cortex; dynamic cell processes; cell motility and control of cell shape and proliferation; experimental approaches and theoretical models. Same as BIOE 461. 4 undergraduate hours. 4 graduate hours. Prerequisite: TAM 251.

<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>30961</td>
<td>Lecture-Discussion</td>
<td>C</td>
<td>01:00 PM - 02:50 PM</td>
<td>TR</td>
<td>260 - Mechanical Engineering Bldg</td>
<td>Wang, N</td>
</tr>
</tbody>
</table>

TAM 470  **Computational Mechanics**  credit: 3 OR 4 hours.
Modern computational mechanics: mappings and iterative methods; stability; convergence; consistency; numerical and symbolic solutions of ordinary and partial differential equations; finite-difference methods; the finite-element method; spectral methods. Applications to problems in solid mechanics, fluid mechanics, and dynamics. Same as CSE 450. 3 undergraduate hours. 3 or 4 graduate hours. Prerequisite: CS 101 and MATH 285.

<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>35028</td>
<td>Lecture-Discussion</td>
<td>E3</td>
<td>12:30 PM - 01:50 PM</td>
<td>TR</td>
<td>253 - Mechanical Engineering Bldg</td>
<td>Fischer, P</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Kaneko, K</td>
</tr>
</tbody>
</table>

Credit Hours: 3 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>40082</td>
<td>Lecture-Discussion</td>
<td>E4</td>
<td>12:30 PM - 01:50 PM</td>
<td>TR</td>
<td>253 - Mechanical Engineering Bldg</td>
<td>Fischer, P</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
Not intended for Undergrad - Urbana-Champaign.

TAM 497  **Independent Study**  credit: 1 TO 3 hours.
Individual studies in any area of theoretical and applied mechanics. 1 to 3 undergraduate hours. No graduate credit. May be repeated to a maximum of 6 hours in separate terms as topics vary. Prerequisite: Consent of Instructor. Students with Junior or Senior standing.

<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>

page 14 - Theoretical and Applied Mechanics, Fall 2018
TAM 499  **Senior Thesis**  credit: 3 hours.
Thesis investigation of special subjects in mechanics, including theoretical or experimental research. 3 undergraduate hours. No graduate credit. Prerequisite: Department and instructor approval required.

<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>10208</td>
<td>Independent Study</td>
<td></td>
<td>ARRANGED -</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructor Approval Required

TAM 500  **Seminar**  credit: 1 hours.
Lectures and discussion on current topics in theoretical and applied mechanics. Approved for S/U grading only only.

<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>30964</td>
<td>Lecture-Discussion</td>
<td>G</td>
<td>03:00 PM - 04:50 PM</td>
<td>TR</td>
<td>190 - Engineering Sciences Building</td>
<td>Saif, M Smith, K</td>
</tr>
</tbody>
</table>

TAM 531  **Inviscid Flow**  credit: 4 hours.
Dynamics of fluids in the limit of zero viscosity: governing equations of motion, kinematics, and vorticity transport; general theory of irrotational flow, including two-dimensional potential flow, the complex potential, and three-dimensional potential flow; applications to thin airfoil theory and free streamline theory; inviscid flows with vorticity; vortex dynamics; water wave theory; aspects of inviscid compressible flow. Prerequisite: MATH 285 and TAM 435.

<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>30965</td>
<td>Lecture-Discussion</td>
<td>A</td>
<td>10:00 AM - 11:50 AM</td>
<td>MW</td>
<td>260 - Mechanical Engineering Bldg</td>
<td>Pantano-Rubino, C</td>
</tr>
</tbody>
</table>

TAM 537  **Experimental Fluid Mechanics**  credit: 4 hours.
Methods and techniques for measurement and analysis of data used in experimental fluid mechanics: signal processing, electronics, and electro-optics; fluid mechanical properties; experimental signal processing; random data and signal analysis; analog and digital data processing; dynamic similarity, self-preservation; pressure measurement, thermal anemometry, and laser-Doppler velocimetry; flow visualization, particle-image velocimetry. Prerequisite: TAM 531 or TAM 532.

<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>39107</td>
<td>Lecture-Discussion</td>
<td>K</td>
<td>01:00 PM - 02:50 PM</td>
<td>MW</td>
<td>260 - Mechanical Engineering Bldg</td>
<td>Juarez, G</td>
</tr>
</tbody>
</table>
TAM 539  **Fluid Mechanics Seminar**  credit: 1 hours.
Weekly seminar on current research topics in turbulent and other complex flows: theoretical modeling, numerical analysis, computational techniques, and experimental investigations. Approved for S/U grading only.

<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>30967</td>
<td>Conference</td>
<td>C</td>
<td>12:00 PM - 12:50 PM</td>
<td>F</td>
<td>2005 - Mechanical Engineering Lab</td>
<td>Gazzola, M</td>
</tr>
</tbody>
</table>

TAM 541  **Mathematical Methods I**  credit: 4 hours.
Vector and tensor algebra and complex-variable methods; ordinary differential equations, qualitative questions of existence and uniqueness; analytic solution methods, numerical methods, power-series solution and special functions; eigenvalue problems, Green's functions, Laplace transforms, stability of solutions; engineering applications drawn from mechanics. Prerequisite: MATH 285 and TAM 251.

<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>30968</td>
<td>Lecture-Discussion</td>
<td>G</td>
<td>11:00 AM - 12:50 PM</td>
<td>MW</td>
<td>1306 - Everitt Laboratory</td>
<td>Davies, W</td>
</tr>
</tbody>
</table>

<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>39105</td>
<td>Lecture-Discussion</td>
<td>KP</td>
<td>01:00 PM - 02:50 PM</td>
<td>MW</td>
<td>410B1 - Engineering Hall</td>
<td>Starzewski, M</td>
</tr>
<tr>
<td>63682</td>
<td>Online</td>
<td>ONL</td>
<td>ARRANGED -</td>
<td></td>
<td></td>
<td>Starzewski, M</td>
</tr>
</tbody>
</table>

Restricted to MS: Civil Engr - Online - UIUC, MCS:Computer Sci Online -UIUC, MS:Industrial Engr Online-UIUC, MS:Mechanical Engineering -UIUC, MS:Env Engr CivilEngr ONL-UIUC, NDEG:Grad Nondegree-CE-UIUC, or MENG:Mech Engineering Onl-UIUC. Restricted to online grad non-degree, online MCS, online MSME, online MSCEE, and online MSAE students. Center for Innovation in Teaching & Learning (CITL) restrictions and assessments apply, see https://online.illinois.edu. For more details on this course section, please see http://engineering.illinois.edu/online/courses/.

TAM 545  **Advanced Continuum Mechanics**  credit: 4 hours.
Unified treatment of modern continuum mechanics: mathematical preliminaries; review of kinematics and general balance laws; general theory of mechanical constitutive equations, including material constraints and material symmetry. Prerequisite: TAM 551.

<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>51690</td>
<td>Lecture-Discussion</td>
<td>E</td>
<td>03:00 PM - 04:50 PM</td>
<td>MW</td>
<td>135 - Mechanical</td>
<td>Mataion, M</td>
</tr>
</tbody>
</table>

TAM 549  **Asymptotic Methods**  credit: 4 hours.
Advanced methods of perturbation theory and asymptotic analysis, with examples drawn from classical dynamics, fluid mechanics, and wave propagation: asymptotics of integrals, singular perturbation theory (boundary layers, matched asymptotic expansions, and composite expansions), multiple scales, summation of series; special topics. Prerequisite: MATH 446 and TAM 541.
TAM 551  **Solid Mechanics I**  credit: 4 hours.
 Mechanics of elastic deformable bodies, based on the fundamental concepts of modern continuum mechanics: kinematics, balance laws, constitutive equations; classical small-deformation theory; formulation of initial boundary-value problems of linear elastodynamics and boundary-value problems of linear elastostatics; variational formulations, minimum principles; applications of theory to engineering problems. Prerequisite: MATH 285.

<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>30969</td>
<td>Lecture-Discussion</td>
<td>E</td>
<td>10:00 AM - 11:50 AM</td>
<td>TR</td>
<td>153 - Mechanical Engineering Bldg</td>
<td>Amiri Hezaveh, A Sofronis, P</td>
</tr>
</tbody>
</table>

TAM 597  **Advanced Independent Study**  credit: 1 TO 8 hours.
 Analytical, experimental, or computational studies in one or more areas of theoretical and applied mechanics, including solid mechanics, behavior of materials, fluid mechanics, dynamics, applied mathematics, and computational science and engineering. May be repeated. (Summer session, 1 to 4 hours). Prerequisite: Consent of instructor.

<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>10215</td>
<td>Independent Study</td>
<td>ARRANGED-</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Instructor Approval Required

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>70406</td>
<td>Lecture-Discussion</td>
<td>SHH</td>
<td>09:00 AM - 10:50 AM</td>
<td>MW</td>
<td>206 - Transportation Building</td>
<td>Hutchens, S</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
Rubbery Polymer Micromech
Advanced analysis of rubbery and gel materials with an emphasis on relating microstructural architecture to the mechanics of material behavior: non-linear elasticity, viscoelasticity, damage accumulation, fatigue, and fracture. Effects of fillers, covalent vs. physical bonding, and branching on mechanical response will be discussed as well as current topics in materials research (such as liquid crystal elastomers and electroactive polymers). Analysis will be performed at all relevant length scales, from the molecular to the macroscopic. Pre-requisites: TAM 551 (Solid Mechanics I) or equivalent, CEE 300 or ME 330 or TAM 324 (Materials) or ME 430 (Failure of Engineering Materials), graduate standing.

TAM 599  **Thesis Research**  credit: 0 TO 16 hours.
 Approved for S/U grading only. May be repeated.
<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>10220</td>
<td>Independent Study</td>
<td></td>
<td>ARRANGED -</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructor Approval Required