AE 598  **Special Topics**  credit: 1 TO 4 hours.
Subject offerings of new and developing areas of knowledge in aerospace engineering intended to augment existing formal courses. Topics and prerequisites vary for each section. See Class Schedule or departmental course information for both. May be repeated in the same or separate terms if topics vary to a maximum of 12 hours.

<table>
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<tr>
<th>CRN</th>
<th>Type</th>
<th>Section</th>
<th>Time</th>
<th>Days</th>
<th>Location</th>
<th>Instructor</th>
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<tr>
<td>62621</td>
<td>Lecture</td>
<td>ANS</td>
<td>10:00 AM - 11:20 AM</td>
<td>MW</td>
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<td>Gao, G</td>
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<td>64177</td>
<td>Lecture-Discussion</td>
<td>C</td>
<td>10:00 AM - 11:50 AM</td>
<td>MW</td>
<td>-</td>
<td>James, K</td>
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<tr>
<td>49926</td>
<td>Lecture-Discussion</td>
<td>CAA</td>
<td>10:30 AM - 12:20 PM</td>
<td>TR</td>
<td>225A - Talbot Laboratory</td>
<td>Freund, J</td>
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<tr>
<td>47198</td>
<td>Online</td>
<td>CAO</td>
<td>ARRANGED -</td>
<td>-</td>
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<td>Freund, J</td>
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Credit Hours: 4 hours

**Adv Global Nav Sat Systems**
Satellite Navigation, and in particular, the Global Positioning System (GPS) is a critical component in avionics, and has been widely used in both ground and aerial vehicles. The discipline is in a period of flux. The U.S. GPS and the Russian GLONASS are being joined by the European Galileo and the Chinese BeiDou systems. Furthermore, the prospect of a commercial UAV industry in the near future will create significant new engineering opportunities in designing and building avionics systems involving GPS. In this course, students will learn advanced satellite navigation technologies with applications in UAV flight and control systems.

Credit Hours: 4 hours

**Nonlinear Solid Mech Design**
This course will be taught with ME 570, Nonlinear Solid Mech Design. Optimality conditions; finite methods; design sensitivity analysis; transient analysis; thermo-mechanical solid mechanics. Prerequisite: One of AE 420, CEE 470, ME 471, TAM 470, TAM 445, TAM 551.

Credit Hours: 4 hours

**Aeroacoustics**
4 hours Topic: Aeroacoustics. Physical mechanisms and mathematical modeling of sound generation and flow-sound interaction; An overview of aeroacoustics theories and computational approaches; Advanced turbulence simulation techniques (DNS, LES, unsteady RANS) for evaluation nonlinear sound sources; Accurate numerical methods and boundary conditions for direct computation of sound generation and propagation. Both engineering biological systems (e.g., the human voice) will be discussed. Prerequisites: Intermediate level courses in fluid mechanics and CFD (or numerical methods).

Credit Hours: 4 hours

**Aeroacoustics**
Restricted to MS: Civil Engr - Online - UIUC, MCS:Computer Sci Online -UIUC, MS:Mechanical Engineerng -UIUC, MS: Aerospace Engr-Online-UlUC, NDEG:Grad Nondegree-CE-UlUC, or MENG:Mech Engineering Onl-UlUC.
Restricted to online graduate non-degree, online MCS, online MSME, online MSCEE, and online MSAE students. For more details on this course section, please see [http://engineering.illinois.edu/online/courses/](http://engineering.illinois.edu/online/courses/). Non-Degree students may enroll on a space-available basis with consent of Program Coordinator, Staci McDannel (tank@illinois.edu).