Aerospace Engineering

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>
<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>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>Bodony, D</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
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).

<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>46225</td>
<td>Lecture-Discussion</td>
<td>GSE</td>
<td>09:00 AM - 10:20 AM</td>
<td>TR</td>
<td>225A - Talbot Laboratory</td>
<td>Elliott, G</td>
</tr>
</tbody>
</table>

Credit Hours: 4 hours
4 hours Topic: Diagnostics for Aerodynamics and Propulsion. Advanced techniques for measurements in flow fields relevant to aerodynamics and propulsion with an emphasis on laser and optical based techniques; A brief review of experimental procedures and classic diagnostic techniques relevant to aerodynamic and propulsion experiment research. The majority of the course will cover the fundamentals needed to utilize optical and laser based techniques such as interferometry, spectroscopy, laser induced fluorescence, particle image velocimetry, laser based flow visualization, laser Doppler velocimetry, Rayleigh scattering, and pressure/temperature sensitive paint. The course will be divided between lectures, student presentations, and hands-on exercises where the students will utilize the diagnostics in investigative laboratory experiences. Prerequisite: AE 460 or equivalent, and graduate level fluid mechanics class (AE 412) or consent of instructor.