<table>
<thead>
<tr>
<th>Course Title</th>
<th>MECH 5337 Aerospace Dynamics and Controls</th>
<th>Spring/2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INSTRUCTOR:</strong></td>
<td>Angel Flores-Abad Office: Engineering Building, Room E331, <a href="mailto:afloresabad@utep.edu">afloresabad@utep.edu</a></td>
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<tr>
<td><strong>OFFICE HOURS:</strong></td>
<td>11:00 AM to 12:00 pm MTWRs</td>
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<tr>
<td>Lecture:</td>
<td>Quinn Hall 202</td>
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<tr>
<td>LAB:</td>
<td>E-102B Intelligent systems laboratory</td>
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<td><strong>COURSE DESCRIPTION:</strong></td>
<td>This course provides fundamentals on spacecraft dynamics and control considering the effects of orbital mechanics. Particular focus is placed on rigid body kinematics and dynamics, attitude control, orbital determination, orbital maneuvers, restricted three body problems and formation flying.</td>
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<td><strong>PREREQUISITES:</strong></td>
<td>Desired knowledge on dynamics and controls.</td>
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| Software | • Matlab 2012: available at ETC  
• FreeFlyer: available at Csetr (M305) |
| **Journal and Conferences** | **Journals**  
AIAA Journal of Guidance, Control and Dynamics  
IEEE Transactions on Aerospace and Electronic Systems  
IEEE Transactions on Automatic Control  
AIAA Journal of Spacecraft and Rockets  
Acta Astronautica  
Journal of the Astronautical Sciences  
**Conferences**  
AIAA Guidance, Navigation, and Control Conference  
AIAA/AAS Astrodynamics Specialist Conference  
IEEE Aerospace Conference |
| **GRADING:** | Class assignments (Paper-based and software-based assignments) 40%  
Test 1 (Midterm) - March 2 25%  
Test 2 (Midterm) - April 27 25%  
Final Project: 10% |
| **ESCALE** | A ≥ 90  
B ≥ 80 but <90  
C ≥ 70 but <80  
D ≥ 60 but <70  
F <60 |
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<tr>
<td><strong>TOPICS COVERED:</strong></td>
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<tr>
<td>• Dynamics systems modelling</td>
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<td>• Rotational kinematics</td>
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<td>• Dynamics systems control</td>
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<tr>
<td>• Orbital dynamics</td>
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<tr>
<td>• Orbital maneuvers and control</td>
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<tr>
<td>• Rigid-body dynamics</td>
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<tr>
<td>• Rotational Maneuvers and attitude control</td>
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<td><strong>MATERIAL FOR CLASS</strong></td>
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<td>• Calculators: Simple scientific calculators are allowed. For example: TI-30X, HP33S and HP35S. Programmable calculators or those with advanced functions ($\int, dx, vectors$ and $matrices$) are not allowed. Those are the same calculators that are currently being allowed in the Fundamental of Engineering (FE) and Professional Engineering (PE) exams (<a href="http://ncees.org/exams/calculator-policy/">http://ncees.org/exams/calculator-policy/</a>)</td>
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<td>• Laptop.</td>
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<td><strong>AUTHOR/DATE:</strong></td>
<td>Angel Flores-Abad</td>
<td>1/20/2016</td>
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