Syllabus

MAE 4410: Fundamentals of Astrodynamics

University of Colorado at Colorado Springs
Mechanical and Aerospace Engineering

Meets: M 4:30 -7:05
Columbine Hall, Room 304

Instructor: Dr. Jason Roney
Office: University Office Park 1867, Room 201C
Telephone: (719) 262-3573
Email: jroney@eas.uccs.edu

Textbooks:

Midterm I: Monday, October 7, 2002 (2 hours)
Midterm II: Monday, November 18, 2002 (2 hours)
Final: Monday, December 16, 2002 4:30-7:00 p.m.
Last Day of Class (Lecture): Monday, December 9, 2002, Also, No Class September 2, 2002

Grading:
Homework: 15%
Midterm I: 25%
Midterm II: 25%
Final (Comprehensive): 25%
Project: 10%

*Homework will be due at the beginning of class on the due date. Late policy: 50% off, one day late, and will not be accepted 2 days late. Homework will be assigned in class.

*A final project involving satellite orbits will be due on the last day of classes.

Prerequisites: MAE 2102: Dynamics
MATH 313: Introduction to Linear Algebra
MATH 340: Introduction to Differential Equations
CS 206: Topics in Computer Science

Note: This course no longer meets with MAE 5410

Course Outline:
A solid overview of Chapters 1-4, 6 and 9 from *Orbital Mechanics* will be covered in addition to supplemental material from *Fundamentals of Astrodynamics*.

<table>
<thead>
<tr>
<th>Course Chapters</th>
<th>OM: 1.1-1.7</th>
<th>FOA: 1.1 –1.11</th>
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<tbody>
<tr>
<td>1. The n-body problem</td>
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<tr>
<td>2. Positions in Orbit as a Function of Time</td>
<td>OM: 2.1 - 2.5</td>
<td>FOA: 4.1 – 4.3</td>
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<td>3. The Orbit in Space</td>
<td>OM: 3.1- 3.3</td>
<td>FOA: 2.1 – 2.6</td>
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<td>4. Lambert’s Problem</td>
<td>OM: 4.1 - 4.10</td>
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<tr>
<td>5. The Rocket Equations</td>
<td>OM: 5.1-5.3, 5.5</td>
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<tr>
<td>6. Basic Orbital Maneuvers</td>
<td>OM: 6.1 – 6.4, 6.6</td>
<td>FOA: 3.1 – 3.4</td>
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Course Outline Subject to Appending as the Semester Progresses.