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:
Prussing, J.E., and Conway, B.A., Orbital Mechanics, Oxford University Press, New York 1993.

Bate, R.R., Mueller, D.D., and White, J.E., Fundamentals of Astrodynamics, Dover Publications, Inc., New York, 1971.

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 *Funadmentals of Astrodynamics*.

	Course Chapters
1. The n-body problem	**OM:** 1.1-1.7
	FOA: 1.1 –1.11
2. Positions in Orbit as a Function of Time	**OM:** 2.1 - 2.5
	FOA: 4.1 – 4.3
3. The Orbit in Space	**OM:** 3.1- 3.3
	FOA: 2.1 – 2.6
4. Lambert's Problem	**OM:** 4.1 - 4.10
5. The Rocket Equations	**OM:** 5.1-5.3, 5.5
6. Basic Orbital Maneuvers	**OM:** 6.1 – 6.4, 6.6
	FOA: 3.1 – 3.4
7. Perturbation	**OM:** 9.1 – 9.4
	FOA: 9.1 - 9.7

Course Outline Subject to Appending as the Semester Progresses.