ENG ME406 Dynamics of Space Vehicles **Fall 2009**

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Text: W. T. Thomson, *Introduction to Space Dynamics*, Dover, 1986.

Week Beginning	Topics	Reading
8/31	Kinematics of particle motion	Ch. 1, 2
9/7	Rotation matrices, angular velocity	Secs. 3.1-3.3
9/14	Particle dynamics, energy principles	Secs. 4.1-4.4
9/21	Two-body problem	Secs. 4.5-4.9
9/28	"	"
10/5	Orbital dynamics	Secs. 4.11-4.18
10/12	"	"
10/19	Momentum and energy principles for rigid bodies	Secs. 5.1-5.7
10/26	Torque-free motion	Secs. 5.8-5.12
11/2	Attitude dynamics	Secs. 7.1-7.6
11/9	"	"
11/16	Gyroscopic instruments	Secs. 6.1-6.2, 6.6
11/23	Rocket dynamics	Secs. 7.7-7.8, 8.1-8.2
11/30	Three-body problem	Class notes
12/7	"	"

Grading: Three examinations, each worth 25% of the final grade.
Homework assignments, together worth 25% of the final grade.
Optional course project.

References: W. E. Wiesel, *Spaceflight Dynamics*, McGraw-Hill, 1997.
R. H. Battin, *An Introduction to the Mathematics and Methods of Astrodynamics*, AIAA, 1987.