

## Course Announcement

# AERO 7970 Special Topics in Aerospace Engineering: Advanced Mechanics of Dynamic Systems

Spring 2009, MWF 10-10:50

Dr. Andrew Sinclair

Prerequisite: MECH 7610 Advanced Dynamics or equivalent

### Course Topics

#### Alternative Coordinate Representations

1. Constrained Systems
2. Overparameterized Systems

#### Alternative Dynamic Principles

3. Hamilton's Principle
4. Quasi Velocities
5. Kane's Equations

#### Analysis of Dynamic Systems

6. Reduction
7. Motion Integrals and Stream Functions
8. Stability Analysis for Nonlinear Systems

#### Introduction to Control Concepts

9. Sliding-Mode Control
10. Robust Control
11. Adaptive Control

#### Introduction to Flexible-Body Dynamics

12. Assumed Modes
13. Finite-Element Method