

ASEN 5010
Spacecraft Dynamics and Control
Spring 2020

Instructor: Jordan Maxwell, Office: AERO 446
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Lectures: T, R 8:30-9:45am, AERO 111

Office Hours: T, F 10:00am-10:00pm, AERO 111

Exams: There will be a mid-term exam and one comprehensive final exam. If you have exam grading issues, you must see me within 2 weeks of having the exam returned to you. There will also be one course project which will require you to write a technical report. These reports must be type written and composed as a professional technical report.

Class Attendance: You are expected to attend class. If you need to miss a lecture, it is your responsibility to catch up on the material. Don't go to the instructor to catch up on missed material, speak with class mates and get the notes from them. Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. If you cannot attend a regularly scheduled class, it is up to the student to catch up on the missed material. If you cannot take an exam on a particular day, please let the instructor know at the time the exam is being scheduled.

Make-Up Policy: There are no make-up homework assignments. If you miss the assignment, you get a zero for it. If you can't make an exam or a pressing reason, you need to contact the instructor one week prior to the exam date. If you can't take the exam for some emergency reason, you still need to notify the instructor prior to the exam. Without prior consent, there will be no make-up exams.

Disabilities If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition or injury, see [Temporary Medical Conditions](#) under the Students tab on the Disability Services website.

Classroom and On-Campus Behavior Students and faculty each have responsibility for main-

Estimate of Topics Covered

Introduction Review of vector notation, Vector Differentiation, Euler angles

Spacecraft attitude coordinate choices direction cosine matrix, Euler parameters, modified and classical Rodrigues parameters

Spacecraft equations of motion Use momentum and energy equations for rigid bodies

Linear and nonlinear attitude control of rigid bodies Learn how to exploit attitude coordinate descriptions to create regulator and tracking feedback control laws.

Momentum exchange devices Develop equations of motion of satellite with multiple VSCMGs.