

ASEN 5018/6028: Graduate Projects
Department of Aerospace Engineering Sciences
Syllabus, Fall 2020

Course Coordinator: Dr. Nicholas Rainville / AERO 219 / 303 492-7814
nicholas.rainville@colorado.edu

Course Teaching Assistant: David Carr

Lecture Section: ASEN 5018–800 / 6028-800
Monday 17:35 – 18:25, Zoom Meeting, See Canvas for link

Lab Section: ASEN 5018-801 / 6028-801, Human Spacecraft Design Section
Section Adviser: Col. Jim Voss / AERO 317 / jim.voss@colorado.edu
Tuesday, Thursday 11:00 – 12:50, TBD

Lab Section: ASEN 5018–802 / 6028-802, Satellite Timing System
Section Adviser: Prof. Penina Axelrad / AERO 417 / penina.axelrad@colorado.edu
Tuesday, Thursday 9:00 – 10:50, TBD

Lab Section: ASEN 5018–803 / 6028-803, Cubesats for Space Science
Section Adviser: Prof. Bob Marshall / AERO 419 / robert.marshall@colorado.edu
Monday, Wednesday 14:20 – 16:10, AERO 114

Lab Section: ASEN 5018–804 / 6028-804, CU-E3 and Maxwell Cubesats
Section Adviser: Dr. Marcin Pilinski / SPSC-N275 / marcin.pilinski@colorado.edu
Wednesday, Friday 13:50 – 15:40, AERO N240

Lab Section: ASEN 5018-805 / 6028-805, MLI
Section Adviser: Prof. James Nabity / AERO N305 / james.nabity@colorado.edu
Monday, Wednesday 9:00 – 10:50, AERO N240

Lab Section: ASEN 5018–806 / 6028-806, Space Domain Awareness
Section Adviser: Dr. Dan Kubitschek / ARL-175C / daniel.kubitschek@lasp.colorado.edu
Tuesday, Thursday 15:00 – 16:50, AERO N240

Course Text: Curtis R. Cook, Just Enough Project Management, McGraw-Hill. 2005

Course Prerequisite: Permission of lab section instructor. Completion of, or current enrollment in, one of the following courses as related to the specific lab project of interest is highly recommended: ASEN 5158 Space Habitat Design, ASEN 5148 Spacecraft Design, ASEN 4138 Aircraft Design. Completion of, or current enrollment in, ASEN 5188 Space Systems Engineering is also recommended. Non-AES student enrollment is encouraged. Concurrent enrollment in ASEN 4018/28, Senior Design, is discouraged, but may be allowed with consent of the section instructor.

Course Purpose: The Graduate Projects two-semester course sequence is designed to expose graduate students to engineering project work through project management, systems engineering, and subsystem-level design and testing. Students will work on complex, hands-on projects related to the focus areas in the aerospace engineering sciences department: Aerospace Engineering Systems, Astrodynamics and Satellite Navigation Systems, Bioastronautics, and Remote Sensing, Earth and Space Sciences. Students completing this course series will be better prepared for the type of project work and team dynamics they will encounter in government and industry. Should the project team produce a viable commercial product, students will have the knowledge and opportunity to transition into an aerospace business incubator to commercialize those products.

Course Objectives: Students will be practiced in or at least exposed to the following areas.

- Project Management and Systems Engineering
- Team project work in student groups
- Detailed requirements definition and design
- Formal presentations and design reviews
- Build, test and verification of an aerospace system
- Entrepreneurial possibilities for starting a company
- Intellectual property and technology transfer

Course Grading: The lab section professor and course coordinator will split grading responsibilities as described below.

The lab section professor will determine 85% of the student's grade in the following areas:

- 1) Presentations - clear and concise content and delivery
- 2) Documentation - quality engineering writing, delivered in accordance with deadlines
- 3) Peer evaluations - 3% from the first evaluation, 7% from the second
- 4) Faculty evaluation
- 5) Participation - hours reported, attendance

**more detailed grading rubrics for each section will be provided by the professor*

The course coordinator will determine 15% of the student's grade in the following areas:

- 1) Time sheet submission (2%)
 - 0-1 late timecards: 2/2
 - 1-2 late timecards: 1.5/2
 - 2-3 late timecards: 1/2
 - 3-4 late timecards: 0.5/2
 - 4+ late timecards: 0/2
- 2) Lecture attendance/participation (2%)
 - 0-1 missed lectures: 2/2
 - 1-2 missed lectures: 1.5/2
 - 2-3 missed lectures: 1/2
 - 3-4 missed lectures: 0.5/2
 - 4+ missed lectures: 0/4
- 3) Quizzes* (5%)

4) Peer evaluation submissions (3 throughout the semester) (3%)

0 late/missed peer evaluations: 3/3

1 late/missed peer evaluations: 2/3

2 late/missed peer evaluations: 1/3

3 late/missed peer evaluations: 0/3

5) Peer evaluation quality (3 throughout the semester) (3%)

Each peer evaluation will be graded based on the quality of feedback given, 1 point each.

*Students who have already taken the quiz as a 5018 student will be excused from the quiz and their grade will be scaled accordingly.

Classroom Behavior

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the policies on [classroom behavior](#) and the [Student Code of Conduct](#).

Requirements for COVID-19

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. Required safety measures at CU Boulder relevant to the classroom setting include:

- maintain 6-foot distancing when possible,
- wear a face covering in public indoor spaces and outdoors while on campus consistent with state and county health orders,
- clean local work area,
- practice hand hygiene,
- follow public health orders, and
- if sick and you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or if you live on-campus, please alert [CU Boulder Medical Services](#).

Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to [Student Conduct and Conflict Resolution](#). For more information, see the policies on [COVID-19 Health and Safety](#) and [classroom behavior](#) and the [Student Code of Conduct](#). If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the “Accommodation for Disabilities” statement on this syllabus.

Before returning to campus, all students must complete the [COVID-19 Student Health and Expectations Course](#). Before coming on to campus each day, all students are required to complete a [Daily Health Form](#).

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home and complete the [Health Questionnaire and Illness Reporting Form](#) remotely. In this class, if you are sick or quarantined, notify the course coordinator (nicholas.rainville@colorado.edu) that you will be absent. You do **not** need to state the nature of your illness or provide a doctor's note, but you are required to provide notification within 5 days of the lecture or project section absence.

Accommodation for 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, see [Temporary Medical Conditions](#) on the Disability Services website.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code (honor@colorado.edu); 303-492-5550). Students found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the [Honor Code Office website](#).

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

The University of Colorado Boulder (CU Boulder) is committed to fostering an inclusive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or

domestic violence), stalking, or protected-class discrimination or harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or cureport@colorado.edu. Information about the OIEC, university policies, [anonymous reporting](#), and the campus resources can be found on the [OIEC website](#).

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, dating and domestic violence, stalking, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

Religious Holidays

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, you must let the instructors know of any such conflicts within the first two weeks of the semester so that we can work with you to make reasonable arrangements.

See the [campus policy regarding religious observances](#) for full details.