

ASEN 5018/6028: Graduate Projects
Department of Aerospace Engineering Sciences
Syllabus, Spring 2019

Course Coordinator: Rick Hieb / ECAE 111 / 303 492-1486 / rick.hieb@colorado.edu
Course Teaching Assistant: Andrew Dahir / ECAE 133 / andrew.dahir@colorado.edu

Lecture Section: ASEN 5018-010 / 6028-010
Tuesday 5:00 – 5:50, ECCR 200

Lab Section: ASEN 5018-011 / 6028-011, PEGASYS
Section Adviser: Col. Jim Voss / ECAE 101 / jim.voss@colorado.edu
Tuesday, Thursday 11:00 – 12:50, ECAE 104

Lab Section: ASEN 5018-013 / 6028-013, COSMO Cubesat
Section Adviser: Dr. Bob Marshall / ECNT 315 / robert.marshall@colorado.edu
Monday, Wednesday 1:00 – 2:50, ECAE 104

Lab Section: ASEN 5018-014 / 6028-014, RAPS
Section Adviser: Dr. Bob Marshall / ECNT 315 / robert.marshall@colorado.edu
Tuesday, Thursday 1:00 – 2:50, ECAE 104

Lab Section: ASEN 5018-018 / 6028-018, Asteroid Soft Bots
Section Adviser: Dr. Kathryn Wingate / ECES 136 / kathryn.wingate@colorado.edu
Tuesday, Thursday 3:00 – 4:50, ECAE 104

Lab Section: ASEN 5018-019 / 6028-019, Autonomous Cluster Navigation
Section Adviser: Dr. Dan Kubitschek / ARL-175C / daniel.kubitschek@lasp.colorado.edu
Tuesday, Thursday 4:00 – 5:50, ECAE 104

Lab Section: ASEN 5018-020 / 6028-020, Clock Ensemble Testbed
Section Adviser: Dr. Penina Axelrad / / penina.axelrad@colorado.edu
Monday, Wednesday 9:00 – 10:50, ECAE 104

Lab Section: ASEN 5018-021 / 6028-021, Maxwell and CUE3 CubeSats
Section Adviser: Dr. Marcin Pilinski / SPSC-N275 / marcin.pilinski@colorado.edu
Wednesday, Friday 1:00 – 2:50, ECAE 1B16

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. Graduate Projects is an option for MS students who choose to complete two semesters of work on an aerospace engineering project rather than write a thesis or conduct Independent Study to satisfy graduation requirements, and for PhD students who value this type of project experience to meet their coursework requirements.

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 (4%)
 - 0-1 late timecards: 4/4
 - 2 late timecards: 3/4
 - 3 late timecards: 2/4
 - 4 late timecards: 1/4
 - 4+ late timecards: 0/4
- 2) Lecture attendance/participation (4%)

- 0-1 missed lectures: 4/4
 - 2 missed lectures: 3/4
 - 3 missed lectures: 2/4
 - 4 missed lectures: 1/4
 - 4+ missed lectures: 0/4
- 3) Quiz(zes) (4%)
- 4) Peer evaluation submissions (2 throughout the semester) (2%)
- 0 late/missed peer evaluations: 2/2
 - 1 late/missed peer evaluations: 1/2
 - 2 late/missed peer evaluations: 0/2
- 5) Project Charter submitted on time (1%)

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 or injury, see [Temporary Medical Conditions](#) under the Students tab on the Disability Services website.

Classroom Behavior

Students and faculty each have responsibility for maintaining an appropriate learning environment. 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. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on [classroom behavior](#) and the [Student Code of Conduct](#).

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 who are 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 a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (including sexual assault, exploitation, harassment, dating or domestic violence, and stalking), discrimination, and 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, 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.