

ASEN5050 – Space Flight Dynamics – Fall 2017

Instructor:

Professor Natasha Bosanac

Office: ECNT 418

Ph: 303-492-7061

Email: natasha.bosanac@colorado.edu

Office Hours: Tues, Thurs: 3.30-5pm, Wed: 3-4pm, appointments available upon request.

During office hours, distance students may call my office number.

Lectures:

Tues, Thurs 2:00-3:15pm

Lectures held in ECCS 1B28, Labs held in ECCS 1B28 and ECCR 239.

Distance students may view lectures synchronously using Zoom, or at a later date via the lecture recordings available on D2L. An email with instructions will be sent before the first class.

Course Webpage:

Course accessible through D2L at learn.colorado.edu

Teaching Assistants:

Dong-Kyeong (DK) Lee

Email: dongkyeong.lee@colorado.edu

Office Hours: Mon, Wed 10.30am-12.30pm in the George Born room, 3rd floor of ECNT.

Ben Hemphill

Email: ben.hemphill@colorado.edu

Required Textbook:

David A. Vallado, “Fundamentals of Astrodynamics and Applications, 4th Edition”, 2013, ISBN: 978 11881883180

This textbook can be purchased at the CU Bookstore and from external sellers. If you are unable to purchase the text or have a previous edition, a copy will be designated as a course reserve in the Gemmill Engineering, Math and Physics library with a limited borrowing period (~4 hours). Errata document is posted on the D2L page.

Course Overview:

In this course, we will study the kinematics and dynamics of celestial bodies and artificial satellites moving under the influence of forces common to the space flight environment; most importantly, bodies moving under the influence of gravity.

Grading Policy:

Take home Midterm (25%)

Take home Final Exam (25%)

Homework (30%)

Research Project (20%)

On-campus students: Homework must be handed in at the beginning of class on the due date.

Distance students: Homework must be submitted via D2L by 11.59pm MT on the due date.

Important Dates:

A course schedule including lecture topics and assessment due dates will be made available on the course webpage.

October 19 – Take home midterm exam assigned

October 24 – Take home midterm exam due

November 21 – No Class – Fall Break

November 23 – No Class - Thanksgiving

December 14 – Last day of class, Take home final exam assigned

December 19 – Take home final exam due

Note: *Take-home exam dates are subject to change*

Homework Policy:

- While collaboration is permitted on homework, each student must submit a unique assignment write-up. Copying material from any resource (including solutions manuals) is plagiarism and is an Honor Code violation.
- Submitted homework must be neat and professional, with clear working. Either handwritten or typed solutions are acceptable.
- Submitted homework must demonstrate understanding of the problem through: inclusion of diagrams (where appropriate), correct notation and terminology, a clear explanation of the approach used to solve the problem, demonstration of each of the key steps in obtaining a solution, and a clear answer with appropriate units.
- If MATLAB or a similar numerical software package is used to solve a problem, include your code. However, code may not be submitted solely as your solution – a write-up with the components described above must accompany the solution to each problem.
- If you must miss a class for an excused absence or extenuating circumstances, please contact the instructor to make alternative arrangements for homework submission in advance of the deadline, where possible.
- Although each homework assignment will have several problems, all problems may not be graded. However, solutions will be provided to you for all problems.

Distance Students:

- This course requires the use of the Zoom conferencing tool which is currently not accessible to users using assistive technology. If you use assistive technology to access the course material, please contact me immediately to discuss.
- Zoom meeting information, to virtually join the class synchronously (i.e., T,Th 2pm-3.15pm Boulder time), will be provided to you by the instructor.
- Videos of the lectures will be available after the class through D2L.

Course Software:

- This course requires the use of astrodynamics modeling software (e.g., Systems Tool Kit, General Mission Analysis Tool, FreeFlyer) which are currently not accessible to users using assistive technology. If you use assistive technology to access the course material, please contact me immediately to discuss.

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 \(www.colorado.edu/disabilityservices/students\)](http://www.colorado.edu/disabilityservices/students).
- 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 and discuss your needs with your professor.

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, please discuss with me any conflicts you have so we can make alternative arrangements as soon as possible, preferably in the first two weeks of the course.
- See campus policy regarding religious observances for full details.

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](#).

Sexual Misconduct, Discrimination, Harassment, and/or Related Retaliation:

- The University of Colorado Boulder (CU Boulder) is committed to maintaining a positive learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct, discrimination, harassment or related retaliation against or by any employee or student. CU's Sexual Misconduct Policy prohibits sexual assault, sexual exploitation, sexual harassment, intimate partner abuse (dating or domestic violence), stalking or related retaliation. CU Boulder's Discrimination and Harassment Policy prohibits discrimination, harassment or related retaliation based on race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Individuals who believe they have been subject to misconduct under either policy should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127. Information about the OIEC, the above referenced policies, and the campus resources available to assist individuals regarding sexual misconduct, discrimination, harassment or related retaliation can be found at the [OIEC website](#).

Honor Code:

- All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to [the academic integrity policy](#). Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, resubmission, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code Council (honor@colorado.edu; 303-735-2273). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code Council as well as academic sanctions from the faculty member. Additional information regarding the academic integrity policy can be found at the [Honor Code Office website](#).