

Grading:
Homework: 30%

Labs: 30%

labs.

Final Project: 40%

values will be clearly denoted on the assignment. The Final Project will be announced in March.

There are no exams in this class and there are no dropped assignments. If you don't submit an assignment, it is counted as a zero.

Assignment submission

Collaboration is permitted on assignments. However, each student must submit a **unique** assignment write-up.

Many assignments in the class will require coding. You may use the coding language or software package of your choice. It is not necessary to include code as part of your submission. Additionally, code **may not** be submitted solely as your solution.

Partial credit will be given based on intermediate steps and explanations provided in the assignment.

Assignment due dates will be denoted on the Canvas webpage. Students are responsible to ensure that submitted documents are uploaded correctly, readable, and in the correct location. Corrupt files will not be graded.

Late Policy

10% deduction per day.

if you will be turning something in late (Conference, travel, etc)

Topics:

- I. Review
 - a. History sto

- b. Type I vs Type 2 orbits
 - c. Discussion of Geometry of Lambert's problem
 - d. Universal Variables Algorithm
 - e. Revisit f and g functions
 - f. TOF equations for elliptical, parabolic, and hyperbolic transfers
 - g. Multi-Revolution solutions (Type 3, Type 4, etc)
 - h. Algorithm for multi-rev solutions
- III. Ephemeris
- a. Meeus Coefficients
 - b. Discussion of JPL Ephemerides
- IV. Pork Chop Plots
- a. Construction and Analysis
- V. Gravity Assists
- a. History
 - b. Vector Diagrams
 - c. Leading vs Trailing
 - d. Geometry
 - e. Computation of parameters (periapsis radius, turn angles, etc)
- VI. B-Plane
- a. Motivation
 - b. Geometry and axes derivation
 - c. Computing nominal B-

- b. Derivation of Equations of Motion
 - c. Transformation from synodic to inertial frame
 - d. Libration Points
- XIII. State Transition Matrix
 - a. Motivation
 - b. Derivation for CRTBP
- XIV. Libration Point Orbits
 - a. History in Mission Design
 - b.

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Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the academic integrity policy of the institution. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access, 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 honorcode.colorado.edu.