

ASEN 6060: Advanced Astrodynamics Fall 2020

Course description:

This course focuses on studying multi-body gravitational environments via the circular restricted three-body problem. This dynamical model is derived in detail using multiple approaches. The complex solution space admitted by this dynamical model is explored through the numerical computation, characterization and analysis of fundamental dynamical structures and the application of dynamical systems theory. These solutions are used to construct a transfer and are transitioned into higher-fidelity software for further use.

Instructor: Prof. Natasha Bosanac

Email: natasha.bosanac@colorado.edu

Office Hours: My office hours are Wednesdays 4pm-5pm MT and during lecture periods where no synchronous components are planned. All office hours will be held via Zoom.

Instruction mode: Hybrid Remote/Online.

Course Schedule: T,Th: 2.50pm-4.05pm

Course webpage: canvas.colorado.edu (Please check that your settings in Canvas enable you to receive regular notifications and announcements)

Course format: This course will be divided into modules based on subject matter. Lecture content will be delivered asynchronously via videos that will be accessible through the course webpage. Selected lecture periods will be used for synchronous recitation-style discussions via Zoom; these designated lecture periods and the associated logistics for participation will be noted on the course webpage at the beginning of the semester. To ensure flexibility in your participation in this course, I will not monitor or mandate attendance during these synchronous discussions; parts of these sessions will be recorded and videos made available so that you can watch them later if you are unable to attend. Office hours will not be recorded.

Note: lecture videos and course materials may not be distributed publicly or shared with individuals who are not registered in the course this semester without instructor consent.

Prerequisites: ASEN 5050 or equivalent, or instructor permission required.

Syllabus, ASEN 6060, Bosanac, Fall 2020

By the end of this course, students should be able to:

- 1.1 " # \$ % & ' (# !) * # ! + , & - . / 0) ' , 1 ! , + !) * # ! % ' & % . / 0 & ! & # \$) & ' %) # 2 !) * & # # 3 (, 2 4 ! 5 & , (/ # - ! 0 1 2 ! 2 # & ' 6 # !) * # ! # 7 . 0) ' , 1 \$! , + ! - ,) ' , 1

H me k A ig me

Final Project

There will be one final project that is due in the last week of classes. This project will focus on numerically generating a transfer in the circular restricted three-body problem. Further information will be provided in the middle of the semester.

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 (o) 10.24 8.4

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, we do not have any in-person participation; however, if you are sick or quarantined, please let me know whenever you need any accommodations and/or extensions.

