

Astronomy 31: Stellar Structure and Evolution

This class is aimed at people majoring in the physical sciences, with an emphasis for those majoring in physics and astrophysics. The goal is for you to learn both some of the theoretical grounding of stellar astrophysics, but also to learn some of the tools professional astronomers use including data analysis and coding. Both will be new to most of you, and therefore challenging. Success will depend on attending class, engaging in discussion and during lectures, doing all assigned work in a timely fashion (including the assigned reading), and most of all seeing help when needed, i.e., take advantage of office hours.

FALL 2020 - READ ME: Needless to say, this will be an unusual semester with the course taught fully remotely. After long consideration, I decided that a lot of the responsibility has to be shifted onto the students. For example, there is really no point for me to run a traditional lecture on Zoom: it would be tremendously tedious and I suspect a waste of time for all. Therefore, I will provide detailed readings on the textbook that must be done before each lecture. Not only the assignment reading must be done, but it is of paramount importance that the reading is understood, including demonstrations and examples. We will use the time on Zoom during lectures to discuss the assigned reading, with me facilitating the discussion and highlighting the most relevant aspects, as well as using the time to clarify any aspects which need clarification. I will supplement the reading with my lecture notes (which include, e.g., more steps in the demonstrations, or highlight important aspects).

Lectures:

Remotely, Tuesday and Thursday from 9:00 AM to 10:15 AM (Block T+). ZOOM will be used for all our lectures. Zoom meeting information:

<https://tufts.zoom.us/j/99157337454>

Meeting ID: 991 5733 7454

A PASSWORD IS REQUIRED TO JOIN. THIS WILL BE SENT SEPARATELY

Instructor:

Prof. Danilo Marchesini, CLIC, Room 312-E

Office Telephone: (617) 627-2756

Internet Address: Danilo.Marchesini@tufts.edu

Office Hours:

I am planning to have office hours on Wednesdays, 9:00 AM to 10:00 AM on Zoom, using the same meeting ID/PWD as above. In case needed, I can also schedule office hours on an individual case by case - just email me so that we can find a mutually convenient time. Do not hesitate to contact me as soon as you encounter difficulties in the course, especially for homework sets (but in general, for any matter).

Prerequisites:

Physics 11 and 12 (co-prerequisite), or instructor's consent.

Requirements:

To attend this course, you are required to sign a document stating that you are familiar with the Rules of Academic Integrity and promise to exercise the highest standards of academic honesty in this course. This document is at the end of the syllabus. If you join late, please contact the instructor to sign this document.

Textbook

I require the use of the book "An Introduction to Modern Astrophysics", 2nd Edition, by Carroll and Ostlie (ISBN: 9781108422161). This book is required. You are encouraged to find the cheapest available version either on-line or at the Tufts bookstore. Note: in Fall 2015, I adopted ***Pearson Custom Library Astronomy: Stellar Astrophysics, AST-15 Fall 2015, Prof. Danilo Marchesini***. If you still find it around, you are more than welcome to buy/use it. IMPORTANT: before buying the book, I advise you to send me an email for confirmation.

If you are planning on taking AST32 (Galactic and Extragalactic Astrophysics) as well in future semesters, you should strongly consider buying the full book as you will cover the "extra-galactic" chapters of the book in that class.

Given that this year the course will be taught online, I will be heavily using the textbook, as specified above.

Course Website

<http://cosmos.phy.tufts.edu/~danilo/AST31/AST31.html>. You should check this site regularly, especially for the updated syllabus and schedule of the course, and other documents.

Course Format

Classes will comprise of lectures, in-class problem solving sessions and discussions. Homework sets will be administered regularly. There will be a synchronous "on zoom" mid-term exam, and individual presentations by students who will serve as final exams.

Grading policy

Your final grade will be weighted as follows:

Your score

Homework assignments:

30%

Midterm exam:

35%

Presentations:

35%

TO PASS THIS CLASS YOU NEED A MINIMUM OF 60% . The grades will be distributed as follows:

A=90-100% , B=80-89.99% , C=70-79.99% , D=60-69.99%

IF NEEDED, THE ABOVE PERCENTILES MAY BE LOWERED, BUT NOT RAISED.

Make sure you double check your grades on the course site on Canvas from time to time, as these are the grades from which the final is computed. If there is a typo (or else), is your responsibility to alert me in a timely fashion.

Homework

There will be homework sets on problems that are representative of the material covered during the class lectures. The homework assignments should be approached as the best way to prepare for the mid-term exams. Homework assignments must be done individually, i.e., without working together on the problems with other students. Homework solutions will not be posted. If you'd like to discuss your homework grading, make sure to attend office hours.

Presentation

You will be assigned a topic over which you will prepare a 20 min lecture/presentation. This lecture will be delivered by you over Zoom at the end of the semester (we will schedule/assign presentation time slots ahead of time). The main goals for this assignment is to develop/strengthen your skills to critically read a chapter/paper and summarize it, and to develop/strengthen your presentation skills. Attendance to all students' presentations is mandatory. The students not presenting must ask at least three cumulative questions to the presenter. Grading on this assignment will be based on the presentation, presentation skills, presentation content, and ability to answer questions. I will provide individual feedback after the presentations.

Work submitted late

All assignments are due before the beginning of class on the due date, and they can be scanned and emailed to me. You get 5% off for every day after the due date. Extension on the homework are only allowed with a note from health services or an email from a dean. Maximum extension is one week, after which you will receive a zero.

Exams

There will be **ONE MIDTERM EXAM. THERE ARE NO MAKEUP EXAMS.**

MIDTERM IN-CLASS EXAM: Thursday, November 5th, 2020

The exam will be delivered through Zoom, synchronously. In other words, students will need to be connected on Zoom by 8:55am, and I will provide the exam through Zoom (as a PDF file). The students will have 75 min to complete the exam, scan it, and send it to me (as PDF, preferably). The exam must reach me by 10:20am to be considered for grading. I will provide more details about the format of the mid-term exam in due time.

Early/Makeup exams

NO EARLY EXAMS OR MAKEUP EXAMS ARE OFFERED FOR ANY EXAM. Exceptions are made for legitimate, documented emergencies that are cleared with the Dean of Student Affairs.

Academic Support at the StAAR Center:

The StAAR Center (formerly the Academic Resource Center and Student Accessibility Services) offers a variety of resources to students in the Schools of Arts and Sciences, and Engineering, the SMFA, and The Fletcher School; services are free to all enrolled students. Students may make an appointment to work on any writing-related project or assignment, attend subject tutoring in a variety of disciplines, or meet with an academic coach to hone fundamental academic skills like time management or overcoming procrastination. Students can make an appointment for any of these services by visiting go.tufts.edu/TutorFinder, or by visiting go.tufts.edu/StAARCenter.

Accommodations for Students with Disabilities:

Tufts University values the diversity of our body of students, staff, and faculty and recognizes the important contribution each student makes to our unique community. Tufts is committed to providing equal access and support to all qualified students through the provision of reasonable accommodations so that each student may fully participate in the Tufts experience. If a student has a disability that requires reasonable accommodations, they should please contact the StAAR Center (formerly Student Accessibility Services) at StaarCenter@tufts.edu or 617-627-4539 to make an appointment with an accessibility representative to determine appropriate accommodations. Please be aware that accommodations cannot be enacted retroactively, making timeliness a critical aspect for their provision.

Academic honesty:

Tufts holds its students strictly accountable for adherence to academic integrity. The consequences for violations can be severe. It is critical that you understand the requirements of ethical behavior and academic work as described in Tufts' Academic Integrity handbook. If you ever have a question about the expectations concerning a particular assignment or project in this course, be sure to ask me for clarification. The Faculty of the School of Arts and Sciences and the School of Engineering are required to report suspected cases of academic integrity violations to the Dean of Student Affairs Office. **If I suspect that you have cheated or plagiarized in this class, I must report the situation to the dean.**

By attending this class you are expected to have read and understood the rules of Academic Integrity (<http://students.tufts.edu/student-affairs/student-life-policies/academic-integrity-policy>) and are automatically agreeing to adhere to these rules.

As advised by the Dean of Student Affairs you are required to sign a document stating that you understand these rules and will adhere to them. Sign and hand in the last page of this document you are currently holding. It is expected that students in Astronomy 31 will maintain the highest standards of academic honesty. In particular, it is expected that:

- During tests and examinations, you will not accept or use information of any kind from other students. You will not use aids to memory other than those expressly permitted by the examiner.
- You will never represent the work of another student as your own.
- You will never try to deceive the instructor or teaching assistant by misrepresenting or altering your previous work or that of others.
- You are allowed to discuss approach and methods with other students, but you must do your own homework and must hand in your own handwritten work. You are not allowed to copy text or phrases from other students or other sources in books, magazines, the internet, etc.

Exam Policy: Do NOT bring unauthorized materials, information, or any electronic equipment with you to a room in which an exam is being administered. Do NOT engage in behavior that gives the appearance of cheating, such as passing a note to a friend, whispering to another student while the exam is in progress, or looking in the direction of another student's work. Do NOT bring your cell phone, tablet, music device, programmable calculator or any other electronic device to an exam room. If an exam proctor sees you handling an electronic device even to silence a phone if it rings or vibrates in the middle of the exam, the Judicial Affairs Administrator will treat it as an academic integrity violation. DO turn off your cell phone and put it out of reach, out of sight, or as instructed before the exam begins.

Departures from these standards will be reviewed with utmost seriousness by myself and Tufts University and will be reported to the Dean of Student Affairs.

HAND IN THIS PART TO YOUR INSTRUCTORS:**ACADEMIC HONESTY**

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It is expected that students in Astronomy 31 will maintain the highest standards of academic honesty. Departures from the standards specified in the syllabus and Tufts' Academic Integrity handbook will be review with utmost seriousness by myself and Tufts University and will be reported to the Dean of Student Affairs.

I understand and agree to these terms

Date: _____ Student ID: _____

Print Name: _____

Signature: _____