Astronomy 121: Stellar and Galactic Astronomy

Lectures:

Monday and Wednesday from 9:00 AM to 11:00 AM in Bromfield-Pearson, Room 007.

Professor:

Danilo Marchesini, CLIC, Room 312-E

Office Telephone: (617) 627-2756

Internet Address: Danilo.Marchesini@tufts.edu

Office Hours:

By appointment - just email me and we will set up a mutually convenient time.

Teaching Assistant:

N/A

Prerequisites:

Physics 13 and Math 51 (formerly Math 38), or 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 will be handed out on the first day of class. If you join late, please see the instructor to sign this document. ATTENDANCE is not mandatory, but it is very strongly recommended.

Course Objectives:

Astronomy-121 is a graduate level course covering topics on the physics of stellar interior and atmosphere (basic equations of stellar structure, nuclear processes, stellar evolution, white dwarfs, and neutron stars); properties of stars and stellar systems (variable stars, star clusters), distance measurements, magnitude systems, radiation emission processes in astrophysics. The objectives of this course will be addressed mainly through one or more of the following activities: lectures, in-class discussions and problem solving, hand-outs and homework problem sets. In-class exams (mid-term) will also be administered.

Textbook

- **Principles of Stellar Evolution and Nucleosynthesis**, by D. D. Clayton.

Additional readings:

- **Stellar Structure and Evolution**, by R. Kippenhahn & A. Weigert.
- **An Introduction to Modern Astrophysics**, 2nd Edition by Carroll and Ostlie.
- Handouts / Lecture notes

Course Website

http://cosmos.phy.tufts.edu/~danilo/AST121/AST121.html. You should check this site regularly, especially for the updated syllabus and schedule of the course, and for homework assignments.

Course Format

Classes will comprise of lecture, in-class problem solving sessions, and discussions. Homework sets will be administered regularly.

Grading policy

Your final grade will be weighted as follows:

	Your score
Homework sets:	37.5%
Midterm exam:	25%
Final exam:	37.5%

To pass this class you need a minimum of 60%. The grades will be distributed as follows:

A-/A/A+: >= 90/94/97%, B-/B/B+: >= 80/84/87%,

C-/C/C+: >= 70/74/77%, D-/D/D+: >= 60/64/67%

Homework

There will be several homework sets on problems that are representative of the class lectures and aimed at developing a useful astronomy tool set. The due dates of the homework sets will be specified at the time of assignment. Homework sets must be completed before class starts on the date they are due, as additional discussion will be done during the lecture.

Work submitted late

If you cannot finish the homework in time, you have a week to hand it in. Note: all assignments and homework must be completed and submitted before class starts. You get 5% off for every day

after the due date. After the 7 day grace period, no late work is accepted. Extension on the assignments are only allowed with a note from health services or an email from a dean.

Exams

There will be **one in-class exam (plus a mandatory comprehensive final exam). There are no makeup exams.**

In-class exam: TBD

Final exam: This exam is comprehensive and covers the whole material covered in class and in assignments.

TBD

The final exam is comprehensive and covers the whole material covered in class and in assignments. For graduate students, the **final exam** can be substituted by putting everything learned in this course at work and writing a code that solves the equations of stellar structure and stellar evolution and simulates the evolution of a high-mass star. The code and relevant figures must be submitted before XXX (end of Finals period).

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. **Important:** if you are sick with flu/COVID symptoms, stay in your room and call for medical assistance; do not come to class; it is your responsibility to prevent spreading the disease.

Health and Safety Policy

When physically in person and indoors for this course, **you'll be responsible for wearing a mask that covers your mouth and nose.** It is imperative that we work together as a community to uphold these standards to help mitigate the risk of spreading the virus. Failure to do so may result in a referral to the Dean of Student Affairs Office. For more information about expectations for the Fall, please review the Fall Guide here.

Mental Health Support

As a student, there may be times when personal stressors or emotional difficulties interfere with your academic performance or well-being. The Counseling and Mental Health Service (CMHS) provides confidential consultation, brief counseling, and urgent care at no cost for all Tufts undergraduates as well as for graduate students who have paid the student health fee. To make an appointment, call 617-627-3360. Please visit the CMHS website: http://go.tufts.edu/Counseling to learn more about their services and resources.

Accommodations for Students with Disabilities:

Tufts University values the diversity of our 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 you have a disability that requires reasonable accommodations, 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 Support at the StAAR Center:

The StAAR Center (formerly the Academic Resource Center and Student Accessibility Services) offers a variety of resources to all students (both undergraduate and graduate) in the Schools of Arts and Science, Engineering, the SMFA and Fletcher; 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/StAARCenter.

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 121 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 review 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:

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It is expected that students in Astronomy 121 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: _____