Astronomy 121: Stellar and Galactic Astronomy

Lectures:
Tuesday and Thursday from 9:30 AM to 11:45 AM in CLIC 406.

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.

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, homework problem sets, and small research papers. In-class exams (mid-term) will also be administered.
Textbook

- **Stellar Structure and Evolution**, by R. Kippenhahn & A. Weigert.
- Handouts / Lecture notes

Course Website

[http://cosmos.phy.tufts.edu/~danilo/AST121/AST121.html](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.

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:

<table>
<thead>
<tr>
<th></th>
<th>Your score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework sets:</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm exam:</td>
<td>20%</td>
</tr>
<tr>
<td>Term project paper and presentation:</td>
<td>30%</td>
</tr>
<tr>
<td>Final exam:</td>
<td>30%</td>
</tr>
</tbody>
</table>

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

A: >=94%,  B: >=84%,  C: >=74%,  D: >=64%

If needed, the above percentiles may be lowered, but not raised.

Term project paper

You will be required to write a project paper (<10 pages) on a specific topic outlined in class, and to present it in the classroom in a 45 min session. The paper is due on November 29th.

Homework

There will be several homework sets on problems that are representative of the class lectures. 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. The penalty for late submission is 25% deduction, that is, you will receive a maximum of 75% of the total grade for that work. After the 7 day grace period, no late work is accepted under any circumstances.

**Exams**

There will be one take-home mid-term exam lasting between an hour and a half. There are no makeup exams.

For graduate students, the **final exam** consists in putting everything learned in this course at work, by writing a code that solves the equations of stellar structure and stellar evolution and simulates the evolution of a high-mass star. Undergraduate students have the choice between this and a take-home final exam. This exam would be comprehensive and would cover the whole material covered in class and in assignments.

**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 symptoms, stay in your room and call for medical assistance; do not come to class; it is your responsibility to prevent spreading the disease.

**Accommodations:**

Tufts University values the diversity of our students, staff, and faculty; recognizing the important contribution each student makes to our unique community. Students with disabilities are assured that the Student Accessibility Services (SAS) office will work with each student individually to create access to all aspects of student life. 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 Student Accessibility Services office at accessibility@tufts.edu or 617-627-4539 to make an appointment with an SAS representative to determine appropriate accommodations.

Please be aware that accommodations cannot be enacted retroactively, making timeliness a critical aspect for their provision.
**Academic honesty**

All professors at the School of Arts and Sciences and Engineering are required to report suspected cases of academic misconduct to the Office of the Dean of Student Affairs. By attending this class you are expected to have read and understood the rules of Academic Integrity and are automatically agreeing to adhere to these rules. The booklet ‘Academic Integrity’ is available from the Office of the Dean of Student Affairs and on the web site:

http://studentservices.tufts.edu/dos/publications.htm

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 much 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.

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:

ACADEMIC HONESTY

All professors at the School of Arts and Sciences and Engineering are required to report suspected cases of academic misconduct to the Office of the Dean of Student Affairs. By attending this class you are expected to have read and understood the rules for Academic Integrity and are automatically agreeing to adhere to these rules. The booklet ‘Academic Integrity’ is available from the Office of the Dean of Student Affairs and on the web site:


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.

• During group work you are allowed to discuss strategies, approach, and results with other students, but you are required to write your own report and present it in your own wording and neat, legible handwriting.

• 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.

Departures from these standards will be viewed 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:________________________________________________________________________________