PHYS 4201: Astrophysics: Winter 2021

Instructor:
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Lectures:
Tuesday and Thursday 10:05 - 11:25
Big Blue Button: synchronous and asynchronous delivery
Mainly synchronous lectures delivered by Big Blue Button on CULearn
Recordings of the lectures will be posted on CULearn for asynchronous learning
Detailed lecture notes will be posted on CULearn
Some weeks pre-recorded lectures may be posted on CULearn

Prerequisites: PHYS 3701.
Corequisites: PHYS 3606 or PHYS 3608; PHYS 2401 or PHYS 4409.
Or permission of the Department.

Marks Distribution:

Assignments:	40%	
Midterm Examination	20%	(1.5 hours)
Final Examination	40%	(3.0 hours)

Course Delivery:
- The course notes posted on CULearn are the guide to the course content. Material covered may be more thoroughly done in either the course notes or the textbook. The assigned textbook is required for the course. It is a superb text which has clear explanations and many good worked examples which you may find helpful. Some of these worked examples may be given as assigned reading.

- The course notes are protected by copyright. They are for your own educational use, but you are *not* permitted to publish to third party sites, such as social media sites, or course materials sites,

- There will be approximately half a dozen assignments given out. They are due at a time announced on distribution, at least one week after their distribution. Marks will be deducted for lateness. If there is a particular problem with submission of an assignment by the due date please e-mail the instructor before the due date to explain the exceptional circumstances involved.

- You are allowed to discuss the problem assignments with other students in this course. However, the work you turn in must be your own. Figuring out the assignments is the best way to learn the material. Modalities for problem set submission will be announced when available.

- Working through problems is an essential part of developing a deep understanding of physics. This course is heavily math based and is meant to provide a foundation for the quantitative understanding of the subject material. Students are permitted to discuss concepts and strategies related to solving the homework assignments; however the work that you hand in must be your own.

- Please note that submitting an examination of any kind, a laboratory report, or other assignment that is copied, in whole or in part, from someone else is considered plagiarism, which is an academic misconduct offence. This includes copying the full solution, or any part of the solution, from an online resource like Chegg, or from any other type of unauthorized source.

For University regulations concerning academic offences see:
`https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/`

- The midterm exam will be 1.5 hours long.

- The final exam will be 3 hours long.

- The exact format and timing of the exams will be discussed well in advance. As on-line course delivery for a full year is new for this academic year, and guidance from the administration on possibilities for administering examinations is evolving, the exact formalities for examination administration may change. The date of the midterm will be set in consultation with the class, and will be sometime in mid-march. All examinations will be (at least in part) long answer, to be hand written on paper. The student is required to have the tools necessary to scan the resulting examination sheets, and convert the scans to .pdf format, in order to submit the examination

answers electronically. For administration of the examinations, which will be displayed electronically in CULearn, stable internet is required, and for invigilation of the examinations a desktop/laptop with a webcam is required.

- Use of e-Proctoring systems: This course has timed written assessments, which may consist of tests, midterms, and/or final examinations. The Carleton University e-Proctoring system may be used in your assessments, and requires the use of webcams, microphones, and smart phones.

- Students who miss the final examination, may not be eligible for a deferred examination if they have not achieved a passing grade on the term work component of the course.

Session Recording:
-Web lectures in this course will be recorded for asynchronous learning and review. If students do not wish to be recorded they should leave their camera and microphone off, and submit questions to the instructor via *private* chat.

- You will be notified at the start of lecture when the recording starts.

The recordings are protected by copyright. The recordings are for your own educational use, but you are *not* permitted to publish to third party sites, such as social media sites, and course materials sites.

Course Outline:
- A copy of the course outline will be posted on the CULearn PHYS 4201 webpage. It will be updated with corrected information as necessary. *This online Course Outline is the official course outline for the course.*

Text:

Astrophysics In a Nutshell (2nd Edition)
Dan Maoz
Princeton University Press (2016)

Course Content:

The primary course content is that of Chapters 1 to 7 of the Maoz Text.
The course content is defined by the lectures as well as the text.
Supplementary material on cosmology and gravitation will be provided in the lectures.

1. Introduction
2. Stars: Basic Observations
3. Stellar Physics
4. Stellar Evolution and Stellar Remnants
5. Star Formation and the Interstellar Medium
6. Extrasolar Planets
7. The Milky Way and Other Galaxies
8. Cosmology: Basic Observations
9. Big Bang Cosmology
10. Tests and Probes of Big Bang Cosmology

For Physics Department policies regarding academic integrity and privacy, please see `http://www.physics.carleton.ca/Policies.html`. **It is your responsibility to read these policies.** Please let me now if you require a hardcopy version.