

PHYS 4201A:5401W Astrophysics: Winter 2022

Instructor:

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Office Hours: TBA

Teaching Assistant:

NA
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Brightspace Link:

<https://brightspace.carleton.ca/d2l/home/66495>

Lectures:

Tuesday and Thursday 13:05 - 14:25
Building: Southam Hall, Room 516

Prerequisites: PHYS 3701.

Corequisites: PHYS 3606 or PHYS 3608; PHYS 2401 or PHYS 4409.

Or permission of the Department.

Marks Distribution:

Assignments:	60%	
Final Examination	40%	(3.0 hours)

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

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.

- 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 any 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 written final exam will be 3 hours long.

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

Course Outline:

- A copy of the course outline will be posted on the Brightspace PHYS 4201/5401 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)

ISBN-10 : 0691164797

ISBN-13 : 978-0691164793

Course Content:

The primary course content is that of Chapters 1 to 7 (listed below) 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 (and lecture notes).

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

Learning Outcomes:

The purpose of the course is for a student to acquire an understanding of the physical principles which underlie the structure and dynamics of astrophysical systems, and for the student to be able to apply them in the analysis of all the major types of astrophysical structures, as listed in the Chapters of the Maoz text.

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.

Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation:

Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For accommodation regarding a formally-scheduled final exam, you must complete the Pregnancy Accommodation Form (<https://carleton.ca/equity/contact/form-pregnancy-accommodation/>).

Religious obligation:

Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details click here: (<https://carleton.ca/equity/focus/discrimination-harassment/religious-spiritual-observances/>).

Academic Accommodations for Students with Disabilities:

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Survivors of Sexual Violence:

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carletons Sexual Violence Policy. For more

information about the services available at the university and to obtain information about sexual violence and/or support, visit: <https://carleton.ca/equity/sexual-assault-support-services>.

Accommodation for Student Activities:

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation will be provided to students who compete or perform at the national or international level. Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. <https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf>