Introduction to Astrophysics PHYS-374

General Information and Policies Fall 2023-24

Meetings

There will one meeting each week

Monday 12:00 – 12:50 PM Wallace Library (WAL)-4530

Instructor

Dr Andy Robinson

Contact information

Location: Room 76-1270
Office Tel. 585 475 2726
Email: axrsps@rit.edu

Office Hours

Thursday 10:00 am

(or email or check with me after class to schedule a meeting).

Brief Course Description

This seminar-style course presents concepts of stars, stellar systems and the universe at an intermediate level. Topics include the observed characteristics of stars, stellar atmospheres, stellar structure and evolution, classification and properties of galaxies, galaxy clusters, nuclei of galaxies, the early universe, cosmic expansion and cosmological parameters. It is intended to provide a broad survey of modern astrophysics for those considering the Physics BS/Astrophysical Science and Technology MS accelerated degree.

Prerequisites

PHYS-213 Modern Physics I

PHYS-220 University Astronomy

Or permission of the instructor.

Course Mode

This is not a traditional lecture course. In general, I will outline the topic and identify some key points. We will then work through the material and related example problems. You are expected to prepare by reading, **in advance**, the relevant textbook sections, or selected articles (see topic list). I will also assign a problem each week that you should attempt prior to the next class meeting.

Textbooks

The main textbook for the course is

Astrophysics in a Nutshell (2nd Edition)

Dan Maoz
Princeton University Press (2016)
ISBN-10: 0691164797
ISBN-13: 978-0691164793

You are expected to read selected sections of this book prior to each class meeting.

Important note: there are some errata, which are listed at http://wise-obs.tau.ac.il/~dani/

A comprehensive overview of astrophysics at advanced undergraduate level is

An Introduction to Modern Astrophysics (2nd edition)

Bradley W. Carroll & Dale A. Ostlie
Pearson (2006)
ISBN-10: 0805304029
ISBN-13: 978-0805304022

Hefty and expensive, but "BOB" (Big Orange Book) is worth considering if you want a comprehensive general reference.

As important advances have been made in the field over the last decade or so, we will supplement the textbook with selected recent articles from research journals.

Guest Seminars

I will be inviting some of the senior AST Ph.D. or M.S. students to present informal talks based on their research topics.

On-line material

All course announcements will be posted on-line on the Intro. to Astrophysics site on myCourses. I'll be adding material and links as we go along, so you should login frequently to get the latest news, check assignment deadlines, check for updates etc.

A detailed list of course topics, along with corresponding textbook sections, can be found on the **Content** page under Course Information.

Powerpoint presentations will be posted on the **Content** page in the form of .pdf handouts.

Homework problems will also be posted weekly.

Students are also encouraged to make full use of web resources. A selection of links can be found under **On-line resources**.

Exams and assignments

Exams

There will be no written exams.

Homework

In general, I will assign a problem each week, to illustrate the topic that will be discussed during the next class meeting. Students are expected to read the relevant textbook section, attempt the problem and upload an initial solution before class. We will discuss the solution during class, after which you will have a limited time to make any necessary corrections. Points lost for the initial attempt can be partly made up in the corrected version.

Class participation

This will be a seminar-style class, which is intended not only to provide a broad overview of general astrophysics but also to provide a flavor of small enrollment graduate level courses. As such, you are expected to be an active learner. Engage with the material, ask questions and participate in discussions.

Mini-project, paper & presentation

You will undertake a self-study project on a topic related to the course. The project may take the form of a detailed study of one or more research papers, analysis of archival data or a study based on computer simulations. The project will be graded on the basis of a 5-6 page paper and a 15-minute oral presentation.

Assessment

There will be no written exams. The overall grade will be determined as follows:

- Homework problems: 50%
- Class participation: 20%
- Project paper/presentation: 30%

NOTE: these weightings are meant as a guide only.

LATE SUBMISSION POLICY: homework submitted late without my prior agreement will be penalised by -25% of the assessed grade up to 2 days late, and graded zero thereafter.

Attendance

Attendance in class is expected. I will often use the whiteboard, and not all of the material I will discuss is covered in the textbook, so you will need to take good notes during class. If you know in advance that you will miss a class for a valid reason (e.g., conflict with other institute sponsored activities, doctor's appointment etc) please email me before class with a brief explanation. If you miss a class due to unforeseen circumstances (illness etc) please provide an explanation by email as soon as possible after the event.

General Policies

We will adhere strictly to RIT's policies, particularly relating to academic integrity, discrimination and harassment and gender-based and sexual misconduct. Please ensure that you are familiar with your rights and responsibilities under these policies:

Academic integrity (D08.0): https://www.rit.edu/academicaffairs/policiesmanual/d080

Discrimination and Harassment (C06.0):
https://www.rit.edu/academicaffairs/policiesmanual/c060

Title IX (D19.0): https://www.rit.edu/academicaffairs/policiesmanual/d190-interim-policy-student-gender-based-and-sexual-misconduct-policy-title-ix

If you have a concern related to gender-based discrimination and/or harassment, there are several sources available where you can find confidential support and assistance:

https://www.rit.edu/fa/compliance/content/confidential-support

Statement on Reasonable Accommodations

RIT is committed to providing reasonable accommodations to students with disabilities. If you would like to request accommodations such as special seating or testing modifications due to a disability, please contact the Disability Services Office. It is located in the Student Alumni Union, Room 1150 (www.rit.edu/dso). After you receive accommodation approval, it is imperative that you contact me so that we can work out whatever arrangement is necessary.