

Syllabus and Course Policies
PHYS 116: Seminar in Physics & Astronomy at Rice and Beyond
Spring 2022

Regular Meetings

Tuesday 2:30 pm - 4:10 pm HBH 423

Jan 11 — Mar 01

Zoom meeting ID: 997 8983 9887 Passcode: 518697 (only for the first two weeks)

Course Instructor

Eduardo Ibarra Garcia Padilla, M. Sc.

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Office hours: Fridays 1:00 - 2:30 pm

Course Organizer

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Course Rationale and Description

A half-semester seminar course designed for science-major undergraduates to become familiar with the process of reading, discussing, and comprehending published research articles. It is intended for students who are strongly considering pursuing a career involving scientific research.

Course Objectives and Outcomes

This course is unconventional by typical physics classes standards. Ultimately, the exact content of the readings is less important than the process through which we will be analyzing them. We are hoping to impart some of the basic skills in preparing students to become independent researchers, something that is crucial for future stages of a scientific career. Reading, comprehending, and in general becoming more familiar with scientific research in a more relaxed, yet structured manner is the main goal of this course.

Assignments

Homeworks — There will be 6 assignments due midnight the night before the next class meeting.

Conference exercise— We will discuss how scientific conferences are organized, how participants register, and the following two activities:

- Each participant will have the opportunity to give a single-slide, 60 second presentation on a topic of their choice. This activity is designed to provide basic public speaking practice as well as giving a presentation within a strict time limit.
- Participants will be able to view and judge a variety of posters made by Rice Physics and Astronomy graduate students. This activity is meant to give students the opportunity to analyze and assess research posters in order to inform them of what works and what doesn't.

Schedule (subject to revision)

Week	Date	Topic	HW due
1	Jan 11	Introduction to the class Overview	
2	Jan 18	Article 1 Abstract	HW #1
3	Jan 25	Article 1 Intro/ Conclusion/ Fig 1	HW #2
4	Feb 01	Article 1 Sec 2/ Sec 3/ Fig 2	HW #3
5	Feb 08	Lab tour	HW #4
6	Feb 15	Article 2	HW #5
7	Feb 22	Conference exercise, wrap-up	HW #6
8	Self-scheduled (zoom)	Seminar or Colloquium	
9	Mar 01		HW #7 (end of course survey)

Readings:

- 1) Chen, T., Yi, M., and Dai, P., [Electronic and Magnetic Anisotropies in FeSe Family of Iron-Based Superconductors](#). *Frontiers in Physics* **8**, 314–321 (2020).
- 2) Pérez, L. M., Carpenter, J. M., Andrews, S. M., *et al.* [Spiral density waves in a young protoplanetary disk](#). *Science* **353**, 1519–1521 (2016).

Course Policies

Attendance and Grading:

Attendance is mandatory. Since this is a seminar course with only a few meetings during the semester, it is not possible to truly make up a missed class. Should you miss a meeting due to an illness or emergency, you may request an opportunity to recover some of the points by completing an additional reading and homework.

Being late to class meetings will negatively impact your participation grade for that session. Your final grade will be based on written homework assignments (6 assignments) and class participation (7 meetings/tour).

This course is meant to introduce undergraduates to physics research and scientists in a non-threatening environment. Effort is more important than right or wrong answers. Students who attend all class meetings, actively contribute to discussions, and put a solid effort into every

homework assignment will be able to earn an A. However, this will not be an easy A — the homework can be time-consuming and the readings are difficult. Nevertheless, students who attempt to thoughtfully answer each question or explain where they became lost or confused will do best.

Electronic Devices:

No phones, computers, or tablets during class unless there is an emergency or specifically permitted by their instructor. In the interest of a lively discussion, it is important that students not be distracted by texting, gaming, or surfing the web. Hand-written notes are encouraged instead.

Disability Accommodations:

Any student with a documented disability needing academic adjustments or accommodations are requested to speak with the instructors during the first week of class. All discussions will remain confidential. Students with disabilities also will need to contact Disability Support Services in the Allen Center.

Honor Code:

All homework must be the work of the individual. You are not permitted to work with others on any of the homework assignments unless specifically stated on the assignment itself. In such a situation, you should list the names of all those with whom you worked.

Cite your sources on homework assignments. When referencing the assigned readings, it is sufficient to reference the articles as “1stAuthor’sLastName, et al.” When consulting outside sources, you must provide a complete reference (i.e. authors, journal name, year, volume and page number), or a URL if the source is not from a published journal. Any text quoted verbatim from a source must be placed in quotes. Please review the Rice Honor Council policy on plagiarism at <http://honor.rice.edu/honor-system-handbook/>

Conduct:

Please be respectful of all students, instructors, and laboratory staff you will encounter during this course, whether it be their opinions or persons. Being tactful and having some social awareness are invaluable skills that career scientists ought to have.

Diversity and Inclusion:

Historically, people of color, women, and other groups have been underrepresented in physics and astronomy. This lack of diversity has likely led to missed opportunities for exploration and discovery. While the field is now more inclusive, it is important to understand that our history impacts the current state of our field. The questions that we choose to ask in science are influenced by who is included in the scientific endeavor.

We all bring different experiences to this class. As participants in this class, all instructors and students should strive to honor the diversity of the class. In this class, you have a right to define your identity, but no student is ever presumed to speak on behalf of any group or anyone other than themselves. You have the right to be called by your pronouns and the name you wish. If there are aspects of this course that act as barriers to your inclusion in course content, please contact one of the instructors privately.

Canvas:

Homeworks and announcements will be released through the course’s Canvas website. The forum section of the website may also be used, based on popular demand.