PHYS 1901 -- PHYSICS SEMINAR – FALL 2024

Class No. 12514,

Wednesday 3:30 p.m. - 4:50 p.m., Morton Hall 227

Professor: Dr. Julie Roche—rochej@ohio.edu; #206 Edwards. I respond to emails as soon as possible during working hours (M-F) 9-5.
Office hours: https://outlook.office365.com/book/DrJulieRocheofficehours@catmail.ohio.edu/
Course website: Canvas. https://www.ohio.edu/oit/initiatives/lms/students
No-textbook: There is no textbook for the class. Readings will be posted on Canvas.

All information in this syllabus is subject to change. I will announce changes to the syllabus in class and by email. You are responsible for keeping up to date with the changes.
I care about your success in this class. Let me know if something in this syllabus makes learning difficult for you. We will find a solution to maximize your training.

Course Description: This seminar uses readings and student presentations to provide an overview of the questions addressed by the study of physics, some of the methods employed for this purpose, and an introduction to some of the current hot topics in the field. This course is intended for students early in their college experience who are majoring in physics or a related field or are considering doing so.
Learning Outcomes: By the end of this course, students will:
1) be able to approach and solve simple back-of-the-envelope problems;
2) be able to describe current Physics & Astrophysics research areas;
3) be able to discourse on selected topics in contemporary Physics & Astronomy;
4) be able to research a topic in physics and present it orally with effective visual aids.

The **Preliminary schedule** for the class is as follows:

August 28: Course Outline Sept. 4 : Discussion and Group activities -StepUp Sept. 11: Discussion and Group activities Sept. 18: Discussion and Group activities- Sept. 25: Discussion and Group activities Oct. 2: Discussion and Group activities- Oct. 9*: Discussion and Group activities	Oct. 16: Discussion and Group activities- Oct. 23: Discussion and Group activities Oct. 30: Discussion and Group activities- Nov. 6: Student presentation (4) Nov. 13*: Student presentation (4) Nov. 20: Student presentation (4) Nov. 27: No Class Thanks Giving break Dec. 4: Student presentation (4)

The class will be centered around 4 types of activities:

- Before class, everyone will read **an article** (or a few) **about recent trends in Physics and Astronomy**. The concepts in these articles will then be discussed in class. The reading assignments and associated questions will be posted on Canvas on Thursdays before 11:59 pm.
- Some classes will involve **presentations by Ohio University faculty and staff about the department's current research areas** and careers in Physics and Astronomy.
- Part of many classes will involve **the estimation of quantities using back-of-the-envelope (or Fermi) questions**. This will be inspired by the book Guesstimation by Lawrence Weinstein This book is not required for this class. Solutions will be discussed in groups, followed by sharing with everyone.

- In the last few weeks of the class, **students will give short (15 minutes + questions) presentations** about a physics-related topic. This can be a report about a previous research experience, a summary of a Physics or Astrophysics related book or article, or a discussion of recent physics-related news. Every student is required to give such a presentation. You are free to choose the topic of your presentation, but you should discuss it with the instructor and finalize it by October 16. Guidelines for the presentation will be distributed in class. Popular-level science periodicals such as Scientific American, American Scientist, Physics Today, and Sky & Telescope are good places to look for possible presentation topics. The introductory news sections of the top journals *Science* and *Nature* are also approachable and very up-to-date.

Resources:

- Many periodicals and general journals (like *Science* or *Nature*) are available online through the Alden Library's website. To find links to online resources, use the Alden Library's Alice catalog lookup (http://alice.library.ohio.edu/) and choose the "Periodicals" tab. Look for [Electronic Resource] among the hits. You may need to log in through the campus VPN server to access some of these electronic resources.
- Lawrence Weinstein and John A. Adam, *Guesstimation: Solving the World's Problems on the Back of a Cocktail Napkin, is a useful guide to back-of-the-envelope programs.* It should be available as an online resource on the Alden Library website.

Course Web Site: Readings, assignments and any other notes or handouts (including this syllabus), are posted on Canvas. Use your OHIO ID and password to login to the system and look for PHYS 1901.

Grading:

There are three factors used in computing the grade:

Reading and other assignments	40%
Participation (attendance)	30%
Oral Presentation	30%

Attendance Policy: Since this is a participatory seminar, class attendance is mandatory. An unusually high fraction of the grade (for a physics class) is given for your active participation. Certain absences are considered legitimate by the University. These include illness, death in the immediate family, religious observance, jury duty, involvement in University-sponsored activities, and absences for religious observance (see below).

Reasonable religious accommodations: In addition to attendance policies already listed, you may be absent for up to three (3) days each academic semester, without penalty, to take time off for reasons of faith or religious or spiritual belief system or to participate in organized activities conducted under the auspices of a religious denomination, church, or other religious or spiritual organization. You are required to notify the instructor in writing of specific dates requested for alternative accommodations no later than fourteen (14) days after the first day of instruction. These requests will remain confidential. For more information about this policy, students/you may contact the Director and Title IX Coordinator, Equity and Civil Rights Compliance, Lindley Hall, 006, 740-593-9140, Equity@ohio.edu.

Academic Misconduct: Cheating and plagiarism are serious violations of academic and scientific work. Students caught in flagrant academic misconduct may be given a zero on the class work or asked to resubmit the work. If the student disagrees with this action, the student may file a grievance through

established University channels or the Ombuds office. In extreme cases, the instructor may also initiate a review by the Office of Community Standards and Student Responsibility. This action could result in the student's suspension or other punitive actions. All cases involving flagrant or suspected cheating will be reported to the Chair of Physics & Astronomy in writing for future reference.

Generative AI Use for Academic Work: The use of Generative AI, such as ChatGPT and Microsoft Bing-Chat, must maintain the highest standards of academic integrity. Generative AI should be seen as a tool to enhance academic work rather than as a replacement for critical thinking and originality in assignments. Students are only permitted to submit assignments fully or partially generated by AI if explicitly stated in the instructions. Any ideas garnered from Generative AI research must be acknowledged with proper in-text citations and references.

Late work policy: As part of the class is to discuss readings you do in preparation for the class, turning in your work on time will significantly improve your learning. But life happens, so late work can be submitted, and no penalty will be received. But work submitted more than a week past the original deadline will not be graded and receive a 0. The original deadline will be adjusted if you have a valid university excuse preventing you from submitting your work on time.

Disability accommodation: Any student who feels s/he may need accommodation based on the impact of a disability should contact me privately to discuss your specific needs and provide written documentation from Student Accessibility Services. If you are not yet registered as a student with a disability, please get in touch with Student Accessibility Services at 740-593-2620 or visit their website (this link).

Inclusivity: Physics and Astronomy are best done in an inclusive environment. The students, staff, and faculty of the Department of Physics and Astronomy are committed to professional interactions, respecting and considering the rich and diverse backgrounds of all its members. We expect each member of our Department to encourage and support a culture of equity and the inclusion of all social identities in all activities in which we participate and uphold all Ohio University diversity policies. For more information about our culture of inclusion and how to report issues and concerns, consult the Inclusion and Equity website of the Physics and Astronomy Department.
https://www.ohio.edu/cas/physics-astronomy/about/inclusion-equity

Feedback: I would appreciate feedback from the students on how the class is going. Talk to me, email me, or drop an anonymous note in my mailbox.

Guidelines for Conduct During Discussions

EQUITY

Share air time equitably.

Know yourself, balance your listening and talking.

DIFFERENCES

Value differences.

Remember that your perspective is not the only one, and that we all face different challenges.

EVIDENCE

Argue using evidence.

Back what you have to say with data.

SAFETY

Make sure everyone feels safe.

Safe is not the same as comfortable. Ensure that there are ways to report problematic behavior.

DISCOMFORT

Discomfort is okay.

Identify your learning edge and push it.

OWNERSHIP

Own your impact.

Your intentions may not be the same as your impact.

COMMUNITY

Create a sense of community.

Acknowledge others and do not isolate anyone.

This poster represents the understanding and work of many. More details, free lesson plans, and community sign up can be found at:

STEPUPphysics.org

NSF

STEP UP

PHYSICS TOGETHER

PHYS1901-F24-08-28-24