PHYS 690
Professional Skills for Physicists Spring 2026

Class Hours: Tuesdays 11:30 AM – 12:20 PM in Physics 221
Instructor: Matthew Pelton
Office Hours: Tuesdays 12:30 – 1:30 PM or by appointment
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Course Objectives

The purpose of this course is to provide some of the practical skills necessary to succeed as a professional physicist in academia, government laboratories, industry, or elsewhere. The course advances the learning outcome of the Ph.D. program in the Department of Physics to develop enhanced oral and written communications skills as required for professional presentations and publications.

You will have succeeded in this course if, at the end of the semester, you

- know how to make an oral presentation on a research topic
- know how to write a thesis proposal
- know how to write a grant proposal
- know how to get a scientific paper published
- know how to effectively access and review the scientific literature • know how to write a peer review
- have an enhanced understanding of issues related to scientific integrity • have an enhanced understanding of issues related to data management and sharing • have an enhanced understanding of career paths and how to achieve career success

By the end of the course, you should be able to

- Make an oral presentation on a research topic in front of your cohort • Write a thesis proposal
- Write a grant proposal

Assignments

There will be a homework assignment about once a week. Homework assignments and due dates will be posted on the Blackboard page. Assignments are to be submitted as PDF files on Blackboard before the start of the class on the day that they are due (except in the case of oral assignments to be presented during class).

The final writing assignment will be a "white paper," or brief research proposal. This will be based on your Ph.D. thesis proposal, but will be in the style of a proposal to a funding agency.

There will also be a final oral presentation on the same topic, in the style of a (brief) conference talk. The content of the proposal must be original (*i.e.*, reflecting your own thoughts and ideas).

All the work that you turn in must be your own. For group assignments, it must be clear that you have made a substantial individual contribution to the assignment.

Use of Generative AI Tools

Many of the assignments in this course involve writing. The use of generative AI tools *is not* allowed in writing or refining your final product. You may use generative AI tools to brainstorm, explore, and refine ideas (e.g., summarizing text, defining complex terms for your own understanding), as long as you verify the information and give proper credit. All final submitted products must be written independently. Keep in mind that generative AI is not always accurate or reliable, so you remain responsible for verifying anything you use to inform the final product. If you are unsure whether a tool is acceptable to use, please check with me first. The use of AI tools in writing your assignments will be treated as an academic integrity issue.

Participation

The majority of class time will be spent on student presentations and discussions. The course will be successful only if all students participate fully in these discussions. Participation will be graded based on attending classes on time, contributing substantially to the discussions, and conducting the discussions in a professional and respectful manner.

Absence from class is permitted only for documented, valid reasons such as illness, injury, legal obligations, required participation in university-sponsored events, religious observances, illness or death of an immediate family member, required military service, and compelling and unavoidable circumstances beyond your control. If you know in advance that you will be required to be absent, you are required to notify the instructor as soon as you are aware of the need to be absent. Being late for class is disruptive to the discussions and disrespectful to the other students in the class.

Grading

Your final grade will be determined by a numerical score, calculated as follows:

Homework: 25%
Grant proposal: 25%
Oral presentation: 25%
Class participation: 25%

The course is Pass / Fail. You must score 80% or higher overall to pass.