PHYS 496:
Introduction to Physics Research

Course Overview

Aug. 31, 2018
PHYS 496

“Introduction to Physics Research”

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Alternate Titles:

“Effective communication in physics”
“A hodgepodge of what physicists/scientists should know”
“Things I wish my advisor had told me”
“How the science world works”
Goals for PHYS 496

• Help you learn to think critically
  • About others’ work and your own

• Help you learn methods to write and speak persuasively
  • The scientific community (and just about everyone else) tends to be both skeptical and busy, so you can’t rely only on quietly producing great results

• Help you learn to navigate the scientific literature
  • Researching existing literature is critical for planning future work, writing proposals, writing papers, etc.

• Teach you how the “world of science” works
Goals for PHYS 496

• Bottom line:

We want to teach you how to become effective scientists and communicators!
PHYS 496

- Useful if you want to go to grad school → academia

- Useful if you want to go to grad school → industry

- Useful if you want to go from undergrad → industry

- Useful if you want to go from undergrad → anything!
Components of the Course

- Writing, speaking, and presentation skills
  - Writing workshops, journal club, colloquium reports, figures, communicating with non-scientists, …

- Resources for scientists
  - How to use on-line databases useful for research

- Scientific ethics
  - Case studies

- Exposure to physics research and careers
  - Speakers, colloquia, journal club
Our expectations of you

• In-class participation
  • mandatory attendance, clickers

• Written assignments
  • Don’t start too late!
  • We prefer a Word file via email, but an emailed pdf file is OK

• Feedback on your classmates’ writing

• Oral presentations
  • Professional and polished
  • Plan to use .pdf or .ppt files (sent to phys496@illinois.edu) on course laptop
Plagiarism

Never copy phrases longer than 3-4 words

- Providing a citation to a bibliographic entry or footnote does not make copying words okay
- Includes:
  - figures and figure captions
  - text from a published paper
  - text from a paper you’re working on with your advisor
  - websites
Direct quotes

• Professor Shelton said, “Never copy phrases longer than 3-4 words.”

• Uncommon in technical writing

• It is appropriate for one of your homework assignments

• You can only quote words that someone said in person, in an email, over the phone, or in a letter to you.
Final words

• You will get out as much as you put in

• Talk with us if you have questions regarding homework, plagiarism, life/career issues, ...

• Take advantage of the guest speakers and ask what you would like to know!

• This course is an opportunity to ask us questions about whatever you’d like to know regarding physics, careers, communication, publishing, funding, …