



Cal Poly Pomona, Physics 463 – Spring 2018

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Office Hours: Mon, 11:00-12:00 or by appointment	

Course Background: In this course we will address two issues:

All of us sometimes need to speak in front of groups of people, yet many surveys show that “fear of public speaking” is a very common phobia. The best way to work with this is to engage in structured practice.

A second issue is that in both academia and industry, scientists are constantly proposing projects. There are never enough resources to fund everything, so it is very important to be able to explain clearly why your proposal is worth funding. Such explanations can be either written or oral. How can such proposals be evaluated as to their relative merit? The process used in science is called peer review. (An example that might clarify this process is shown by this JPL web page, which distinguishes between “future” and “proposed” that is, unfunded, missions). <https://www.jpl.nasa.gov/missions/?type=proposed> We will try to duplicate this process as closely as we can, given the constraints of this class (i.e. we have no real dollars to give out). You can pick an unsolved problem from any area in Physics to be the basis of your proposal. It could be a project that you are actually working on, such as your senior thesis. It must, however, be an **unsolved** problem or **unbuilt** project.

What This Course Should Accomplish:

After completing the course, you should be able to:

- communicate the results of scientific investigations
- propose novel projects.
- organize information in a coherent manner
- develop confidence in your public speaking skills.

Overview of Assignments:

Short Talks: You will give three short talks (two 5 minutes long, one 10 minutes long) early in the quarter to help gain experience being at the front of the room.

- **Social topic** (5 minutes, oral): You will choose a “social topic” by which the physics community is affected (nuclear proliferation, energy conservation, etc.) and present a talk defining the issues for an audience made up of local business people and politicians OR the general public. No visual aids.
- **Your career choice** (5 minutes, oral): Convince a graduate school or potential employer why you are interested in a subject or position. No visual aids.
- **Technical or Scientific Article** (~ 8 minutes + ~1-2 minutes for questions): For this assignment, you will need to find an article in “Physics Today” or a similar source from which you can draw information to present to the class in a ten-minute presentation. You should use a 2-3 powerpoint slides. The topic should not be so technical that class members cannot understand your presentation. This talk can overlap with your research talk (e.g. you could introduce the topic of dark matter in this talk and in your longer research talk propose an experiment to measure dark matter particles).

Your Research Proposal: Your proposal will consist of 2 components:

Abstract: Prior to your talk, you should prepare a 150-250 word written abstract of your presentation. **You should plan on distributing your abstract to the class the week before your talk.** The abstract should include the following elements: Statement of problem or purpose of research; Experiment/methodology to be used and/or theoretical principles applied; Reference(s). **You must send me your proposed topic for approval and feedback at least two weeks before the date of your oral presentation.**

Seminar: The oral part will consist of a 25 minute talk to the class (part of your grade will be based on how well you meet the time goal). After your presentation the rest of the class will act as a scientific panel to discuss both the scientific merit of your project and strengths and weaknesses of your presentation. The winner of this peer review process will receive the famous “Poly Cup”.

Reflection assignment: After each presentation you will write an essay reflecting on the research topic and presentation that you have done. More information about this activity is provided on blackboard. This assignment is due in class one week after you complete a presentation.

Seminar visitation:

Sometime during the quarter you will visit 1 seminar at Cal Poly and submit a written report evaluating the speaker. You will not evaluate the speaker on the content, therefore the seminar can be on any topic it does not have to be Physics related. Use the instructor rubric on blackboard to evaluate the presentation.

Participation:

In order to receive full credit for participation you must ask the speakers at least **5** relevant questions out loud or provide constructive peer feedback over the course of the quarter.

Grading:

Short talks (10% each)	30%
Research Proposal (Seminar + abstract)	35% (25%+10%)
4 Reflection assignments	20%
1 Seminar visitation	5%
Participation:	10%

Attendance and late assignments Policy: Attendance is mandatory. You should plan on attending ALL class meetings. Unexcused absences are not acceptable. Each unexcused absence will result in a grade reduction. See the instructor promptly with your excuse should you miss a class meeting.

You are required to arrive to all meetings on time. One point (i.e 1%) will be deducted from your grade for each 10 min that you are late.

For each day an assignment is late 10% will be deducted from the grade of the assignment.

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact Disable Student Services at 909-869-3333 in room 126 of the University Library to coordinate reasonable accommodations for students with document

Schedule:

Date	Topic	Sign-up to present
March 26	organization	-----
April 2	16 Social Talks 5 minutes (no powerpoint)	-----
April 9	16 Career Talks 5 minutes (no powerpoint)	
April 16	8 Technical Talks 10 minutes (use powerpoint)	
April 23	8 Technical talks “	
April 30	Research Talks 20 minutes (use powerpoint)	
May 7	Research Talks “	
May 14	Research Talk “	
May 21	Research Talks “	
May 27	Research Talks “	
June 4(finals)	If needed	