

PHYS 593: Practicum in Teaching Physics and Astronomy Fall 2020

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Lectures: Fridays, 8:30 am – 9:20 am USA Pacific Time (Online. Zoom link on Blackboard)

Office Hours: After lectures or by appointment

Together we will explore strategies for effective teaching and communication (both oral and written) within the physical sciences. The skills we will explore are obviously important for your contributions as a teaching assistant at USC. However, you will also find that these skills are critical for succeeding in scientific research, particularly when it comes to interacting with collaborators and communicating results to the wider scientific community. For both teaching and research presentations, communication must be clear, inspirational, and reveal the larger context (i.e. why do you think it matters?). In addition, as a PhD level researcher, you must strive for rigor. Meeting all these requirements simultaneously requires preparation and practice.

Below are my initial thoughts on how we will practice these skills together. That said, this class is informal in the sense that there is no fixed knowledgebase. So we might deviate from these ‘exercises’ below, especially if I find that you enjoy some other approaches (do send me ideas!). This is a Credit/No Credit course. The items below are required for Credit.

Teaching Practice. This is a practicum. So in each meeting, two students will each give a 10-12 minute ‘mini lecture’. You can choose the topic! If you are TAing this semester, pick a topic related to the course for which you are TAing. If you are not a TA this semester, you can select a topic relevant to your research. Either way, the content should be geared towards undergraduate students. At the beginning of your mini lecture, state the topic of your lecture and the assumed background of the target audience (i.e. what type of material do they already know). One advantage of Zoom lectures is that we can easily record these presentations, so you can reflect on your own lecture later as well.

Observation. You will attend a minimum of three undergraduate course lectures this semester. This can be the class you are TAing or you can attend any course of your choice (I can give you suggestions if you like). You must contact the professor to get permission (and online access) to attend her/his class beforehand. Take this opportunity to reflect on the teaching style – what would you like to incorporate into your mini lecture? What would you do differently.

Participation. After each mini lecture given by your classmates, I expect you to provide constructive feedback: what was good? What can be improved in your opinion?

Reading. I will occasionally assign you some reading (or web links) about best practices and pedagogy.

Writing. To develop a succinct yet clear and rigorous writing style, we will do the following exercises. A few times this semester, I will provide you with the text of an excellent publication (usually a shorter letter style paper), but withhold the abstract. You will write an abstract based on the paper you read and then we will compare your work to the published abstract. We will talk about this exercise in class and discuss best practices.

Attendance. I expect you to attend this class. Exceptions must be cleared before the lectures.

Textbooks. The following are good resources:

- K. Heller and P. Heller, *Cooperative Problem Solving in Physics*.
- Curzan and L. Damour, *First Day to Final Grade: A Graduate Student's Guide to Teaching* (The University of Michigan Press, 2011, 3rd ed.).
- W. McKeachie and M. Svinicki, *McKeachie's Teaching Tips* (Cengage Learning, 2013, 14th ed.).
- L. B. Nilson, *Teaching at Its Best: A Research-Based Resource for College Instructors* (Jossey-Bass, 2010, 3rd ed.).

Academic Integrity. Students who violate university standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the university. Since dishonesty in any form harms the individual, other students and the university, policies on academic integrity will be strictly enforced. We expect you will familiarize yourself with the USC academic integrity guidelines.

The Trojan Integrity Guide (A Guide to Understanding and Avoiding Academic Dishonesty) can be found at: <https://sjacs.usc.edu/files/2015/03/tio.pdf>

The Undergraduate Guide for Avoiding Plagiarism can be found at <https://sjacs.usc.edu/files/2015/03/tig.pdf>

A Guide for Graduate Students can be found at <https://sjacs.usc.edu/files/2015/03/GradIntegrity.pdf>

Students with Disabilities. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in GFS 120 and is open 8:30 am – 4:30 pm, Monday through Friday. Website for DSP: <http://dsp.usc.edu> and contact information: (213) 740-0776 (Phone), (213) 740-8216 (FAX), ability@usc.edu (Email).

Student Ombudsman. All courses in the Department of Physics & Astronomy have an assigned Student Ombudsman to serve students as a confidential, neutral, informal, and independent resource when they wish to discuss issues concerning their course without directly confronting their instructor. The Student Ombudsman for this course is Prof. Krzysztof Pilch, pilch@usc.edu, 213-740-1145, SSC 202.