PHYSICS 2997: Teaching of Physics

Fall 2022
Fri: 3:00-4:50PM
104 Thaw Hall

Contact Information:

Instructor: Dr. Melanie L. Good
Email: mlgood@pitt.edu (Please state Phys2997 in subject)
Virtual Office Hours: Mondays 2:00-3:00PM and Thursdays 4:00-5:00PM,
`https://pitt.zoom.us/j/99273627245`, or by appointment

COVID-19 Information: We will follow any and all University policies and updated policies regarding COVID-19. Your professor is vaccinated against COVID-19 but plans to continue wearing a mask while infection rates are high. You are expected to follow University guidelines regarding masks, including any changes to guidelines as the semester progresses. **If you have any symptoms of COVID-19, please do not come to class.** Your absence will be excused. In the meantime, promptly contact Student Health Service (SHS) at 412-383-1800 for further advice. If you have had any exposure to someone with COVID-19, you may need to isolate. Please inform your instructor if this is the case.

If you have not been vaccinated and boosted for COVID-19, your professor urges you to please consider getting vaccinated and/or boosted. For further information on COVID-19, vaccinations, University policy, and to learn about any important COVID-19 updates, please visit `https://www.coronavirus.pitt.edu`. You are responsible for knowing about any updates or revisions to University policy regarding COVID-19.

Should the University change its policy regarding in-person instruction, a revised syllabus will be created and shared as promptly as possible. Most aspects of the course were designed with this contingency in mind, so it is unlikely that there will be major changes to the material or assessments. However, the method of delivery and other class policy changes may be revised, if necessary, should we be required to move away from in-person instruction.

Email and Canvas Announcements and Messaging: The main means of communication from your professor will be through Canvas Announcements. You are responsible for assuring that you receive all pertinent Announcements given through Canvas. Please be sure your Canvas notifications are set in such a way to alert you to the fact that an Announcement has been made. Questions that have already been answered in an Announcement may not receive a response. If you need to get ahold of me through email, please be advised that I teach three classes and hundreds of students, so please state "Phys2997" in the subject so that I can give it appropriate attention. As the semester goes on, I will get to know you all by name, but this will be helpful in giving your email context and priority.

Course Description: This is a mandatory course for all physics graduate students. The overall objective of this course is to prepare incoming graduate students for their duties as Teaching Assistants (TAs) and lay the foundation for any subsequent teaching role they may assume. This course will introduce students to the principles of learning and physics education research-based curricular and pegagogical approaches using concrete examples. There will be opportunity to reflect upon various aspects of the course and teaching and learning in general.

Course Objectives: Upon completion of this course, you will:

- Learn basic teaching skills, such as effective public speaking, etc.
- Learn how to create a positive learning environment.
- Practice writing effective assessments, such as homework problems, exam questions, etc.
- Practice engaging with students outside of the classroom.
- Practice preparing and presenting a lesson, including peer reviews.
- Perform an observation of a faculty member teaching a class.
- Develop a teaching portfolio, including a teaching statement

Course Structure: PHYS 2997 (Teaching of Physics) is a mix of lectures, assignments and activities all related to teaching in general, as well as teaching Physics specifically.

The lectures by the instructor, generally 40-60 minutes out of a 110-minute class, cover topics like audience awareness (speaking clearly, etc.), grading, Socratic questioning, learning culture, avoiding bias in the classroom, and new pedagogies. The students are then asked to use what they have learned from the lectures in the assignments and activities.

The major assignment for the course is the creation of a teaching portfolio. Each part of the portfolio will be discussed in class. The portfolio includes:

- A teaching statement
- Designing and teaching a lesson
- Peer feedback on teaching of the lesson and informal assessment
- A sample of exam, quiz and homework questions and problems
- An observation of faculty member teaching a class

Other assignments include a couple of surveys that check to see how well the graduate TAs can anticipate common misunderstandings amongst undergraduate students, readings, and a letter to future students. The letter is an opportunity for the TAs to reflect on what they have learned from the course.

There are two repeating in-class activities. The first is a role-playing exercise meant to highlight the interactions that the graduate students may have with undergraduates outside of the classroom. In this exercise, two students go to the front of the room. One plays the role of an undergraduate student, while the other plays the role of a TA or professor. They are given an initial script for some situation, such as a student asking to have their grade raised, and then they improvise from there. This is followed by a discussion with the whole class on the role-playing; what went well, what could be improved, etc.

The second repeating in-class activity is a problem writing exercise. One very important aspect of teaching physics is being able to create effective assessments, such as problems for exams, quizzes and homeworks. In this exercise, the students are asked to write a very specific sort of problem or question (such as a multiple-choice question for a quiz) on a topic of their choice. After about 20 minutes, they are paired up with another student in the class and given small white-boards and markers. They then try to solve each other's question or problem. At the end of the activity, we go around the room and have each person discuss the problem given to them by their partner. It is an opportunity for the students to learn from each other, and to practice problem writing with their peers. .

Tentative Schedule:

Wk	Date	Topic
1	Sept 2	Introduction and basics–why and how?
2	9	Bias and Diversity Socratic Questioning
3	16	Learning, Culture, and Organization
4	23	X*Class Canceled*X
5	30	Socratic Questioning
6	Oct 7	Audience Awareness
7	14	X*Fall Break–No Class*X
8	21	Grading and Research-based Instructional Strategies
9	28	Teaching presentations I
10	Nov 4	Teaching Presentations II
11	11	Teaching Presentations III
12	18	Teaching Presentations IV
13	25	X*Thanksgiving Break–No Class*X
14	Dec 2	Teaching Presentations V
15	9	Teaching Presentations VI
16	16	Optional Final Social

Grading Scheme:

- 60% Attendance and Participation
- 20% Teaching Presentation
- 5% Teaching Statement
- 5% Faculty Observation
- 10% Readings and Assignments

Honor Code:

Students are expected to uphold the University's standard of conduct relating to academic honesty. Students assume full responsibility for the content and integrity of the academic work they submit.

Students shall be guilty of violating the honor code if they:

1. represent the work of others as their own
2. use or obtain unauthorized assistance in any academic work
3. give unauthorized assistance to other students
4. modify, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit
5. misrepresent the content of submitted work

Any student violating the honor code is subject to receive a failing grade for the course and will be reported to the Vice President of Academic Affairs.

Code of Conduct:

Communication is key to a productive learning environment, and we can maintain productive communication by exhibiting respect for one another. The success of the course for yourself and others depends on all of our commitment to behavior that demonstrates respect for differences, understanding towards others and a willingness to listen and learn. For these reasons, it is unacceptable to harass, discriminate against, or abuse anyone because of race, ethnicity, gender, disability, religious affiliation, sexual orientation, or age. If you witness or are subject to such harassment, please report it to the instructor or to the Office of Diversity and Inclusion.

Disability Services:

If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and Disability Resources and Services no later than the second week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call (412) 648-7890 to schedule an appointment. The Disability Resources and Services office is located at 140 William Pitt Union, and is open Monday-Friday from 8:30AM to 5:00PM.

Title IX:

Legal text: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance." As a professor I am a mandatory reporter, and I am required to report violations of Title IX that I observe or am made aware of to the Title IX office, Title IX violations include, but are not limited to, sexual harassment, sexual violence and verbal or sexual abuse. Within the classroom, behavior in violation might appear as: suggestive jokes or innuendos, inappropriate touching, and unwanted sexual behavior or advances, but my capacity and obligation to report does not end at the classroom.