

Teaching University Physics

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Spring 2013: Tuesdays and Thursdays 1:05-2:20

This is a course which will prepare you to teach physics at the introductory university level. You are students who plan to teach physics professionally at the university level. This course covers research-based curricula and approaches, the research which undergird them, and practica to help you understand them. Because I am a physics professor and you are in training to be professors, I am going to work to make my instructional choices transparent to you to help you think about how to make your own choices in the future.

I am a researcher in physics education. While I imagine that many of you are also researchers in physics education, this is not a course in research methods or theory. You will find that a strong grounding on theory and methods is helpful. You are strongly encouraged to attend both the PER group seminar and Theory Lunch to help with your grounding.

As it turns out, there is no single published textbook that covers the material in the course at an appropriate level. However, there are a number of books and articles which *partially* cover the relevant material. There is one assigned book, Entering the Child's Mind, which is available at the bookstore and on Amazon. I will distribute PDFs via Mendeley, and you are responsible for reading them as assigned.

For this course, you are required to complete training for research with human subjects, maintain a (free) account on Mendeley, and join the email lists (maintained by Kim Coy) for the PER group and Theory Lunch. Because there is a lot of writing in this class, you may find it fruitful to visit the writing center with drafts of your papers, or to circulate them among your friends for comments.

The goals for this course – and a lot more information as well – are available on K-State Online. Should there be a discrepancy between the online docs and this one, the online ones take precedence.

Collaboration and help

Teaching physics at the university level is a deceptively difficult topic. Physics is a collaborative field. I expect that you will work with your peers in group work during class and outside of it. Every member of every group is responsible for all of the intellectual work of this class; “floaters” will find that they do poorly on exams and presentations. In all work, you must cite your sources (including group mates, if applicable) appropriately. An appropriate citation will have enough information in it that I can look it up myself, or in the case of live people, ask them myself.

Because of the cumulative nature and quick pace of this class, you should seek help early and often if you are having difficulty. When in trouble or in doubt, send me an email (esayre@ksu.edu) or stop by my office (CW 329).

Office hours

Generally, I am in my office during normal business hours, unless I have an appointment that takes me elsewhere. You can see my schedule at <http://www.zaposa.com/schedule>. You may stop by my office at any time; the worst that will happen is that we schedule a different time to meet. If you would like to ensure that I am available, you can check my schedule and email me a time you'd like to stop by.

“Formal” office hours for this class will be determined by class vote on the first Tuesday of class.

Evaluation

Credit for work in this class is roughly evenly spread out over the semester and across projects.

Exam 1 (15%) Exam 1 has three parts: a individual take-home exam, a group in-class exam, and an individual in-class exam. It will cover problem solving, misconceptions, and associated material. Exams are your chance to communicate your reasoning and understanding of class topics.

PERUG assessments paper (15%) This paper has two parts: a one-page submission to the PER Users' Guide (PERUG) on a published multiple-choice assessment suitable for publication, and a 10-page paper on the research behind your chosen assessment, and research on assessments in general. Additional details will be distributed in class.

Peer Interview Project (PiP) (10%) This project has four parts. You will perform one interview on a peer during class in preparation for an interview on a student enrolled in EP, write a reflection paper on the interviews, and present the results of your interviews to the class and interested members of the public. Additional details will be distributed in class.

Annotated bibliography (15%) You will produce an annotated bibliography of peer-reviewed literature on a topic negotiated with me (and your classmates) ahead of time. Your annotations will contain both evaluations and summaries of the papers' content. Additional details will be distributed in class.

Final exam (15%) The final exam will be an cumulative oral exam which covers both the material in class and the papers in your annotated bibliography. Additional details will be distributed in class.

Teaching Philosophy (5%) At two points in the semester, you will write your teaching philosophy. Additional details will be distributed in class.

In class work and preparation (25%) Research shows that students learn physics better when they're actually doing physics, not just taking notes. We will have ample opportunities for in class work, from problem solving to class discussions to individual quizzes. To get any credit for this work, you must be in class and participating meaningfully; the amount of credit will depend on both the quality and frequency of your participation. Your paper summaries and peer-reviews fall under this section.

At any point in the semester, I invite to you to my office to discuss your progress in the course, your understanding of the material, and your anticipated grade.

Where possible and practical, I strongly encourage you to submit your work electronically in PDF form. Please include both your last name and assignment name in the title of your document: “Sayre-TeachingPhilosophy.pdf” is a good name; “Paper-v1-final-revised.docx” is not.

Legalese

Late Work

Generally speaking, I don’t accept late work. It will be more difficult for you to keep up in class if you fall into a pattern of late work. It’s also more difficult for me to grade it fairly and return it promptly. For those reasons, I am extremely unlikely to accept late work if the reason for its tardiness could have been prevented with better time management skills on your part.

If you would like to turn in your work late and receive credit on it, you must tell me why you would like an extension *and* propose a new deadline for the work to be turned in. You must do this in writing (email or paper). I will evaluate your reason and decide to grant your request (or not). If you think you might want an extension, I strongly encourage you to discuss it with me ahead of time. If your reason is insufficient and your work is already late, there is no recourse. *Unexcused late work will not be graded, and you will receive a zero on it.*

Under no circumstances will work be accepted later than I have started grading others’ work on the same assignment. Under extraordinary circumstances, it may be exempted (which means you don’t have to turn it in, and it has no effect on your grade – your other assignments will be worth more).

Attendance

Generally speaking, you can’t do in-class work, hand in homework, or participate in discussions if you’re not in class. This is a difficult course, and skipping class will make it more difficult to succeed. If you are planning to miss class (or if you have already missed class), you should send me an email with *when* and *why* you will miss class, and your proposed deadlines for the work that you will miss.

Whatever your reasons for missing class are, you are still responsible for all of the material covered and announcements made during class.

If you are going on a University-sponsored trip and will miss class, you should email me ahead of time to make alternate arrangements for the work you will miss. If you are sick, it is likely that your in-class work will be exempted, but your homework will not. *Do not come to class if you are contagious!* You are all adults, and I trust that you will make mature and intelligent decisions about when to come to class, and accept the consequences of your choices gracefully and respectfully.

Classroom Conduct

All student activities in the University, including this course, are governed by the Student Judicial Conduct Code as outlined in the Student Governing Association By Laws, Article VI, Section 3,

number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

Statement Regarding Academic Honesty

Kansas State University has an Honor System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor System. The policies and procedures of the Honor System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. The honor system website can be reached via the following URL: www.ksu.edu/honor . A component vital to the Honor System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

Statements for Academic Accommodations for Students with Disabilities

Any student with a disability who needs a classroom accommodation, access to technology or other academic assistance in this course should contact Disability Support Services (dss@k-state.edu) and/or the instructor. DSS serves students with a wide range of disabilities including, but not limited to, physical disabilities, sensory impairments, learning disabilities, attention deficit disorder, depression, and anxiety.

Statement for Copyright Notification

Copyright 2013 (Eleanor Sayre) as to this syllabus and all lectures; supplemental materials may have other copyright holders. During this course students are prohibited from selling notes to or being paid for taking notes by any person or commercial firm without the express written permission of the professor teaching this course.

Campus Safety Statement

Kansas State University is committed to providing a safe teaching and learning environment for student and faculty members. In order to enhance your safety in the unlikely case of a campus emergency make sure that you know where and how to quickly exit your classroom and how to follow any emergency directives. To view additional campus emergency information go to the University's main page, www.k-state.edu, and click on the Emergency Information button.