The Pennsylvania State University

EE 009.2 … First Year Seminar (FYS)

LASER LASER

Fall 2022

Tuesdays 3:05-4:20

Instructors: Prof. Tim Kane, 814-863-8727, tjk7@psu.edu [§]

The Smart One: **O'Neill ajo5182@psu.edu**

Welcome to Electrical Engineering!

This first-year seminar is meant to serve as a broad introduction to electrical engineering as well as an introduction to Penn State on the whole. Electrical engineering is one of the broadest majors at Penn State with specializations ranging from developing machine learning algorithms, to building instruments to go on spacecraft, to developing antennas, to quantum computing. This seminar will focus broadly on optics as it relates to electrical engineering. We'll investigate spectrometry, a little bit of telescope design, imaging sciences, and all the ~~weird~~ exciting things you can do with lasers.

Week	***Date***	***Activity***	***Comments***
1	Aug. 23	Syllabus and Laser lab	Discuss the syllabus and light-interface interactions
2	Aug 30	Spectroscopy Lab Part 1	begin constructing your spectrometer
3	Sept 6	Spectroscopy Lab Part 2	Observe different beverages
4	Sept 13	~TOUR~ Millennium Science Complex	Accessibility and Location information on canvas
5	Sept 20	Spectroscopy Lab Part 3	Collect and analyze samples (leaves)
6	Sept 27	The Great Fiber Optic Coupling Competition (1)	Optics Theory and Introduction
7	Oct 4	The Great Fiber Optic Coupling Competition (2)	Competition and turn in Report
8	Oct 11	~TOUR~ Dairy Research Center Tour	Accessibility and Location information on canvas
		~Group Mix Up~	
9	Oct 18	Pinhole camera	Demonstration of pinhole camera, counting Sunspots
10	Oct 25	~TOUR~ Breazel Nuclear Reactor	Accessibility and Location information on canvas
11	Nov 1	Refractometer Lab	Measure index of refraction
12	Nov 8	Fluorescence Spectroscopy Lab	Basics of fluorescence spectroscopy
13	Nov 15	Building Telescopes Week 1	Basics of telescope design and playing with Optics
14	Nov 22	Fall Break	
15	Nov 29	Testing Telescopes	Test your 'scopes from the parking garage
16	Dec 6	Exit Survey and Course Wrap up	Last Week of Class

(Brief) Guest Speakers on Occasion

This Syllabus is an evolving document. Some labs or tours may take place at a different day than is listed on the syllabus. Information regarding the next class will be disseminated no later than Monday the week of class.

[§] Your grade will be based on attendance, participation, interest, **and** Pass

Grading

This course will be utilizing a labor-based grading system as well as points based for required university things. The expectation is that students will put effort into understanding the course material and its applications. Because this is First-year seminar, and is inherently hands on, understanding will be demonstrated based primarily on class participation. What that mean ultimately is that you need to show up to class, actively participate in the labs or tours, and ask questions when you have them. I understand that for some folks asking questions in a large-ish class can be stressful and anxiety inducing. If that is your situation, we can talk individually about what class participation can be for you.

25% Engineering Pass to Success
25% Turning in "lab reports"
50% Class Participation

Accessibility Information

The classroom is located on the third floor of Electrical Engineering West. There is an elevator located towards the rear of the building. If you have issues locating the classroom or the elevator, please reach out.

Resources

Here's a short and incomplete list of resources for this class as well as some tangentially related stuff that is just interesting:

- Thorlabs Technical Resources: https://www.thorlabs.com/navigation.cfm?guide_id=2400
- Edmund Optics Knowledge Center: https://www.edmundoptics.com/knowledge-center/#!&CategoryId=112
- Newport Tutorials: https://www.newport.com/resourceListing/tutorials
- Nikon Microscopy U: https://www.microscopyu.com/
- How does a spectrometer work? : https://www.youtube.com/watch?v=OI3pIvLhVcc

First-year Student Activities

Engineering Pass to Success !!! (see CANVAS **module**) … additional updates posted **here**.

There's a few required modules that you'll all have to take part in as new students at Penn State. They are here to facilitate a successful transition from high school to college. There are two required activities, attending an Engineering Major Night and the World in Conversations

Engineering

https://www.engr.psu.edu/assets/docs/degrees-campuses-2021.pdf
https://www.engr.psu.edu/explore-engineering-majors/index.aspx

Engineering Peer Advising Leaders (EPALs)

EPALS are a cohort of upper-class College of Engineering students who offer technical and advising support to first and second year students who are exploring majors within the College of Engineering. EPALs provide a peer to peer exchange of accurate information to first and second year students, which allows for both parties to engage with the college in meaningful ways. They have gone through training and are ready to assist you.

Writing

Writing Reports: https://sites.psu.edu/scientificwriting/tutorial-reports/
Writing Job Emails: https://sites.psu.edu/scientificwriting/tutorial-emails/

Academic Integrity

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Academic integrity includes a commitment by all members of the University community not to engage in or tolerate acts of falsification, misrepresentation, or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others.

Class Code of Conduct:

This code of conduct is a work in progress and a collaboration between educators in several different departments. In concert with efforts of diversity equity and inclusion, this is designed to address systemic cultural and institutional issues in academia, engineering, and the sciences.

- Respect others and treat them as you wish to be treated.
- Respect and use the chosen names of other students, faculty, and staff.
- Respect and use the pronouns specified by students, faculty, and staff.
- Be mindful of the privilege(s) that your gender, race, or class upbringing gives you.
- Understand that your experiences and abilities are not the same as your classmates.
- Be mindful of the space you take up in class discussions.
- Discrimination based on gender, race, or sexuality will not be tolerated.

If you have questions or concerns regarding this code of conduct or if there is a situation in which it has been violated, I am happy to discuss it in a in private or via email.

Accommodating Students with Disabilities

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. Student Disability Resources (SDR) website provides contact information for every Penn State campus. For further information, please visit Student Disability Resources website. In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: See documentation guidelines. If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with instructors and discuss the accommodations with them as early as possible. You do this every semester you request accommodations.

Counseling and Psychological Services

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.
Counseling and Psychological Services at University Park (CAPS): 814-863-0395
Counseling and Psychological Services at Commonwealth Campuses
Penn State Crisis Line (24 hours/7 days/week): 877-229-6400
Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741

Educational Equity/Reporting Bias

Penn State takes great pride to foster a diverse and inclusive environment for students, faculty, and staff. Acts of intolerance, discrimination, or harassment due to age, ancestry, color, disability, gender, gender identity, national origin, race, religious belief, sexual orientation, or veteran status are not tolerated and can be reported through Educational Equity via the Report Bias webpage.

Safer People Safer Places Network: Members

We are members of the Penn State Safer People Safer Places Network and are available to listen and support you in a safe and private manner. As network members, we can help you connect with resources on campus to address problems you may face that interfere with your academic and social success on campus as it relates to issues surrounding sexual and gender diversity. Our goal is to help you be successful and to maintain a safe and equitable campus. For more information visit the Penn State Center for Sexual and Gender Diversity in LL011 HUB-Robeson Center or at: https://studentaffairs.psu.edu/csgd

School of EECS Mentor Collective Program

The **Peer Mentor Program** connects first and second year students majoring (or intending to major) in electrical engineering, computer science, computer engineering or data sciences with a peer mentor. Participants can sign up for a mentor in their major to help guide them based on the mentor's experiences. **Sign up here:** https://www.eecs.psu.edu/mentor-collective/index.aspx

Career Services

Orientation (Chloe)