



**PennState**

EE 330  
Engineering Electromagnetics  
Fall 2024

**GOALS:** To provide electrical engineering students with an understanding of fundamental electricity and magnetism concepts and to enable them to use these concepts in applications.

**TOPICS:** Static electric and magnetic fields; solutions to static field problems, Maxwell's equations; electromagnetic waves; boundary conditions; engineering applications.

**INSTRUCTOR:**  
Prof. Victor Pasko, [vpasko@psu.edu](mailto:vpasko@psu.edu), 211B EE East, 814-865-3467  
Lectures: Tuesday and Thursday 10:35-11:50 AM Walker Bldg. 112  
Office Hours: Tue. noon-1 PM, Thu. 1:30-2:30 PM, <https://psu.zoom.us/j/91772693490>,  
and by appointment

**PREREQUISITES:**  
C or better in EE 210 or C or better in EE 315, and MATH 230 or MATH 232

**TEACHING ASSISTANTS** (\*see schedule on page 3):  
Mr. Diego Penaloza Aponte (Sections 1R and 3R), [dxp647@psu.edu](mailto:dxp647@psu.edu)  
Recitations\*: 1R Wed. 1:25–3:20 PM 110 Sackett Bldg.  
3R Fr. 8-9:55 AM, 103 Biobehavioral Health Bldg.  
Office Hours: Tue.&Thu. 1:25-2:25 PM, <https://psu.zoom.us/j/3921536111>, and by appointment.  
  
Mr. Justin Henry (Section 2R and 4R), [jkh25@psu.edu](mailto:jkh25@psu.edu)  
Recitations\*: 2R Wed. 3:35-5:30 PM, 110 Sackett Bldg.  
4R Fr. 1:25-3:20 PM, 103 EE West  
Office Hours: Wed.&Thu. 8 AM - 9 AM, <https://psu.zoom.us/j/93577440114>, and by appointment.

**WEB PAGE:** Available on Canvas at <https://www.it.psu.edu/services/canvas/>

**TEXTBOOK:** *Fundamentals of Applied Electromagnetics, 8<sup>th</sup> Ed.*, F.T. Ulaby, E. Michielssen, and U. Ravaioli, Pearson Prentice Hall, 2020. You can get textbook by following electronic links posted on Canvas Syllabus.

**GRADING:** Your course grade will depend on exam, homework and recitation-lab components.

Component	Percentage of grade	
Midterm Exam 1	22%	Oct. 10, Thu., 8-10 PM, 26 Holster Bldg.
Midterm Exam 2	22%	Nov. 21, Thu., 8-10 PM, 26 Holster Bldg.
Final Exam	26%	To be announced by the University Registrar
Homework	15%	On due date by 4 PM on Canvas
Recitation-Lab	15%	

**EXAM POLICY:** All exams are in-person and open-notes. You are allowed to bring up to ten standard size pages of printed or handwritten notes to the exam (i.e., you are allowed to print pages or parts of pages from an electronic textbook). Use of laptops, tablets, ipads, cell phones, etc., is prohibited during the exam. If you have a conflict with an exam, you must personally notify your instructor no later than one week before the exam. If you have a medical or family emergency and cannot take a midterm exam, you must contact your instructor (when possible) before the exam and the day you return to campus to schedule a make-up.

#### HOMEWORK:

Assigned every week and must be submitted in pdf format on Canvas on the indicated due date before 4 PM (on Fridays unless specified otherwise). Please use TurboScan app or similar to create clean scans of your handwritten work. The solutions of the homework will normally be posted on EE 330 web site on the morning after the assignment is due. Homework grades should normally be issued one week after the homework is collected. Late homework will not be accepted.

#### LABORATORY AND RECITATION COMPONENTS:

On some of the weeks there will be regular recitation sessions in specified classrooms (see previous page) devoted to mastering of problem solution techniques. Additionally, you are to complete 4 engineering tasks during the recitation sessions. During the weeks when the engineering tasks will be assigned, please bring your laptop to the recitation sessions. Some of the engineering tasks will require a preparatory work in a form of pre-lab. The pre-lab must be handed in at the beginning of the corresponding engineering task session. The engineering task report materials must be assembled in a single pdf file and submitted on Canvas on the indicated due date before 4 pm (on Sunday the following week unless specified otherwise).

#### MATLAB:

The course will employ MATLAB in selected assignments. Students in this course are required to have access to MATLAB software (free at <https://www.it.psu.edu/software/>). You can also use EE Virtual Desktop Infrastructure (VDI) to run MATLAB: <https://weblabs.engr.psu.edu>. MATLAB will help you to visualize the complex math used in EM and to explore applications more in depth. In addition, exposure to MATLAB now is valuable in view of the extensive use of MATLAB in other classes (particularly at the 400 level). Also, familiarity with an industry-standard math package will help you when you look for jobs.

# EE 330 FALL 2024 TENTATIVE SCHEDULE:

<u>Date</u>		<u>Topics (Reading)</u>	<u>Homework</u>	<u>Recitation/Laboratory/Exam</u>
Aug. 27	T	Introduction (Ch. 1)		*Recitation
Aug. 29	Th	“		
Sept. 3	T	Transmission Lines (Ch. 2)		*Lab 1 - MATLAB Intro
Sept. 5	Th	“		
Sept. 6	F		HW#1 due	
Sept. 10	T	“		*Recitation
Sept. 12	Th	“		
Sept. 13	F		HW#2 due	
Sept. 17	T	Vector Analysis (Ch. 3)		*Recitation
Sept. 19	Th	“		
Sept. 20	F		HW#3 due	
Sept. 24	T	“		*Lab 2 - Impedance Measurement
Sept. 26	Th	Electrostatics (Ch. 4)		
Sept. 27	F		HW#4 due	
Oct. 1	T	“		*Recitation
Oct. 3	Th	“		
Oct. 4	F		HW#5 due	
Oct. 8	T	“		*Recitation
Oct. 10	Th	Magnetostatics (Ch. 5)		Midterm #1, 8 PM 26 Holster Bldg
Oct. 15	T	“		*Recitation
Oct. 17	Th	“		
Oct. 18	F		HW#6 due	
Oct. 22	T	Maxwell's Equations (Ch. 6)		*Recitation
Oct. 24	Th	“		
Oct. 25	F		HW#7 due	
Oct. 29	T	Plane-Wave Propagation (Ch. 7)		*Recitation
Oct. 31	Th	“		
Nov. 1	F		HW#8 due	
Nov. 5	T	“		*Lab 3 – Tomb Raider
Nov. 7	Th	Refl. & Transmission (Ch. 8)		
Nov. 8	F		HW#9 due	
Nov. 12	T	“		*Recitation
Nov. 14	Th	“		
Nov. 15	F		HW#10 due	
Nov. 19	T	“		*Recitation
Nov. 21	Th	“		Midterm #2, 8 PM 26 Holster Bldg
Dec. 3	T	Radiation & Antennas (Ch. 9)		*Recitation
Dec. 5	Th	“		
Dec. 6	F		HW#11 due	
Dec. 10	T	“		*Lab 4 - Antennas
Dec. 12	Th	“		
Dec. 13	F		HW#12 due	

\*Refer to recitation days/hours on 1<sup>st</sup> page

**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.

**ACCOMMODATIONS FOR 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](https://equity.psu.edu/offices/student-disability-resources/campus-offices) (<https://equity.psu.edu/offices/student-disability-resources/campus-offices>). For further information, please visit [Student Disability Resources website](http://equity.psu.edu/sdr/) (<http://equity.psu.edu/sdr/>).

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](http://equity.psu.edu/sdr/guidelines) (<http://equity.psu.edu/sdr/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 your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that 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 are provided by staff who welcome all students and 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 \(CAPS\)](http://studentaffairs.psu.edu/counseling/)  
(<http://studentaffairs.psu.edu/counseling/>): 814-863-0395

Counseling and Psychological Services at [Commonwealth Campuses](http://senate.psu.edu/faculty/counseling-services-at-commonwealth-campuses/)  
(<http://senate.psu.edu/faculty/counseling-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/REPORT 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](http://equity.psu.edu/reportbias/) (<http://equity.psu.edu/reportbias/>)

**REPORTING SEXUAL MISCONDUCT:** Sexual misconduct is never tolerated at Penn State. Prohibited conduct includes sexual and gender-based harassment, stalking, sexual assault, and dating violence. These behaviors are not allowed in the classroom, the campus community, labs, or anywhere students, staff, and faculty are located. Prohibited behaviors can include degrading comments such as belittling female-identified students, LGBTQ+ individuals, and gender-diverse students. It can also include harassment, touching someone without their consent, following someone without consent, repeated calls or messaging, physical acts of violence, and more. In other words, professional and appropriate behavior is always expected, and inappropriate or unprofessional behavior is never tolerated. For more information, please refer to the Student Code of Conduct and Penn State Policies AD85

and AD91. ([Title IX Sexual Harassment | Penn State Policies \(psu.edu\)](#) and [Discrimination and Harassment and Related Inappropriate Conduct | Penn State Policies \(psu.edu\)](#))

If you or anyone you know has experienced or is concerned about inappropriate or unprofessional behavior, you can talk with College, or School leadership, your instructor, academic advisor, or another trusted faculty/staff member, report to police or the Office of Sexual Misconduct Reporting & Response ([titleix.psu.edu](#)), or you can seek confidential support and assistance from the Gender Equity Center. The Gender Equity Center supports any student who has had negative relationship experiences including those impacted by sexual violence, relationship violence, stalking, harassment, and other campus climate issues. Services include one on one crisis intervention/support, advocacy, exploring options, accommodations, safety planning, and referrals. They also promote awareness, build support for survivors, and conduct educational programs and events. All services are free and confidential. [Gender Equity Center | Penn State Student Affairs \(psu.edu\)](#)

\* Source: <http://keepteaching.psu.edu/> and <https://senate.psu.edu/> as of 12/5/22

\* Last updated February 2, 2024