Principles of Physics II

PHYS 2212 – Spring 2023

Instructor Info ——

- 👤 Dr. Andreas Papaefstathiou
- 🕐 Office Hrs: By appointment
- 📍 SC 439 (4th Floor Science Building, Kennesaw Campus)
- ☎ 470-578-2702
- ℹ `http://facultyweb.kennesaw.edu/apapaefs`
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Course Info ——

- ⚡ Prereq: Grade "C" or better in MATH 2202 and PHYS 2211 or PHYS 1211K.
- 📅 Tue & Thu
- 🕐 5:00-6:15 p.m.
- 📍 Engineering Technology Center 106

Recitations ——

- 📅 Tue or Thu
- 🕐 6:30-7:20 p.m.
- 📍 Atrium Building 109 (Tue) or 131 (Thu)

Course Overview

What causes the natural phenomenon of lightning and why should you stay in your car during a lightning storm? How does current flow through circuits to power up our devices? How do magnetiic forces work? How do motors and generators work? What is the nature of light and how does it travel through space? These are some of the questions that this calculus-based course will touch upon.

Learning Objectives

At the completion of this course, students will be able to

- Solve problems of electrostatics, that include discrete and continuous charge distributions, using pictorial, graphical, physical, or mathematical representations (including calculus and vectors), and other representations as appropriate.
- Solve problems of magnetostatic and induction using pictorial, graphical, physical, or mathematical representations (including calculus and vectors), and other representations as appropriate.
- Analyze and solve DC and AC circuit problems using pictorial, graphical, physical, or mathematical representations (including calculus and phasors), and other representations as appropriate.
- Describe the nature of electromagnetic waves and predict the behavior of light waves passing through single or multiple slits.
- Identify and describe the basic ideas of special relativity and quantum theory and apply these principles to simple systems.

Required Text and Material

Physics for Scientists and Engineers with Modern Physics, Serway and Jewett, 10th ed.

Other Required Material:

- Internet access.
- WebAssign Access.
- Calculator with trig functions, exponentials and logarithms. *Note:* A cell phone *cannot* be used as a calculator.

D2L

Course information, homework solutions and announcements will be available on "D2L." This on-line course information system is accessible from `https://d2l.kennesaw.edu`. To sign on, use your KSU username and password.

Homework Assignments

Homework assignments and homework grading will be done through the WebAssign on-line homework tool. Due dates are listed on WebAssign.

When you sign up, use your official KSU e-mail address. Also use your KSU ID number for the WebAssign ID number.

The class keys for this class are:

- kennesaw 1200 1314 (Section 64)
- kennesaw 7241 1440 (Section 65).

Please ensure you enroll to the correct section!

Please only ask for extensions if you have a valid emergency reason. Make an attempt to look at the problems sufficiently in advance and if you have any questions or technical issues contact me well in advance so they can be resolved. If you believe you do have a valid reason, contact me via e-mail before asking for an extension through the WebAssign platform.

Reading Assignments

You are expected to read the textbook before the lecture. Class time will be used for discussion and problem solving. The sections of the text we will be covering are on the syllabus.

IMPORTANT: Communication

Only use e-mail to contact me at apapaefs@kennesaw.edu.

Make sure that the subject line starts with "PHYS 2212".

You must use your KSU e-mail address.

Please DO NOT USE D2L or WebAssign to contact me.

I will return all emails in 36-hours during the week and within 48 hours over the weekends.

Grading Scheme

15%	Homework
20% each (best 3)	Tests 1–4 and Mini-Project
25%	Final Exam

Grades will follow the scale: A = 89.5-100; B = 79.5-89.4; C = 69.5-79.4; D = 60-69.4; F <60. Curving is at the discretion of the instructor. The best three tests of the four tests plus mini-project will be used for the final grade. Therefore, each will contribute 20%. In addition, the lowest homework assignment will be dropped.

Exams and Make-up Policy

Five tests will be given this semester, four tests and a final exam. The test dates are on the attached course schedule. The final exam will be comprehensive. Each test will be a combination of multiple-choice questions, conceptual questions and problem-solving, free response questions.

Make-up exams or tests will not be given. If you know ahead of time you have a conflict, let me know. If you miss an exam because of an illness (yours or a family member's) or some other unforeseeable event, contact me as soon as you can. You can e-mail me, leave a message on my answering machine or call the Physics Department office at 470-578-4205. You must provide documentation showing the reason for missing the exam, if asked.

Course Dos and Don'ts

Please review these important points that will help you throughout the rest of your college career, and in your future careers.

- Regular attendance is essential for success in this class. If students miss a class, it is their responsibility to get the notes for missed lectures from another student. And please be on time!
- Occasionally, it may be necessary for the instructor to make corrections, updates or changes to this syllabus. Corrections or changes to the syllabus will be announced on D2L and in class: students are expected to check D2L for announcements regularly (i.e. at least once or twice a day.)
- Cellular telephones, pagers, and similar devices must be turned off or placed in silent mode during lectures. Use of cell phones should be restricted to emergencies.
- In class, avoid conversations and other disruptions that may distract other students during the lecture. If you have questions or comments, direct it to the instructor.
- Rude and disrespectful student behavior will not be tolerated (administrative actions will be taken).
- Deadlines are deadlines for a reason. As a college student, you must plan accordingly and use your time wisely. In the "real world" you are expected to submit work on time to your boss so that you keep your job. I expect the same.
- If you have asked your professor to grant you an extension on your work, you do not meet the guidelines for getting an extension, and are told "no," do not continue to email the professor. No means no, and this is grounds for a referral to student conduct.
- Do not tell your professors or employers how to do their jobs. While you may not like your professor or employer, remember that they have more experience in and knowledge about the field than you. They are also your means for networking and finding gainful employment.

- Remember that your professional aptitude not only reflects on you as a student and employee, but as a person in general. Please be sure you understand these guidelines, and if you have any questions about appropriate communication or college-level problem-solving skills, let me know.

Course Delivery

KSU may shift the method of course delivery at any time during the semester in compliance with University System of Georgia health and safety guidelines. In this case, alternate teaching modalities that may be adopted include hyflex, hybrid, synchronous online, or asynchronous online instruction.

Face Coverings

Based on guidance from the University System of Georgia (USG), masks are encouraged based on individual preference and assessment of personal risk. Disposable face coverings can be picked up at the Office of Emergency Management at Chastain Pointe on the Kennesaw campus and Norton Hall Police Precinct on the Marietta campus. Please email oem@kennesaw.edu if you have questions.

Academic Integrity

Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. Section 5c of the Student Code of Conduct addresses the university's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to university materials, misrepresentation/falsification of university records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Department of Student Conduct and Academic Integrity (SCAI), which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement.

All students are responsible for knowing the information, policies and procedures outlined in the Kennesaw State University Codes of Conduct. The Code is available online at `http://scai.kennesaw.edu/`.

Accommodations for Students with Disabilities

Any student with a documented disability or medical condition needing academic accommodations of class-related activities or schedules must contact the instructor as early in the semester as possible. This applies to accommodations for medical conditions related to COVID-19. Written verification from the KSU Student Disability Services (`https://sds.kennesaw.edu/`) is required. No requirements exist that accommodations be made prior to completion of this approved University documentation. All discussions will remain confidential.

Withdrawal Policy

Students are solely responsible for managing their enrollment status in a class.

Non-attendance does not constitute a withdrawal.

The last day to withdraw without academic penalty is Tuesday, March 14th 2023, 11:45 p.m.

Additional information on the withdrawal policy can be found at: `http://catalog.kennesaw.edu/content.php?catoid=51&navoid=3701#withdrawalfromclasses`.

The Academic Standing Appeal policy is explained at: `https://appeals.kennesaw.edu/withdrawal_appeal.php`.

Campus Sexual Misconduct Policy

For information about how to report sexual misconduct or how to obtain assistance, please go the following page: `https://scai.kennesaw.edu/procedures/sexual-misconduct.php`.

Other Policies

See the Student Handbook (`http://catalog.kennesaw.edu/`) for other policies and information.

KSU SMART Center

If you require tutoring assistance, the Science and Math Academic Resource and Tutoring (SMART) Center at KSU provides tutoring for all current KSU students in Math, Science, Engineering, Humanities, and Social Science courses. See `https://academicaffairs.kennesaw.edu/smart/index.php` for further details.

COVID-19 illness

If you are feeling ill, please stay home and contact your health professional. In addition, please email your instructor to say you are missing class due to illness. Signs of COVID-19 illness include, but are not limited to, the following:

- Cough
- Fever of 100.4 F or higher
- Runny nose or new sinus congestion
- Shortness of breath or difficulty breathing
- Chills
- Sore Throat
- New loss of taste and/or smell

COVID-19 vaccines are a critical tool in "Protecting the Nest." If you have not already, you are strongly encouraged to get vaccinated immediately to advance the health and safety of our campus community. As an enrolled KSU student, you are eligible to receive the vaccine on campus. Please call (470) 578-6644 to schedule your vaccination appointment.

For more information regarding COVID-19 (including testing, vaccines, extended illness procedures and accommodations), see KSU's official Covid-19 website, `https://www.kennesaw.edu/coronavirus/`.

Class Schedule

Week 1	Jan 10	Electric Fields (Ch. 22: Sec. 22.1-22.6)	Math Review & Electric Field Calculations
	Jan 12	Electric Fields (Ch. 22: Sec. 22.1-22.6)	Math Review & Electric Field Calculations
Week 2	Jan 17	Continuous Charge Distributions & Gauss's Law (Ch. 23: Sec. 23.1-23.4)	Electric Field Calculations
	Jan 19	Continuous Charge Distributions & Gauss's Law (Ch. 23: Sec. 23.1-23.4)	Electric Field Calculations
Week 3	Jan 24	Electric Potential (Ch. 24: Sec. 24.1-24.6)	Electric Potential Calculations
	Jan 26	Electric Potential (Ch. 24: Sec. 24.1-24.6)	Electric Potential Calculations
Week 4	Jan 31	TEST 1	NO RECITATION
	Feb 2	Capacitance and Dielectrics (Ch. 25: Sec. 25.1-25.7)	Capacitance Calculations
Week 5	Feb 7	Current and Resistance (Ch. 26: Sec. 26.1-26.6)	Capacitance Calculations
	Feb 9	Direct-Current Circuits (Ch. 27: Sec. 27.1-27.4)	Resistance Calculations & Analysis of DC Circuits
Week 6	Feb 14	Direct-Current Circuits (Ch. 27: Sec. 27.1-27.4)	Resistance Calculations & Analysis of DC Circuits
	Feb 16	TEST 2	NO RECITATION
Week 7	Feb 21	Magnetic Fields (Ch. 28: Sec. 28.1-28.6)	Magnetic Force on Moving Charges
	Feb 23	Magnetic Fields (Ch. 28: Sec. 28.1-28.6)	Magnetic Force on Moving Charges
Week 8	Feb 28	Sources of magnetic Field (Ch. 29: Sec. 29.1-29.6)	Magnetic Fields Produced by Currents
	Mar 2	Sources of magnetic Field (Ch. 29: Sec. 29.1-29.6)	Magnetic Fields Produced by Currents
Week 9	Mar 7	SPRING BREAK	SPRING BREAK
	Mar 9	SPRING BREAK	SPRING BREAK
Week 10	Mar 14	Faraday's Law (Ch. 30: Sec. 30.1-30.6)	Applications of Faraday's Law
	Mar 16	Faraday's Law (Ch. 30: Sec. 30.1-30.6)	Applications of Faraday's Law
Week 11	Mar 21	Inductance (Ch. 31: Sec. 31.1-31.6)	Calculations of Inductance and Circuits with Inductance
	Mar 23	Inductance (Ch. 31: Sec. 31.1-31.6)	Calculations of Inductance and Circuits with Inductance
Week 12	Mar 28	TEST 3	NO RECITATION
	Mar 30	Alternating Current Circuits (Ch. 32: Sec. 32.1-32.7)	Analysis of AC Circuits
Week 13	Apr 4	Alternating Current Circuits (Ch. 32: Sec. 32.1-32.7)	Analysis of AC Circuits

	Apr 6	Electromagnetic Waves (Ch. 33: Sec. 33.1-33.7)	Properties of Electromagnetic Waves
Week 14	Apr 11	Electromagnetic Waves (Ch. 33: Sec. 33.1-33.7)	Properties of Electromagnetic Waves
	Apr 13	Wave Optics (Ch. 36: Sec. 36.1-36.6)	Wave Optics & Diffraction Patterns
Week 15	Apr 18	Diffraction Patterns & Polarization (Ch.37: Sec. 37.1-37.6)	Wave Optics & Diffraction Patterns
	Apr 20	TEST 4	NO RECITATION
Week 16	Apr 25	Relativity (Ch. 38: Sec. 38.1-38.8)	Calculations in Relativity and Quantum Physics
	Apr 27	Intro to Quantum Physics (Ch. 39: Sec. 39.1-39.8)	Calculations in Relativity and Quantum Physics
	May 2	6:00pm–8:00pm	FINAL EXAM