

Engineering Physics II/Physics II

Physics 214/224-Spring 2009-MW 1:30–2:20 or 2:30-3.20

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Office Hours: T,F 2:00-4:00, or by appointment.

Text: *Fundamentals of Physics*; 7th ed.; Halliday, Resnick, and Walker; Wiley.

Sections: You must be signed up for three sections with this course: a lecture section, a studio section, and a quiz section. If you are not enrolled in all three sections, *see me immediately*.

Technology: This is a “high technology” class. You will use:

- An “i-clicker” for in-class participation. You must purchase an i-clicker and bring it to every lecture. You must also register your i-clicker at www.iclicker.com. See the separate write-up on i-clickers.
- An internet-connected computer using a (free) modern browser such as Internet Explorer or Netscape Navigator.
- A web-based homework tool called WebAssign (www.webassign.net). You must purchase an access code for WebAssign with your textbook, online, or from the Arts&Sciences copy center in Eisenhower hall. See the separate write-up on WebAssign.
- K-State online to access all course information, including syllabus, schedule, grades, assignment solutions, and practice assignments. See www.online.ksu.edu.
- Scantron cards for quizzes, to be supplied by KSU.
- The free Adobe Acrobat Reader software.
- The K-State IT help desk (helpdesk@k-state.edu) for problems with K-State Online, internet connections, or Adobe Acrobat.
- Me, for problems with WebAssign, i-clickers, or scantron cards.

Learning and Assessment: Your grade will be based on five Friday quizzes (400 points– best four at 100 points each), twice-weekly homework assignments (150 points– best 25 at 6 points each), twice-weekly studio labs (150 points–best 25 at 6 points each), twice-weekly studio problems (50 points– best 25 at 2 points each), class participation (50 points– best 25 at 2 points each) and a final exam (200 points). *Makeup assignments will be allowed only in highly restricted cases.* Your final grade will be based on total points: $\geq 900=A$, $800 - 899=B$, $700 - 799=C$, $600 - 699=D$, $< 600=F$. More details:

- Lectures will consist of explanations and demonstrations of physics concepts and problem solving techniques. Any material presented in a lecture, including a demonstration, may appear on a Friday quiz. Thus: attend all lectures and take good notes. Get a copy of someone’s notes if you miss a lecture. Copies of lecture PowerPoint slides will be placed on KSO, but these do not replace lecture notes. You should attend the lecture section you are enrolled in; but you may make up a missed lecture by attending the other section if necessary. Your *i-clicker* will help you answer questions that I pose during lectures, and lets me get feedback from your answers. I won’t grade your i-clicker answers, but I will keep track throughout the semester to see that you are responding. That is why it is essential that you *bring your i-clicker each time you come to class*. I-clicker questions will often correspond to conceptual problems given on the quizzes. Take i-clickers seriously!
- You will learn physics in your *studio* using an active hands-on approach to problem solving and experimental investigations. You must be enrolled in a studio. You must bring a studio manual (available at the Arts and Sciences Copy Center) and a 5×5 quad-ruled lab notebook (available at the Union or Varney’s– don’t get a spiral-bound version) to the first studio. Studios begin the first week of class! Your studio instructor is a valuable resource. He or she will set up office hours for any individual questions you may have about lectures, homework, exams, or studios that cannot be answered during the studio. All studio sessions will have the same basic parts: review of solutions to homework, a laboratory assignment, and a problem assignment. All studios will do the same labs and problems; and

all work must be completed during studio. Studio labs will be graded on a ten point scale followed by all KSU physics laboratories; this score will be multiplied by 0.6 before it is recorded. The studio problem assignment will be more analytical in nature than typical WebAssign homework problems. It too will be graded on a 10 point scale for uniformity, with the score multiplied by 0.2 for recording purposes.

- Studio labs and problem sessions will be graded by group. One lab write-up per group will be randomly selected per studio. That write-up will be graded, and that grade will be assigned to the entire group. A similar procedure will be followed for the problem session. We have tentatively scheduled 28 studios this semester. You may miss up to three without penalty; but it behooves you to attend them all. **There will be no makeup studios.**
- Homework will be *due every Wednesday and Friday* by 4:30 PM starting the first week of class, unless otherwise noted. You will turn in your assignment only over the computer via WebAssign. WebAssign will make “custom” problems for each of you. Nevertheless, you can profitably work out homework problems in groups, *and the assignments are made under the expectation you will do this*. You may also ask your studio instructors for help with your homework problems during studio or at their office hours. Keep in mind that the details of your problems will generally differ from the ones worked out by your instructor, and hence simply copying solutions will not work. Help with homework is also available during my office hours and from the Physics Help Room (see separate writeup on Physics Help Room). Much of the quantitative work in the class will be in the homework assignments, and there is a very high correlation between final grade and homework performance. You should try to log onto the WebAssign course web site as soon as possible— you will not need an access code to do this for the first two weeks of the course. See the separate posted writeup for more information on the WebAssign system. Problem solving in physics takes practice, and that is what homework is for. Begin every problem with a clearly labeled diagram. Work out solutions algebraically, showing all steps. Substitute in numbers only at the end. Check your units. Check for “reasonable” features like the right sign or the right power of ten. Homework solutions will be posted on KSO.
- The five quizzes will be given on Fridays from 4:30-5:20 in the rooms CW101, CW102, and CW103. Part of the quizzes will consist of “conceptual” problems answered on scantron cards, and part will consist of analytic problems worked out on exam sheets. All quizzes will be taken alone with no outside material allowed except a calculator. An equation sheet will be supplied with each quiz. The lowest of your five quiz scores will be dropped. *A missed quiz cannot generally be made up and will count as a zero. You must take the final exam to pass the class.*

Makeup policy: Students are expected to take the quizzes and final exam at the scheduled time. I will make *rare* exceptions on a case-by-case basis according to the policies below. Missed studio assignments, homework assignments, and in-class participation problems cannot be made up. Homework assignments are accessible anywhere in the world with computer access, and studios require too much setup to be made up. Note that the quiz and exam makeup policies are the same as in Prof. O’Shea’s Physics 213 class.

- Friday quizzes. All students will take the quizzes at the times listed in the syllabus unless: (1) There is an event sponsored by an academic department that is crucial for your professional development. I must have a letter from the faculty member who is sanctioning this event in this case, and you must notify me at least one week before the quiz by e-mail. (2) You have a personal emergency (funeral, significant illness). In this case e-mail me the reason you must miss the quiz. (3) You are called for jury duty.
- Final exam. You must take this at the scheduled time unless the official university exam policy allows for other arrangements. You must e-mail me two weeks before the final exam to make these arrangements.
- If you are on a KSU athletic team or other university sanctioned group, and KSU-sponsored off-campus travel prevents you from taking a quiz or the final exam at the normal time and place, then you must contact your academic advisor to arrange for a proctored quiz to be given to you on your trip. You must e-mail me at least two weeks before the quiz or exam to arrange this.

Remarks:

- Engineering physics I and II may be among the most challenging courses you encounter at KSU. You need to maintain a high level of concentration and focus throughout the two semesters. Towards this end, you may not use laptop computers, cell phones, or other electronic devices except calculators in lectures or studios. You may not read newspapers in lectures or studio. Persistent abusers of these rules will be removed from class.
- Physics builds on itself. Week 2 uses week 1, week 25 uses week 3, and so on. You must not fall behind. If you sense trouble for yourself, do something about it *sooner rather than later*. See me *early!* We have available a range of resources to help you with learning physics, many of which are free. Do not engage a tutor without talking to me first.
- The work may be hard at times, but enjoy the challenge of learning how Nature works! It is not my job to flunk you out of the School of Engineering.

Disability: If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as outlined here or which will require academic accommodations, please notify me and contact the Disabled Student Office (Holton 202, 532-6441), in the first two weeks of the course.

Cheating: Cheating and plagiarism are serious offenses and may be punished by failure on the exam, paper or project; failure in the course; and/or expulsion from the university. For more information, refer to the “Academic Dishonesty” policy in the *K-State Undergraduate Catalogue* and the *Undergraduate Honor System Policy* at www.ksu.edu/honor/.

Professionalism: In addition to following the official KSU policies on academic dishonesty, I expect you to fully embrace the high standards of professionalism practiced by engineers and scientists, which go beyond the literal statement of the KSU honor code. A non-exhaustive set of examples of unprofessional behavior would include: using an i-clicker or WebAssign account other than your own, programming a calculator or other electronic device for the purpose of aiding your quiz performance, and failing to contribute in studio to group laboratory or problem assignments.

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WORKING SCHEDULE (subject to change)

LECTURE	TOPIC	TEXT	STUDIO HOMEWORK	LAB
Jan. 19				21.2
Jan. 21	Coulomb's Law	Ch21:1-6		21.1
Jan. 26	Electric Field	Ch22:1-4		22.1
Jan. 28	E-Field Examples	Ch22:5-9		22.2
Feb. 2	Gauss's Law	Ch23:1-4		23.1,23.2
Feb. 4	Gauss's Law Examples	Ch23:5-9		23.3
Feb. 6	Quiz 1; CW101,CW102,CW103; 4:30-5:45			
Feb. 9	Electric Potential	Ch24:1-4		24.1
Feb. 11	Voltage calculations	Ch24:5-11		24.2
Feb. 16	Capacitance	Ch25:1-6		25.1,25.2
Feb. 18	Current/Resistance	Ch26:1-7		27.2,27.3
Feb. 23	Circuits	Ch27		27.4,27.5
Feb. 25	More circuits	Ch24-27		27.6
Feb. 27	Quiz 2; CW101,CW102,CW103; 4:30-5:45			
Mar. 2	Magnetic Field	Ch28:1-4		28.1
Mar. 4	Magnetic Forces	Ch28:5-9		28.2
Mar. 9	Current and B-Fields	Ch29:1-3		29.1
Mar. 11	Ampere's Law	Ch29:3-6		29.2
Mar. 23	Ampere's Law Examples	Ch32:6-12		29.3
Mar. 25	Magnetic Materials	Ch28-29;32		29.4
Mar. 27	Quiz 3; CW101,CW102,CW103; 4:30-5:45			
Mar. 30	Faraday's Law of Induction	Ch30:1-6		30.1,30.2
Apr. 1	Induced E-Fields	Ch30:6-12		30.3
Apr. 6	AC Circuits	Ch 31:1-11		30.4,16.2
Apr. 8	Oscillations	Ch16,Ch17		31.2,17.1
Apr. 13	Waves and Sound	Ch16,Ch17		17.3,18.3
Apr. 15	Electromagnetic Waves	Ch33:1-9		33.1,33.2
Apr. 17	Quiz 4; CW101,CW102,CW103; 4:30-5:45			
Apr. 20	Images	Ch34:1-5		33.3
Apr. 22	Images	Ch34:5-9		33.4,33.5
Apr. 27	Interference	Ch 35		34.2
Apr. 29	Diffraction	Ch 36		34.3
May 1	Quiz 5, Ch17,18,34,35; CW101,CW102,CW103; 4:30-5:45			
May 4	Maxwell's Equations			35.1
May 6	Wave mechanics			36.1
May 15	FINAL EXAM (7:30-9:20 AM, CW101,102,103)			