Physics 31: General Physics

Joint Science Department — Spring 2009
TTh 9:35 AM — Keck 125

Professor Steuard Jensen

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Office Hours: M 2:30–3:30 (Pom. ML109); T 3–5; W 10:30–11:30, 3–4; or by appointment.

Course description:
This is the second half of a calculus-based introduction to physics intended for students with majors outside the physical sciences. The central goal is for you to learn physical reasoning and problem solving skills (*not* to memorize dry facts). The main topic is electricity and magnetism, but we will also discuss optics and basic aspects of thermodynamics and modern physics. With luck, you'll also come to appreciate the beautiful simplicity of the laws that govern our complex world and to recognize them in your work and everyday life.

Textbook: *Principles of Physics* by Serway and Jewett (4th edition) ISBN: 0-534-49143-X
Required materials: scientific calculator, ruler and protractor (sometimes handy), sleep
Discussion and handouts on **Sakai:** `https://sakai.claremont.edu:8443/portal`
Website: `http://faculty.jsd.claremont.edu/sjensen/teaching/classes/phys31/`

Midterm Exams: (2 Evening Exams)
Feb. 26 (Thur., 6:30–8 pm) and **Apr. 16** (Thur., 6:30–8 pm).

These exam dates will not be changed. If you have a specific conflict with any of these dates, you must let me know in writing **during the first week of class**.

Cumulative Final Exam: Monday, May 11, 9:00am–12:00pm

Grading: Your work will contribute to your final grade with the following weights:

2 Midterms:	20%, 25%	Homework:	25%
Final Exam:	30%	Lab:	(see below)

Grades may be scaled up, but never down. You are welcome to ask me for your overall grade at any time. The correspondence between percentages and letter grades is as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
92–100	88–92	84–88	80–84	76–80	72–76	68–72	64–68	60–64	52–60	< 52

Grading philosophy
In this class, the focus in grading is on your methods, explanation, and understanding, not simply on whether you got the right answer in the end. You can expect substantial partial credit if you make an effort. The details are on a separate handout: please read it! Pay special attention to the fact that part of your grade depends on the *clarity* of your work.

Homework policies
Unless I announce otherwise, homework will be **due Thursdays in class at the beginning of class**. I encourage you to discuss the assignments with others in the class, but all work that you turn in must be your own (do not simply copy someone else's work). If you do get significant help on a problem from another person or a book besides our textbook, briefly give them credit at the beginning or end of your solution. Late homework assignments will receive half credit and should be turned in with the following week's assignment. Assignments over one week late will not be accepted. I will drop your lowest homework score from your final grade.

Most homework will be graded by student graders (I will grade the exams myself). If you feel that any grade on a homework or an exam is unfair, you may ask me to **re-grade** the problem. (Not all grades go up; some go down.) I don't expect any issues of academic honesty to arise, but I will follow your campus policy in cases of suspected cheating on homework or exams. That certainly means zero credit for that assignment and may also include reporting the issue to your Dean of Students or Registrar.

Reading assignments
Our class time together is best spent discussing concepts and practicing problem solving, but we won't have time for that if I have to explain everything from scratch. Thus, we are using what I hope is a clear and readable textbook, and you are expected to read the material before class. (Come prepared with questions!) To encourage this, some homework questions may be assigned on upcoming material and I may ask you for feedback on the reading prior to class.

Lab
Lab sections meet weekly in Keck 134 starting in the second week of class. During the first week of class, it is your responsibility to sign up for a lab section that fits your schedule. Labs will be graded as "High pass/Pass/Low pass/No credit". A "pass" reflects the expected level of work and will leave your overall course grade unchanged. High and low pass lab grades will contribute noticeably to your overall course grade (e.g. getting mostly high passes could raise a B+ to an A-). **If you cannot attend your lab section one week, you must arrange to attend a different section that same week instead.** Any lab that you miss or that receives "no credit" will count as *three* low pass grades.

Schedule: Tentative: reading assignments to be announced in class. (1/2 weeks *italicized*.)

Topic	Chapters	Weeks	Exam
Thermodynamics	16–18	1–*2*	Midterm 1
Electric charge, force, and fields	19	*2*–4	
Electric potential and potential energy	20	5	Midterm 2
Capacitance, Resistance, and Current	21	6	
Magnetism and Induction	22–23	7–*9*	
Maxwell's equations and EM waves	24	*9*–*10*	
Optics: Reflection and refraction	25–26	*10*–11	(incl. on final)
Interference and diffraction	27	12	
Quantum physics: particles and waves	28	13	
Nuclear physics	30	14	
Frontiers of modern physics	(31)	*15*	