Syllabus for Physics 206, spring 2012

Ben Crowell, Fullerton College

office hours My office hours are in room 415-P (not my office), M 9:30-10:30, Tu 4:30-5:30, W 9:30-10:30, Th 9:30-10:30, and Th 4:30-5:30. I urge you to pick at least one of these office hours to come to every week as part of your habitual schedule; if none of my office hours fits your weekly schedule, please give me a copy of your schedule written out on a grid, and we'll see what we can work out.

web page `www.lightandmatter.com/area3phys206.html`
To e-mail me, use your Spotter account.

required materials The texts are volume 2 of *Light and Matter* and *Relativity Simply Explained* by Gardner. You'll also need a calculator, two bound lab notebooks (either $10 \times 7\frac{3}{4}$-inch or $9\frac{3}{4} \times 7\frac{1}{2}$-inch) with graph paper pages (across from the colored pens at the bookstore) a metric ruler, and a protractor. If you need to review trig, I recommend the free book at `mecmath.net/trig`. You can use a dictionary on exams, but it has to be a printed dictionary, not an electronic one.

getting started Here are the things you need to do by the second class meeting:

1. Get everything listed under "required materials" above. You can buy the book at the FC bookstore or download it. Download and print the lab manual. The downloads are linked to from the class's web page.
2. Read this syllabus.
3. Consult the schedule on page 4. Do the listed reading and the homework problems. Take notes on the reading, and print two copies of them.
4. If you don't already have e-mail, get an account.

grading Grades will be determined as follows:

homework	122 problems @ 1 point each	122
reading quizzes	42 questions @ 2 point each	84
reading notes	22 @ 1 points each	22
prelabs	14 @ 2 point each	28
check-off labs	11 @ 10 points each	110
lab writeups	5 @ 20 points each	100
exams	4 @ 150 points each	600
standardized test		33

points	grade
80%	A
69%	B
58%	C
47%	D

reading notes I'll maintain a folder for you containing your notes on the reading. These are the notes you get to use on the exams. You should do the notes on a computer (for ease of revision), and do them after you read, not while reading (so that you know what ended up being the main points).

On any date when reading is assigned, you should be prepared for an open-notes quiz, and print out an extra copy of your notes on the reading; you'll turn in the copy, and I'll add it to your folder. It has to be a copy, because you need the original for your own use in studying and problem solving. I expect you to bring your own copy of your notes to school so that, e.g., we can refer to them together if you're getting help in my office hours. I will not accept hand-written notes.

Your notes need to be entirely in your own words; stating everything in your own words is a good way to test and consolidate your own understanding. Cutting and pasting from the book would be a form of cheating on exams (because the exams are not open-book), and would also be plagiarism if the copied material wasn't properly attributed.

Shorter is better. The laws of physics are fundamentally simple. I would suggest limiting yourself to no more than half a page per chapter. By the end of the

semester, the simple underlying structure of the material will have become more and more obvious to you, and I think you should be able to go back over your notes and edit them down to no more than about a page *total*. It's not against the rules for your notes to be too long, but it's not smart, either; long notes usually indicate that you're not distinguishing fundamental principles from trivia, or that you're making futile efforts to write a cookbook of problem-solving techniques, which is a self-defeating way to approach problem solving. If it feels too scary to walk into an exam with short notes, I suggest making a separate long version as a security blanket, but sealing them shut with a big binder clip to remind yourself that using them is probably a mistake, indicating that you aren't working from basic principles.

Google Docs for note-taking

For note-taking, I recommend that you use Google Docs, `docs.google.com`, which makes it easy to do equations. It works in any web browser, and you don't have to install any software. To do an equation, go to the Insert equation and choose Equation. You can then type in your math. A toolbar also comes up, just above the top of the page, with symbols in it like square roots. I found the toolbar confusing when it came to doing exponents; the easiest way to do it is to enter, e.g., `x^2` for x squared. Printing works, but is a little awkward and ugly. A PDF file pops up, with your equations rendered at low resolution. You then have to print the PDF file (i.e., you have to do two print commands in order to get the output to actually go to the printer).

Another option is the free LibreOffice word-processor, which you can download from `libreoffice.org`.

Spotter

Spotter is computer software I've written to help you check your answers to homework problems. It can check both numerical answers and symbolic ones. Having Spotter helps you more than having answers in the back of the book, because it is programmed to give you helpful pointers. If you put in an wrong answer that I've anticipated, it will explain why it's wrong. If your answer doesn't make sense in terms of units, it will tell you that. If you get a wrong answer, you can redo the problem and put in the right answer later for full credit.

Problems that are underlined on page 11 of the syllabus have purely mathematical answers, and are in Spotter. To get credit for an online homework problem, you need to enter a correct answer in Spotter, and also turn in your written calculations and explanations along with the rest of the homework. What I'm really trying to do here is get you to come to my office hours and get help if you can't get the right answer — Spotter helps you by letting you know whether you have the problem right *before* you turn it in.

You don't need to install the software; you just use it through a web browser. Start from the class's web page, then click on the "homework" link to the class's Spotter page. Once you're in Spotter, make sure to log in, or else you won't get credit for your work! Once you're logged in, all your answers will be recorded.

When using Spotter, you have to be careful about the notation you use for inputting mathematical expressions. Spotter is designed to allow you to use something resembling normal human mathematical notation, as opposed to the notation used in computer programs. However, human math notation is designed for humans, not computers, and you need to learn a few things about how to type your expressions in a form that Spotter will interpret correctly.

First, everything you type will be smashed down to one line of text, eliminating the superscripts and subscripts. For example, a variable name with a subscript, like x_1, is entered as `x1`. Since there are no superscripts, you have to enter exponents using the `^` symbol (shift-6), e.g., x^2 becomes `x^2`. You can enter a square root as either `sqrt(x)` or `x^.5`. There is no way to enter the times symbol, $\times$, without confusing the computer and making it think you meant the variable x, so in scientific notation you should simply leave a space where you would normally put the times symbol, e.g., 5×10^6 becomes `5 10^6`. Don't try to enter this as `5e+6`; that's what a lot of computer software would want, but Spotter is trying to interpret everything as normal human notation, so it will think you meant $5e + 6$, where e is a variable.

Human languages, including human math notation, are ambiguous. Use parentheses liberally to make your meaning clear. There are two main situations where you need to watch out. First, arguments to functions: `sin 2x` will be interpreted

as $(\sin 2)(x)$; if you intended $\sin(2x)$, you should have entered `sin(2x)`. Second, the bottom of fractions: `1/3c` will be interpreted as $(1/3)c$, so if you want $\frac{1}{3c}$, you need to enter `1/(3c)`.

An advantage of using Spotter in the free Firefox web browser (firefox.com) is that, unlike Internet Explorer, Firefox can display mathematical equations. As you type in the equation, it will show you, "on the fly," its interpretation of what you're typing. This makes it much easier to avoid confusion about how to enter your answers.

academic honesty policy

In cases of serious academic dishonesty, I will assign a zero on the work, and I will also pursue action at the college level, which may result in penalties such as suspension or expulsion. Serious academic dishonesty includes cheating on an exam, or turning in homework that is plagiarized from my solutions.

I will also assign a zero in cases where two students turn in homework or lab reports that contain identical or nearly identical work. A good rule of thumb is that if A is helping B, only B's paper should be out, and the pen should be in B's hand.

labs

At the end of the first lab in the lab manual, there is information about the organization of labs. Note that most labs have prelab questions, which you're expected to turn in on a piece of paper (not in a lab notebook) at the beginning of lab.

If you miss a lab, you can only make it up in one of my other lab classes over the rest of the week, and it is still due at the same time it's due for everyone else. If you want to make up a lab, email me, and I'll coordinate with the physics technician.

drops

I will drop you under any of the following conditions:

- You miss any lab or lecture during the first two weeks without contacting me in advance by e-mail. If I don't receive any written work from you, I will consider that the same as an absence on that day.
- You miss an exam without contacting me in advance by e-mail.
- Over a period of seven consecutive days, you don't turn in any homework papers or quizzes, and don't complete all the lab work (participating in lab, and turning in written lab work when it's due).

Schedule for Physics 206, spring 2012

		read ch.	hw	topics	lab	
Jan. 24	Tu				1	electricity
	Th	21.1-7*	1	Electric circuits. Exercise 21A.		
31	Tu	G1**	2	Exercise 21B	2	resistivity
	Th	21.8,G2	3	Series and parallel circuits.		
Feb. 7	Tu	G3	4	Exercise 21C.	3	loop and junction rules
	Th	G4	5			
14	Tu	22.1-3,G5	6	Relativity of time. Fields.	4	electric fields
	Th	22.4-7,G6	7	Energy in fields.		
21	Tu	23,G7	8	Relativity and magnetism.	5	relativity
	Th			*Exam 1*†		
28	Tu	24.1-2,G8	9	The magnetic field.	6	magnetism
	Th	24.3-5,G9	10	The universal speed c. Induction.		
Mar. 6	Tu	26.1-3,G10	11	The atom.	7	electromagnetism
	Th	26.4,G11	12	The nucleus.		
13	Tu	26.5,G12	13	$E = mc^2$. Exercise 26.	8	e/m of the electron
	Th	27	14	General relativity.		
20	Tu	28,29	15	The ray model of light. Images	9	radioactivity
	Th			*Exam 2*†		
27	Tu		16		10	2-source interference
	Th	30	17	Images, quantitatively.		
Apr. 10	Tu	31	18	Refraction.	11	refraction and images
	Th		19			
17	Tu	32	20	Wave optics.	12	geometric optics
	Th			*Exam 3*†		
24	Tu		21		13	wave optics
	Th	33	22	Rules of randomness.		
May 1	Tu	34	23	Light as a particle.	14	photoelectric effect
	Th			*Standardized test*†		
8	Tu	35	24	Matter as a wave.	15	electron diffraction
	Th	36	25	The atom.		
15	Tu		26		16	hydrogen atom
	Th		27	Analysis of lab 16.		
22	Tu			*Exam 4*†		

†Bring a bluebook. All exams are cumulative. Each exam will concentrate on the material that you haven't yet been tested on. The last date to add notes to your folder for use on an exam is the preceding lecture. Exam 1 covers Physics 205/210 plus all the reading through ch. 22. Exam 2 is through ch. 24. Exam 3 is through ch. 30. The standardized test covers ch. 21; bring a Scantron. Exam 4 covers everything.

* Whenever reading is assigned, you should bring both copies of your notes to class.

** G1, G2, etc., refer to chapters from Gardner.

student learning outcomes

The college requires me to list this in the syllabus. You don't need to print out this page.

I. Outcome: Upon successful completion of this course, the student will be able to compare mechanical models to real-world systems in the laboratory, test theory via experiments, and recognize and analyze deviations from idealized theoretical behavior.
Assessment: Laboratory experiments.

II. Outcome: Upon successful completion of this course, the student will be able to analyze physical situations using conservation of mass, energy, momentum, and angular momentum.
Assessment: Homework and exams.

III. Outcome: Upon successful completion of this course, the student will be able to determine the applicability and nonapplicability of equations in particular situations in mechanics, describe the approximations and limitations involved, and systematically evaluate the usefulness of various equations by making lists of known and unkown quantities.
Assessment: Homework and exams.

Homework Assignments for Anthony Cocca

Underlined problems are in Spotter (see page 2). The full statement of each problem is in the book, not in Spotter. "Challenge" problems are extra credit; if you do a challenge problem, please write me an eye-catching note on your homework paper so I'll know to grade it.
Note that in many of the homework problems, you need to look up data in the back of the book.
Sometimes different problems are assigned randomly to different students. Each student has his or her own page of homework problems in this syllabus. If you don't have a copy of your own page, you can download the syllabus from `lightandmatter.com/area3phys206.html`. If you download the latest syllabus and it doesn't have a page for you, please email me via your Spotter account and remind me to update it.
If a problem doesn't exist in your printed copy of the book, you can get it online at `lightandmatter.com`.

hw 1: Ch. 21, #1,16 2,10
FAQs about Spotter: (1) The full statement of the question is in the book, not in Spotter. (2) Spotter has every problem, not just the ones assigned to you.

hw 2: Ch. 21, #3,4,11,12,42
If your copy of the printed book doesn't have problem 41, you'll need to get it from the latest online version of the book. If you haven't done order of magnitude estimates before, read the relevant material from ch. 1.

hw 3: Ch. 21, #17,18,22 14,15 challenge: 8

hw 4: Ch. 21, #22 challenge: 21
Also do the conceptual exercises with circuits linked to from the class's web page.

hw 5: Ch. 21, #24,34 26,27,29 challenge: 38

hw 6: Ch. 21, #28,32,35

hw 7: Ch. 21, #challenge: 19 Ch. 22, #1,3

hw 8: Ch. 22, #13,15

hw 9: Ch. 23, #2,3 5

hw 10: Ch. 24, #3,6 7,15a

hw 11: Ch. 24, #2,6,16 1,4

hw 12: Ch. 24, #20 challenge: 21

hw 13: Ch. 26, #3,6,7 1,4bc,5
Problem 26-4a is the same as 21-42, which you've already done.

hw 14: Ch. 26, #2 10 challenge: 8

hw 15: Ch. 26, #challenge: 13 Ch. 27, #1,2

hw 16: Ch. 28, #1-4,6

hw 17: Ch. 28, #5 Ch. 29, #2,3 1

hw 18: Ch. 29, #4-7 Ch. 30, #1,2,8,10 7
Problem 30-7 should refer back to chapter 28, not chapter 1.

hw 19: Ch. 30, #3,4,6 challenge: 11 Ch. 31, #1,2

hw 20: Ch. 31, #4,7,15,20 10

hw 21: Ch. 31, #3,8 6,11,12 Ch. 32, #13
Problem 21 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 22: Ch. 32, #2,10 12

hw 23: Ch. 32, #1,4,6,9,11,14 3 Ch. 33, #1,2
Problem 14 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 24: Ch. 33, #4-6,8 7 Ch. 34, #2

hw 25: Ch. 33, #9 Ch. 34, #5 1,11,12 Ch. 35, #1,2

hw 26: Ch. 34, #8,9 7 Ch. 35, #3,5 Ch. 36, #1,2 11

hw 27: Ch. 35, #4 Ch. 36, #3,5,6 4,7 challenge: 8

Homework Assignments for Leo Holguin

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hw 1: Ch. 21, #1,16 2,10
FAQs about Spotter: (1) The full statement of the question is in the book, not in Spotter. (2) Spotter has every problem, not just the ones assigned to you.

hw 2: Ch. 21, #3,7,11,12,42
If your copy of the printed book doesn't have problem 41, you'll need to get it from the latest online version of the book. If you haven't done order of magnitude estimates before, read the relevant material from ch. 1.

hw 3: Ch. 21, #17,18,22 13,15 challenge: 8

hw 4: Ch. 21, #22 challenge: 21
Also do the conceptual exercises with circuits linked to from the class's web page.

hw 5: Ch. 21, #25,34 26,27,29 challenge: 38

hw 6: Ch. 21, #28,31,35

hw 7: Ch. 21, #challenge: 19 Ch. 22, #2,3

hw 8: Ch. 22, #12,16

hw 9: Ch. 23, #2,3 4

hw 10: Ch. 24, #3,6 5,7

hw 11: Ch. 24, #2,6,16 1,4

hw 12: Ch. 24, #20 challenge: 21

hw 13: Ch. 26, #3,6,7 1,4bc,5
Problem 26-4a is the same as 21-42, which you've already done.

hw 14: Ch. 26, #2 9 challenge: 8

hw 15: Ch. 26, #challenge: 13 Ch. 27, #1,5

hw 16: Ch. 28, #1-4,6

hw 17: Ch. 28, #5 Ch. 29, #2,3 1

hw 18: Ch. 29, #4-7 Ch. 30, #1,2,8,10 7
Problem 30-7 should refer back to chapter 28, not chapter 1.

hw 19: Ch. 30, #3,4,6 challenge: 11 Ch. 31, #1,2

hw 20: Ch. 31, #4,7,15,20 10

hw 21: Ch. 31, #3,8 11,12,21 Ch. 32, #13
Problem 21 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 22: Ch. 32, #2,10 12

hw 23: Ch. 32, #1,4,6,9,11,14 3 Ch. 33, #1,2
Problem 14 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 24: Ch. 33, #4-6,8 7 Ch. 34, #2

hw 25: Ch. 33, #9 Ch. 34, #5 1,11,12 Ch. 35, #1,2

hw 26: Ch. 34, #8,9 7 Ch. 35, #3,5 Ch. 36, #1,2 11

hw 27: Ch. 35, #4 Ch. 36, #3,5,6 4,7 challenge: 8

Homework Assignments for Carmen Lopez

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FAQs about Spotter: (1) The full statement of the question is in the book, not in Spotter. (2) Spotter has every problem, not just the ones assigned to you.

hw 2: Ch. 21, #3,6,11,12,42
If your copy of the printed book doesn't have problem 41, you'll need to get it from the latest online version of the book. If you haven't done order of magnitude estimates before, read the relevant material from ch. 1.

hw 3: Ch. 21, #17,18,22 13,15 challenge: 8

hw 4: Ch. 21, #22 challenge: 21
Also do the conceptual exercises with circuits linked to from the class's web page.

hw 5: Ch. 21, #25,34 26,27,29 challenge: 38

hw 6: Ch. 21, #28,32,35

hw 7: Ch. 21, #challenge: 19 Ch. 22, #2,3

hw 8: Ch. 22, #13,16

hw 9: Ch. 23, #2,3 4

hw 10: Ch. 24, #3,6 7,15a

hw 11: Ch. 24, #2,6,16 1,10

hw 12: Ch. 24, #20 challenge: 21

hw 13: Ch. 26, #3,6,7 1,4bc,5
Problem 26-4a is the same as 21-42, which you've already done.

hw 14: Ch. 26, #2 9 challenge: 8

hw 15: Ch. 26, #challenge: 12 Ch. 27, #1,6

hw 16: Ch. 28, #1-4,6

hw 17: Ch. 28, #5 Ch. 29, #2,3 1

hw 18: Ch. 29, #4-7 Ch. 30, #1,2,8,10 7
Problem 30-7 should refer back to chapter 28, not chapter 1.

hw 19: Ch. 30, #3,4,6 challenge: 11 Ch. 31, #1,2

hw 20: Ch. 31, #4,7,15,20 10

hw 21: Ch. 31, #3,8 6,11,12 Ch. 32, #13
Problem 21 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 22: Ch. 32, #2,10 12

hw 23: Ch. 32, #1,4,6,9,11,14 3 Ch. 33, #1,2
Problem 14 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 24: Ch. 33, #4-6,8 7 Ch. 34, #2

hw 25: Ch. 33, #9 Ch. 34, #5 1,11,12 Ch. 35, #1,2

hw 26: Ch. 34, #8,9 7 Ch. 35, #3,5 Ch. 36, #1,2 11

hw 27: Ch. 35, #4 Ch. 36, #3,5,6 4,7 challenge: 8

Homework Assignments for Eryika Rodriguez

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hw 4: Ch. 21, #22 challenge: 21
Also do the conceptual exercises with circuits linked to from the class's web page.

hw 5: Ch. 21, #25,34 26,27,29 challenge: 38

hw 6: Ch. 21, #28,31,35

hw 7: Ch. 21, #challenge: 19 Ch. 22, #2,3

hw 8: Ch. 22, #13,16

hw 9: Ch. 23, #2,3 5

hw 10: Ch. 24, #3,6 7,15a

hw 11: Ch. 24, #2,6,16 1,10

hw 12: Ch. 24, #20 challenge: 21

hw 13: Ch. 26, #3,6,7 1,4bc,5
Problem 26-4a is the same as 21-42, which you've already done.

hw 14: Ch. 26, #2 9 challenge: 8

hw 15: Ch. 26, #challenge: 13 Ch. 27, #1,3

hw 16: Ch. 28, #1-4,6

hw 17: Ch. 28, #5 Ch. 29, #2,3 1

hw 18: Ch. 29, #4-7 Ch. 30, #1,2,8,10 7
Problem 30-7 should refer back to chapter 28, not chapter 1.

hw 19: Ch. 30, #3,4,6 challenge: 11 Ch. 31, #1,2

hw 20: Ch. 31, #4,7,15,20 10

hw 21: Ch. 31, #3,8 6,11,12 Ch. 32, #13
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hw 22: Ch. 32, #2,10 12

hw 23: Ch. 32, #1,4,6,9,11,14 3 Ch. 33, #1,2
Problem 14 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 24: Ch. 33, #4-6,8 7 Ch. 34, #2

hw 25: Ch. 33, #9 Ch. 34, #5 1,11,12 Ch. 35, #1,2

hw 26: Ch. 34, #8,9 7 Ch. 35, #3,5 Ch. 36, #1,2 11

hw 27: Ch. 35, #4 Ch. 36, #3,5,6 4,7 challenge: 8

Homework Assignments for Karleen Smith

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hw 5: Ch. 21, #24,34 26,27,29 challenge: 38

hw 6: Ch. 21, #28,31,35

hw 7: Ch. 21, #challenge: 19 Ch. 22, #1,3

hw 8: Ch. 22, #12,15

hw 9: Ch. 23, #2,3 4

hw 10: Ch. 24, #3,6 7,15a

hw 11: Ch. 24, #2,6,16 1,4

hw 12: Ch. 24, #20 challenge: 21

hw 13: Ch. 26, #3,6,7 1,4bc,5
Problem 26-4a is the same as 21-42, which you've already done.

hw 14: Ch. 26, #2 9 challenge: 8

hw 15: Ch. 26, #challenge: 13 Ch. 27, #1,6

hw 16: Ch. 28, #1-4,6

hw 17: Ch. 28, #5 Ch. 29, #2,3 1

hw 18: Ch. 29, #4-7 Ch. 30, #1,2,8,10 7
Problem 30-7 should refer back to chapter 28, not chapter 1.

hw 19: Ch. 30, #3,4,6 challenge: 11 Ch. 31, #1,2

hw 20: Ch. 31, #4,7,15,20 10

hw 21: Ch. 31, #3,8 6,11,12 Ch. 32, #13
Problem 21 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 22: Ch. 32, #2,10 12

hw 23: Ch. 32, #1,4,6,9,11,14 3 Ch. 33, #1,2
Problem 14 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 24: Ch. 33, #4-6,8 7 Ch. 34, #2

hw 25: Ch. 33, #9 Ch. 34, #5 1,11,12 Ch. 35, #1,2

hw 26: Ch. 34, #8,9 7 Ch. 35, #3,5 Ch. 36, #1,2 11

hw 27: Ch. 35, #4 Ch. 36, #3,5,6 4,7 challenge: 8

Homework Assignments for Felicia Tang

Underlined problems are in Spotter (see page 2). The full statement of each problem is in the book, not in Spotter. "Challenge" problems are extra credit; if you do a challenge problem, please write me an eye-catching note on your homework paper so I'll know to grade it.
Note that in many of the homework problems, you need to look up data in the back of the book.
Sometimes different problems are assigned randomly to different students. Each student has his or her own page of homework problems in this syllabus. If you don't have a copy of your own page, you can download the syllabus from `lightandmatter.com/area3phys206.html`. If you download the latest syllabus and it doesn't have a page for you, please email me via your Spotter account and remind me to update it.
If a problem doesn't exist in your printed copy of the book, you can get it online at `lightandmatter.com`.

hw 1: Ch. 21, #1,16 2,10
FAQs about Spotter: (1) The full statement of the question is in the book, not in Spotter. (2) Spotter has every problem, not just the ones assigned to you.

hw 2: Ch. 21, #3,7,11,12,42
If your copy of the printed book doesn't have problem 41, you'll need to get it from the latest online version of the book. If you haven't done order of magnitude estimates before, read the relevant material from ch. 1.

hw 3: Ch. 21, #17,18,22 14,15 challenge: 8

hw 4: Ch. 21, #22 challenge: 21
Also do the conceptual exercises with circuits linked to from the class's web page.

hw 5: Ch. 21, #25,34 26,27,29 challenge: 38

hw 6: Ch. 21, #28,32,35

hw 7: Ch. 21, #challenge: 19 Ch. 22, #2,3

hw 8: Ch. 22, #13,15

hw 9: Ch. 23, #2,3 4

hw 10: Ch. 24, #3,6 5,7

hw 11: Ch. 24, #2,6,16 1,4

hw 12: Ch. 24, #20 challenge: 21

hw 13: Ch. 26, #3,6,7 1,4bc,5
Problem 26-4a is the same as 21-42, which you've already done.

hw 14: Ch. 26, #2 10 challenge: 8

hw 15: Ch. 26, #challenge: 12 Ch. 27, #1,2

hw 16: Ch. 28, #1-4,6

hw 17: Ch. 28, #5 Ch. 29, #2,3 1

hw 18: Ch. 29, #4-7 Ch. 30, #1,2,8,10 7
Problem 30-7 should refer back to chapter 28, not chapter 1.

hw 19: Ch. 30, #3,4,6 challenge: 11 Ch. 31, #1,2

hw 20: Ch. 31, #4,7,15,20 10

hw 21: Ch. 31, #3,8 6,11,12 Ch. 32, #13
Problem 21 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 22: Ch. 32, #2,10 12

hw 23: Ch. 32, #1,4,6,9,11,14 3 Ch. 33, #1,2
Problem 14 refers to a figure in section 31.5. If your copy of the book has scale marked 20 μm, it's wrong; it should actually read 156 μm. If your copy of the book has a scale marked 200 μm, it's right.

hw 24: Ch. 33, #4-6,8 7 Ch. 34, #2

hw 25: Ch. 33, #9 Ch. 34, #5 1,11,12 Ch. 35, #1,2

hw 26: Ch. 34, #8,9 7 Ch. 35, #3,5 Ch. 36, #1,2 11

hw 27: Ch. 35, #4 Ch. 36, #3,5,6 4,7 challenge: 8