

PHYS 11C - General Physics: Electricity and Magnetism

Prof. Margoniner

Syllabus for Spring 2017

Professor Margoniner's Contact Information

Office Location 436 Sequoia Hall

Drop Box Box #6 at the second floor of Sequoia Hall

Help Sessions Monday 12-1pm in SQU 436
 Wednesday 1-2pm in SQU 124 (Physics and Astronomy tutoring center)
 Friday 1-2pm in SQU 436
 and by appointment

Email Address send e-mail to vera.margoniner@csus.edu

Office/Home/Cell (530) 746-8372 (Weekdays from 8 am to 9 pm)

DR. VERA MARGONINER - ASSOCIATE PROFESSOR'S SCHEDULE										
SPRING 2017										
	8:00- 8:50	9:00- 9:50	10:00- 10:50	11:00- 11:50	12:00- 12:50	1:00- 1:50	2:00- 2:50	3:00- 3:50	4:00- 4:50	5:00- 5:50
MON		Phys 135 MND 1028	Phys 11C Lec 01 MND 1015		Office Hour SQU 436					
TUES						Curriculum Policies (twice/monthly)			DEPT MTNGS	
WED		Phys 135 MND 1028	Phys 11C Lec 01 MND 1015		SPS Club SQU 40	Tutor Center SQU 124				
THUR									COLLOQUIA 4-5:20PM	
FRI		Phys 135 MND 1028	Phys 11C Dis 02 MND 1003			Office Hour SQU 436		LA Meetings 3-5pm DLN 1010		

Prof. Margoniner

Syllabus for Spring 2017

Class Meetings	Mondays, Wednesdays 10:00 - 10:50 am in Mendocino 1015 Fridays 10:00 - 10:50 am in Mendocino 1003
LA Help Sessions	TBD
Course Web page	Many useful documents can be found on the Google Drive : http://tinyurl.com/phys11c-ma-s17 We will also use SacCT for the class (posting grades only).
Required Textbook	R. D. Knight, Physics for Scientists and Engineers, Volume 2 (Chs 22-36), 4rd Edition (2017) with a “Modified” MasteringPhysics access code. If you don’t mind reading the text online, it is sufficient to buy the registration code for MasteringPhysics and make sure to include the e-Text if you buy online!
Required material	<ul style="list-style-type: none">• Access to SacCT (http://www.csus.edu/sacct/)• Access to MasteringPhysics Follow the link in our course’s SacCT site (under Pearson My Lab and Other Content). To contact their customer support call 800-424-9299.• Simple scientific calculator
Midterms	Friday, February 24 , chapters 22--24 Friday, March 17 , chapters 25--27 Friday, April 28 , chapters 28--30
Final exam	Friday, May 19 , from 8:00 to 10:00 am

Catalog Description

Course Learning Outcomes

- Acquire, through hands-on experience and interactive demonstrations, familiarity with the basic phenomena of electricity and magnetism.
- Develop and use a mental model of charges.
- Understand what fields and potentials are and how they are used.
- Analyze simple electric circuits including batteries, resistors, capacitors, or inductors.
- Explain magnetic inductance and some of its applications.

- Recognize that our description of nature is connected to careful observation and reasoning (lab work)

A broader and equally important goal is to develop an analytical, logical approach to problem solving, and to acquire a certain level of intuition, or “feel”, for physical phenomena.

To achieve these outcomes, we will solve problems rather than do exercises. In an exercise, you are simply practicing a well-defined procedure for obtaining an answer, and you may think of physics (and other subjects) as simply performing a series of these exercises.

In a problem instead, you have a goal but you have to figure out how to get there. This is what physics (and real life) is really like, and the learning outcomes accurately reflect this. But to get there you have to practice solving a lot of problems rather than doing exercises. This may be new and uncomfortable for you at first, but by the end of the semester you will have achieved a much deeper understanding than is possible by merely doing exercises. As in real life, much of the problem-solving will be done in a team environment, where different ideas and ways of thinking will be discussed and analyzed on the way to solving the problem.

Lecture, Discussion, & Laboratory

The objective of lecture and discussion meetings is to clarify the hardest concepts, help you connect the different ideas presented in the book, and allow you to practice problem solving. You must come to class with your notes prepared and having completed the appropriate pre-class assignment. You should do the reading carefully enough to understand the most basic concepts presented in the chapter and to formulate appropriate questions to bring to class.

Physics 11C officially has three components: Lecture, discussion, and laboratory. In practice (and due to budget restrictions), there is no difference between lecture and discussion.

The goal of the laboratory is to make the physics you learned from your readings and during class more concrete; and to give you some practice and understanding about methods physicists use to learn about nature. The lab component is a crucial part of the class - *lab attendance is mandatory*, and that **you need to get at least 70% in the lab to pass the class**.

Think about your instructor as a coach or guide that will help you make sense of physics, and not as a source of all knowledge. My goal is to help you learn physics while helping you become an independent learner with study skills that will allow you to continue to learn and grow much after your graduation from Sacramento State.

The Learning Assistant Program

Learning assistants are students who have recently completed Physics 11C with good grades and are now returning to the class to help other students succeed, deepen their own physics understanding, and to try teaching to see if they would like to explore it as a career. Please keep in mind that learning assistants are not experts. They are slightly more advanced students that are willing to work with you on figuring out problems. Also, learning assistants are explicitly taught not to give you the answer but to instead ask you questions that will help you figure it out by yourself. Keep in mind the Chinese proverb:

PHYS 11C - General Physics: Electricity and Magnetism

Prof. Margoniner

Syllabus for Spring 2017

Tell me, I'll forget. Show me, I may remember. Involve me, and I'll understand.

[Here you can learn a little about our Learning Assistants.](#) We will be recruiting new Learning Assistants at the end of the semester. Let your LA know if you are interested and keep your eyes open for our end of semester recruitment session.

Team Learning

Meaningful learning is achieved only by struggling to make sense of new concepts and fitting them with things you already know. When working as part of a team you are often either asking for help, or helping others, and both processes facilitate learning. Communicating what you don't understand makes you search for the cause of the difficulty and puts you in the right path for achieving the kind of deep learning I want you experience in our class. The process of helping others also helps you check and solidify what you know.

It is therefore to help you learn better that we will be working in teams in this class. I understand that not all team members will enjoy the process right away, but teamwork is not only important in our class, but in pretty much any job you will ever have. The ability to know how to work collaboratively in a team is a top priority for all engineering and physics employers I ever spoke to.

You will be part of a team of about 5 students for the duration of the semester, and I expect you to work together in and out of the classroom. Teams will be formed in class on week 2 or 3 of instruction. I will use measures of interest (such as your major), content knowledge (force and motion pre-instruction assessment), prior achievement (GPA), and motivation (self-reported) to classify students into five "colors", each representing a category. You will then form teams with one student of each color.

Grading

Pre-class assignments (PCAs)	10 %	A	95% or more	C	73% or more
Homework	10 %	A-	90% or more	C-	70% or more
Quizzes	10 %	B+	87% or more	D+	67% or more
Attendance & Participation	10 %	B	83% or more	D	63% or more
Laboratory	10 %	B-	80% or more	D-	60% or more
4 Exams	50 %	C+	77% or more	F	less than 60%
<i>3 midterms (10 % each)</i>					
<i>1 final (20%)</i>					
<i>Class Total</i>	<i>100 %</i>				

Attention: Note that high exam grades do not guarantee a high course grade. You must be completing pre-class assignments, homework, and participating in lecture/discussion and laboratory in order to earn a high course grade.

Pre-Class Assignments (PCAs)

For the reasons outlined above, there is always a pre-class assignment due the day before class. The only exception are exam days. These assignments are due 11 pm in masteringphysics at the website. You will need to register and join our class - follow the link on SacCT (under Pearson My Lab and Other Content).

Each PCA consists of two parts:

- A. Selected multiple-choice questions. I don't expect you to get all of the PCA questions right because you just read the material and still have many questions. The mistakes you make will help you figure out what you are having difficulty with so that you are ready to get help in class. You can still get full credit even with many mistakes.
- B. One open-ended question: *What concepts are you currently having most difficulty with in our class? What would you like to see explained in class?*

I will grade this question in a pass/no-pass way. To make sure you get awarded points I suggest that you read what you wrote and ask yourself:

Did I write a clear explanation of WHAT I need help with?

Am I clear as to WHY I don't understand the concept I need help with?

The "correct" answer is one that shows me that you have reflected on the content and tried to make sense of it. Your answer should be written clearly enough so that I can understand your difficulty and how to help you.

Each PCA grade is calculated the following way:

If you pass the PCA_B : $PCA(\% \text{ grade}) = PCA_A(\% \text{ grade}) + 30\%$

If you fail the PCA_B : $PCA(\% \text{ grade}) = PCA_A(\% \text{ grade})$

So, if you get 70% of the multiple choice questions (PCA_A) and pass in the open-ended question (PCA_B), your grade will be 100% in that PCA. Each PCA is worth no more than 100%.

Check the course schedule for due dates. There is no make-up for missed PCAs and they can not be turned in late but I will drop your two lowest grades.

Quizzes

Quizzes will be given randomly throughout the semester. You will first take the quiz individually and then have the chance to work with your team and improve your grade. Students with individual quiz grades of less than 50% will not earn extra points from group work.

If individual quiz grade $> 50\%$: $quiz(\%) = (individual \text{ quiz } (\%) + group \text{ quiz } (\%))/2$

If individual quiz grade $< 50\%$: $quiz(\%) = individual \text{ quiz } (\%)$

PHYS 11C - General Physics: Electricity and Magnetism

Prof. Margoniner

Syllabus for Spring 2017

Homework

The homework consists of tutorials and problems. The homework should also be completed in masteringphysics and is always due at 11:00 pm on the date indicated on the course schedule.

A typical homework assignment will usually take upward of 3 hours to complete in its entirety; however, not all problems have to be completed to get full credit. Some of the problems are *practice* problems and do not contribute to the score. Those are usually easier problems. *Credit* problems are the ones that contribute to your score. Each homework is worth 100 points but many more are offered in each assignment. This is to allow you to choose which problems will be most beneficial to your learning, and so that you give yourself permission to make mistakes and actually learn from the homework. Just complete as many problems as you need until you reach 100 points. You may complete more problems to get practice, but each individual homework is worth no more than 100%.

I encourage you to work together on homework problems. That said, copying solutions will not teach you the material, and you're not likely to do well in exams unless you are able to solve problems on your own. *Getting 100 % in homework but 40 % in exams is not going to get you a passing grade in the class!*

The homework is graded automatically by MasteringPhysics (except for occasional "essay" questions). Since it is easy to make mistakes while entering answers online, you'll get a relatively large number of trials for each question. Late homework is accepted after the due date, but your score will be reduced automatically in proportion to how late your submission is (0.2 percentage point for each hour.) Homework submitted more than about a week late (but before the final exam) will earn at most a score 70 %.

Check the course schedule for due dates.

Attendance & Participation

It is very important to participate actively in our class and points will be given for in class (individual and in group) and also for online activities. Also, LAs will be keeping track of attendance. Attendance & Participation is worth 10% of your grade because you will be asked to complete many tasks during the semester. Here are some of them:

- **Electricity and Magnetism Survey** (double participation points). This evaluation must be taken at the beginning and again at the end of the course for credit. Your grade in this evaluation will NOT affect your grade but you must take it seriously in order to receive the participation points.
- **Introduction to MasteringPhysics**. See assignment on MasteringPhysics. Due Monday 1/30 at 11:59pm.
- **Contact your Learning Assistant** by email or text before the first midterm to earn this credit. Their contact information is in the Google Drive and also [here](#).
- **Finish-at-home Problems**. Sometimes we will end class in the middle of a problem and I will ask you to finish that problem for the next class. Show your LA that you completed it at the beginning of the next class.
- **What helps you learn?** Link to the survey will be emailed to you later in the semester.
- **Advice to future students**: At the end of the semester, I will ask you to give some advice about the class for future students.

PHYS 11C - General Physics: Electricity and Magnetism

Prof. Margoniner

Syllabus for Spring 2017

Typically, each participation opportunity is worth 1 point, but some more extensive tasks will be worth more.

$$\text{Participation (\% grade)} = 1.1 \times \frac{N_{\text{points you have}}}{N_{\text{points offered}}}$$

So, if you get 80% of the participation points offered, your final class participation grade will be 88%. The maximum participation grade is 100%.

Exams

There will be three 50-minutes exams and one two-hour final exam. A typical exam will consist of a number of short-answer questions (possibly multiple choice) and a few longer problems to be worked out. Any subject matter covered in class, homework, textbook, or labs may be included.

The exams will be closed book and closed notes, except for one double-sided (4"x6") card of notes that you may bring with you. Your card must be handwritten because the process of making it will help you organize your ideas. Please have your name clearly marked on the top. Unmarked, photocopied or typed notes will be considered academic dishonesty.

You are allowed a scientific calculator, but nothing may be programmed on it. I reserve the right to clear the memory of your calculator prior to or during the exams.

Under no circumstances will there be make-up exams. I trust that you may have a very real and significant reason for missing an exam, but it is just not practical to arrange for make-up exams. If you miss a midterm for a legitimate, officially recognized excuse, your final exam grade will replace it. If you miss a midterm without a valid excuse your grade on it will be a zero.

The final exam follows the same rules, but is two-hour long and you will be allowed four (4) double-sided note cards. The exam is comprehensive, but will be somewhat weighted toward the material covered after the last midterm exam.

Laboratory

We attempt to synchronize the experiments with the topics being discussed in lecture as much as possible, but the labs are run independently. *Lab attendance is mandatory* (missing more than two labs will get you an F), and a passing grade (70%) in the lab part of the course is a requirement for passing the whole course! Your lab instructor will communicate your lab grade to your lecture instructor at the end of the semester.

Online Resources

SacCT will be used for class announcements; e-mail communications; download of class presentations

PHYS 11C - General Physics: Electricity and Magnetism

Prof. Margoniner

Syllabus for Spring 2017

and other documents; and links to external websites.

The online system **MasteringPhysics** will be used in this class for pre-class assignments and homework. It requires a registration code that can be purchased either with the textbook at the bookstore, or separately from the MasteringPhysics website. You should access it by following the link on SacCT (under Pearson My Lab and Other Content).

In addition to a complete online version of the textbook, MasteringPhysics gives you access to a number of resources that I encourage you to take advantage of. These include in particular, the study area, with videos of experiments (some of which will be demonstrated in class), video tutor solutions, concept simulations, ...

One advantage of MasteringPhysics is that it can give you instant feedback on homework problems and guide you through the solution of many problems. The flip side of the coin is that it is sometimes unforgiving, and you need to be very precise in what you enter as your answers. Try not to get frustrated when you make a silly mistake and remember that there are always many more problems/points offered than what you need to get 100% on the homework.

Out-of-class help

Succeeding in college, especially in science classes, does not come “for free,” but requires a lot more work than what you may be used to from high school or other classes. You will need to work several hours a week (probably at least 10 hours) to read and understand the theory, do the homework and make sure you are able to work out similar, but different, problems on your own!

The college of Natural Sciences & Mathematics has put together some information that can be helpful to learn good studying habits. It can be found at <http://www.csus.edu/nsm/commit/>. I encourage you to read it.

I am always happy to help students and am available during the help sessions indicated above. Outside these hours, you're welcome to try your luck and knock on my door or, preferably, make an appointment, but be aware that I can be busy. Additionally, you may ask questions by email and I'll try and answer quickly.

In addition, the physics department has a tutoring center (SQU 124) staffed by faculty and advanced students, which is open about 15-20 hours a week (a schedule is available on the door of SQU 124, at the Physics office, SQU 230, or on the Department of Physics' [web site](#)).

I strongly recommend that you take advantage of these possibilities. It is important not to fall behind in this class as every chapter builds on the preceding ones!

The web can also be a useful resource of additional information about the class material. Be careful though that not everything you find online is correct.

Some Other Things You Should Know

- **Add policy:** Talk to the lab instructors. Make sure to come to all classes if you are hoping to add.
- **Drop policy:** I will not sign any drop forms if the class is impacted. It is your responsibility to drop before the second week of class if you feel this class is too hard. Missing two meetings in the first two weeks of classes, without prior approval from me, will result in an administrative drop.
- It is your responsibility to know what announcements were made in class and what subject was covered. If you miss a class, come see me in office hours, or ask a friend.
- It is your responsibility to check announcements and e-mail at SacCT frequently.
- The best way to contact me is using the mail tool in SacCT. I will try to reply to you within 24 hours, but I do not check my email on weekends.
- Keep this syllabus for your reference. If you need to print it again, go to the course website on SacCT.
- If you have a disability and require accommodations, you need to provide disability documentation to Services to Students with Disabilities (SSWD), Lassen Hall 1008, (916) 278-6955. Please discuss your accommodation needs with me after or during my office hours early in the semester.

Student Conduct and Discipline

The **textbook** is a great resource and you should use it often, just not in class! Lecture/Discussion is the time to be engaged with your peers and can not be used for catching up on the reading. If you need to simply check for a formula, or the value of a constant, you are most welcome to ask me or to use the instructor's textbook copy which will be in front of the room during every class (exams included).

Cell phones are not allowed in class. You must turn off your cell phone before class starts. If there is a very strong reason why you need your cell phone on, you need to let me know beforehand, and put it to vibrate.

Laptops are great study tools but are NOT allowed during class for the same reasons explained above. **Tablets** may be used for taking notes only.

Code of conduct: The faculty of the Department of Physics and Astronomy will not tolerate academic dishonesty. Falsification of data, copying, unauthorized collaboration, plagiarism, alteration of graded materials, or other actions (as described in, but not necessarily limited to the Sacramento State Policy Manual) will be promptly reported to the Office of Student Affairs. The offending student will be penalized on the assignment in question. Serious infractions will result in course failure and a recommendation for administrative sanctions. If you have any questions please come talk to me.

--- These descriptions and timelines are subject to change at the discretion of the Professor ---