

# SP 212 – GENERAL PHYSICS II

## Section 4341

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### Text:

- Physics for Scientists and Engineers, Serway and Jewett, 7<sup>th</sup> Edition
- *SP212 Lab Manual* (<http://intranet.usna.edu/PhysicsCourses/SP21xSupport/212Manual.htm>)

**Why I am required to take physics?** During the course of this semester, you will hear me talk about the differences between education and vocational training. The mission of the US Naval Academy is to provide you with some of both, but this class is an educational element. An educated officer corps is crucial to the success of the U.S. armed forces, because education enables sound decision-making. It is my belief that no education is complete without an understanding of the principles that govern our physical world. No matter what you choose to do following graduation, you will be ineffective and prone to mistakes without a solid understanding of physics.

**A word about math:** We will use calculus nearly every day in class, and most homework sets will require you to exercise the calculus you've spent so much time learning. I strongly urge you not to "tune me out" when the lecture material becomes difficult. Lecture is your chance to ask me questions about anything you don't understand. Use it wisely!

### Course objectives:

- Master the principles of introductory electricity, magnetism and optics.
- Master the problem-solving techniques that you developed during first semester physics.
- Recognize the role that a sound understanding of physics will play in your career as an officer in our highly technical military (this includes the Marine Corps, by the way). Note that technical competence is an absolute necessity for sound decision-making in our modern military.
- Develop a "watchstander's physical intuition" from the basic principles of first-year physics

**Classroom etiquette:**

- Drinks are permitted, food is not.
- If you need to use the head, do so without interrupting class; no need to ask permission.
- No sleeping. If you are tired, feel free to stand in the back of the classroom.

**Reading assignments:** Read over the material that is going to be covered in class *before* the appropriate lecture. I will post up-to-date reading assignments on the class website with you homework assignments each week. Our time together in lecture will be most effective if you arrive in class “loaded” with questions.

**Homework:** I will assign one problem set every Thursday on the class website (<http://usna.edu/Users/physics/cmorgan/sp212/SP212Spring2009.html>). Problem sets are due on Thursdays at the beginning of lab. Late homework will not be accepted. I will post my solutions to the week’s problem set on the class website on Thursday evenings.

- One of my primary objectives for this class is to develop your problem-solving skills. I assign homework sets a week ahead of time and homework is **weighted heavily** in your final course grade.
- I will award significant partial credit for demonstrating use of the “Conceptualize, Categorize, Analyze, Finalize” technique (page 42 of the text), even if you don’t find the correct solution to the problem.
- I strongly encourage you to work together with others on your problem sets. Your final work must be your own, but sessions in which the “Conceptualize” and “Categorize” steps are worked out by the group will be tremendously valuable.
- I require homework to be neat and well-organized. Don’t cram many problems onto one sheet of paper in some vain effort to conserve paper.
- Use of the Serway & Jewett Instructor’s Solutions Manual is forbidden.

**Tests:** I will give three regular in-class tests during the semester. I have listed tentative test dates on the syllabus, but I may elect to change the dates depending upon the needs of the class.

- You are permitted to bring one notebook-sized (8.5” x 11”) sheet of paper to each test with anything written on it that you please (formulas, definitions, etc.)

**Lab policy:** Instructions for each lab can be found at the following link:

[http://intranet.usna.edu/PhysicsCourses/SP21xSupport/212lab\\_login/stu\\_login.html](http://intranet.usna.edu/PhysicsCourses/SP21xSupport/212lab_login/stu_login.html)  
(This link is also available at the SP212 *Lab Manual* link under “Click here for access to the Laboratory Write-Ups”.) Review each experiment before arriving in lab. I do not require that you complete the pre-lab exercise, but they do serve as a useful guide for what you need to understand prior to arriving in the lab.

- Lab is your time to develop your physical intuition; it also represents a prime opportunity to ask me questions or discuss concepts (any concepts, not simply what we are doing in lab that day).
- Lab grades will be based entirely on your lab write-ups.

**Extra Instruction (EI):** I am happy to meet with you individually or in groups for extra instruction. I do not have regularly scheduled office hours, so email me to make an EI appointment. Appointments are the best way to guarantee a meeting, but feel free to drop by my office at any time. I am happy to answer impromptu questions as they come up.

**Absences:**

- **Excused Absences**
  - **Lab:** For planned absences or movement orders, make arrangements to perform the lab with another section. Keep me informed of your plans.
  - **Test Days:** Inform me ahead of time, and we will arrange a mutually convenient time for you to take the test.
- **Unexcused Absences:** If you have an unexcused absence on a lab or test day, you will not be permitted to make up the work, and you will receive a zero for the test or the lab.

**Grade Breakdown:**

	Percentage of total grade
<b>Homework</b>	25%
<b>Labs</b>	15%
<b>Tests</b>	30%
<b>Final Exam</b>	20%
<b>Professionalism</b>	10%
<b>TOTAL</b>	<b>100%</b>

<b>A</b>	100 - 90 %
<b>B</b>	90 - 80 %
<b>C</b>	80 - 70 %
<b>D</b>	70 - 60 %
<b>Fail</b>	< 60 %

**Professionalism:** Nearly all of you are used to academic success. Some of you may have earned the very first C or D of your life here at the Naval Academy, but you all earned excellent grades in high school. You will find that no matter how well (or poorly) you do at the Naval Academy, you will encounter failure much more often as a junior officer than you did here. All junior officers make mistakes; senior officers know this. As a result, you will often be judged by your resilience in the face of failure and your ability to avoid the same mistake twice. I will judge you by the same standard in this class.