

## Physics 220 – General Physics II

### Course Information

**Instructor:** David Locke

**Phone:** 650-574-6624

**Email:** [locke@smccd.edu](mailto:locke@smccd.edu)

**Office:** 36-105B

**Office/TBA Hours:** TBD

**Lecture:** Online

**Laboratory:** T 2:10-5:00 pm (WAX)

T 6:30-9:20 pm (WJX)

Room 36-125

**Course Website:** <https://smccd.mrooms.net/>

#### Course Materials:

Required Text: *Essential College Physics*, Volume 2, Rex and Wolfson, 2010, Pearson

*Mastering Physics* will be used and you may have purchased it with the Physics 210 Text. If not, it can be purchased standalone, with the ebook, or the full text.

*Physics 220 Lab Manual* available online at <http://collegeofsanmateo.edu/physics/>

Required Calculator: Any Non-Programmable Scientific Calculator

You will be allowed to use a non-programmable calculator on the quizzes and exams.

#### Course Description:

Electricity and magnetism, light, modern physics.

#### Course Student Learning Outcomes:

Upon successful completion of Physics 220, General Physics II, the student will be able to:

- Identify problems involving electric and/or magnetic fields and forces and correctly solve them.
- Analyze DC circuits.
- Identify problems that should be solved using concepts of geometric and physical optics and correctly solve them. This includes but is not limited to image formation and interference problems.
- Identify problems involving quantization of energy and correctly solve them. This includes but is not limited to the photoelectric effect and energy levels in atoms.
- Identify problems involving the structure of the atom and the nucleus and correctly solve them. This includes but is not limited to the quantum-mechanical view of atoms and nuclear binding energy and radioactivity.
- Collect and analyze data to verify physics principles.

#### Course Objectives:

Upon successful completion of Physics 100, Conceptual Physics, the student will be able to:

1. Recognize some of the fundamental laws of nature and express them in mathematical form.
2. Apply the laws of nature to the solution of problems. State the range of validity of each law, express the relevant law(s) in mathematical form appropriate to the specific problem, and solve the resultant equation(s) for the unknown quantity or quantities.
3. Use the language and notation of physics correctly. Communicate explanations of physical phenomena in writing.
4. Demonstrate good problem-solving habits, including: 1) organizing given information and determining which physical principles apply to the problem. 2) considering a variety of approaches to a given problem, and selecting one that is appropriate. 3) estimating solutions and recognizing unreasonable results. 4) interpreting solutions correctly, and answering the questions that were actually asked.
5. Develop skill in laboratory procedure. Explain the purpose of each experiment, correctly use laboratory equipment, record data with proper attention to units and significant figures. Analyze data and draw conclusions. Write clear and concise lab reports.

**Attendance:** In the first weeks, I may drop students who are not present in lab to allow for students who wish to add the course. As per college policy, I may also drop students at any point in the semester due to excessive absences. However, non-attendance does not guarantee your being dropped. If you need to drop the course, it is your responsibility to do so.

Attendance in laboratory is essential. We will often begin the lab period with a quiz on the previous week's material and do some group work on the current week's material. The laboratory is also where you get a hands-on opportunity with the material. **You may not make up missed quizzes, exams, labs, or turn in any assignments late without contacting me prior to the class period in which the exam is scheduled, the lab is performed, or the assignment is due.**

**Conduct:** Be courteous and respectful to myself and your fellow students both in the classroom (laboratory) and online. Be on time and do not leave early. Your cell phone should be off and put away during class. Off is off, not vibrate mode. **If your cell phone rings during a quiz, you will get an automatic zero, no discussion.**

**Student Code of Ethics:** Please read the Student Code of Ethics (<http://www.smccd.edu/accounts/smccd/ethics.shtml>) which address Academic Dishonesty including Cheating and Plagiarism.

**Laboratory Experiments:** We will be doing about 12 laboratory experiments. The laboratory portion of the course will account for 20% of your final grade. You must receive a passing grade of at least 70% in the laboratory to receive a passing grade for the course. In addition to completing hands-on laboratory exercises, we will do group problem solving during some of the lab periods. Participation in your group will also account for a portion of your grade.

**Quizzes:** Approximately weekly, you will have a quiz at the start of the lab period. Be on time. If the quiz is scheduled to go from 2:10-2:25 and you arrive at 2:20, you will only have 5 minutes to work on the quiz. If you arrive after the quiz ends, you will receive a zero on the quiz. Your lowest three quizzes for the semester will not be figured into your grade.

**Homework:** It is important that you complete the homework assignments. The majority of the material on the exams will be based on the homework and the group problem solving exercises. I encourage students to work together on homework and labs, but you will learn nothing by copying. Do not rely on a Solutions Manual, you will not be using it on exams or quizzes. Make sure you can do problems from each assigned section of each chapter without referring to the Solutions Manual.

**PreLecture Assignments:** PreLecture Assignments are basically reading quizzes. You will complete these online after reading a chapter or selected sections from a chapter. They are open book quizzes and you can even print the quiz questions before doing the reading and make notes as you read.

**Time Commitment/Carnegie Unit:** The standard "Semester Credit Hour" (sometimes called the Carnegie Unit) for U.S. colleges and universities is defined as 3 hours of work per week for students over a 16-week semester. That comes out to 48 hours of work over any length term for 1.0 unit. Since this course is a 4-unit course, you can expect to spend  $4 \times 48 = 192$  total hours on this course. This comes out to an average per week of  $192 \div 16 = 12$  hours per week. (3 of those hours are the laboratory meetings.)

Although the breakdown will vary from week to week and by student, I expect the breakdown of these hours to be approximately:

- |  |                |
|--|----------------|
| • Time in Lab                                  | 3 hours/week   |
| • Textbook Reading/PreLecture Assignments      | 1 hours/week   |
| • Viewing Demonstration/Theory/Tutorial Videos | 1.5 hours/week |
| • Homework and Other Out-of-Class Assignments  | 6.5 hours/week |

**Evaluation and Grades:** Your grade in this course will be determined by your participation in the laboratory sessions and your understanding of the material as demonstrated on three exams, a comprehensive final, laboratories, homework and quizzes. The following shows the breakdown.

Exams (4 × 7.5% each)	30%
Comprehensive Final Exam	20%
Laboratory	20%
Quizzes and Group Problem Solving Sessions	10%
Homework (Online)	14%
PreLecture Assignments (Online)	6%

I will report to you after each exam your current overall percentage. Please keep all graded material until the end of the semester. In the event that you believe I have made an error on grading your assignments or in computing your average, please come and see me after class or during my office hours.

**Office Hours and Other Resources:** I will hold regularly scheduled office hours. If you are unable to attend my office hours, you may make an appointment with me to discuss the course material or any thing else outside of my office hours. This is best done by asking me after class or sending me email. My job is to make sure that every student who wants to understand the material for this course does. Please come and see me if you have any questions about the course, on the course material or about your educational goals. On the latter, if I do not have the information you seek, I can probably point you toward someone who does.

It is a good idea to form study groups and work with your classmates. You will find that they are a great resource and you can get a very good understanding of the material when you explain it to each other.

**The Integrated Science Center** (36-110) is one place you can meet on campus to work together on assignments. The Center will be open M-F. The Center has computers, software and reference materials you may use for course work.

**The Learning Center** (first floor Building 10) is another place you can meet on campus to work on assignments. You can reserve rooms inside the Center for group studying. The Learning Center's website is: <http://collegeofsanmateo.edu/learningcenter/>.

**Disability Resource Center:** If you have a documented disability and need accommodations for this class, please see me as soon as possible or contact the **Disability Resource Center** for assistance. The DRC is located in Bldg. 10 Room 120. (650) 574-6438; TTY (650) 574-6230