

COURSE INFORMATION

Physics 222 – Winter 2013

Classical Physics II

Lecture: Mon, Wed, and Fr 13:00–14:23 Science III 108
Labs Tu (Sec 2) Th (Sec4) 10:00–12:30 Science II 283
Tu (Sec3) 12:45 – 15:15
Instructor: Dr. Alexander Dzyubenko adzyubenko@csub.edu
Office Hours: Mon Wed 10:00 AM – Noon, Fri 11:00–Noon, and by appointment
Office: Science III, Room 302 Phone: 654-2096

Course Web page: <http://www.csub.edu/~adzyubenko/Phys222> to be regularly updated

Text: *Physics for Scientists and Engineers* 8e Edition by **R.A. Serway** and **J.W. Jewett**
Hybrid (with **Enhanced WebAssign Homework**) © 2012
ISBN-10: 1-133-10360-X ISBN-13: 978-1133103608

Goals of this course: Very generally, we will try to address the following goals:

1. To acquire rather detailed qualitative physical understanding of the major physical notions and phenomena of thermodynamics and electricity and magnetism such as, for example, heat and thermal energy, electric and magnetic interactions, and electromagnetic induction.
2. To develop mathematical skills, analytical methods and effective problem solving skills.
3. To enhance both written and oral communication skills appropriate to physics.

A rough schedule appears below. Lectures will cover only selected topics from the text but *you will be responsible for all corresponding text material unless specifically told otherwise.*

THERMODYNAMICS

The Zeroth Law of Thermodynamics

- Temperature
- Thermal Expansion
- The Ideal Gas Law

The First Law of Thermodynamics

- Heat
- The Transfer of Heat
- The First Law as a Statement of the Conservation of Energy

The Second and Third Laws of Thermodynamics

- The Efficiency of Furnaces and Refrigerators
- Entropy and Disorder

ELECTRICITY AND MAGNETISM

Maxwell's First Law and Circuits

- Coulomb's Law
- Electric Field and Potential
- Currents
- Resistance and Resistivity
- Circuits with Power Sources and Resistors: Kirchoff's Rules
- Circuits with Capacitors: RC Circuits

Maxwell's Second Law

- Magnetism
- Magnetic Field Effects

Maxwell's Fourth Law

- Ampere's Law: Magnetic Fields Induced by a Current-Carrying Wire
- The Magnetic Field of other Current-Carrying Conductors

Maxwell's Third Law

- Faraday's Law: Electric Fields Induced by a Magnetic Flux
- Lenz's Law

Laboratory and Exam Schedule

(Tentative, subject to change, with notice given in class)

Date	Laboratory Assignment or Exam Time
Jan 8 th	Lab 1a: Coffee Cooling Experiment
Jan 10 th	Lab 1a: Coffee Cooling Experiment
Jan 15 th	Lab 1b: Coffee Cooling Experiment
Jan 17 th	Lab 1b: Coffee Cooling Experiment
Jan 21 st Monday	Holiday Martin Luther King Jr. Day – Campus Closed
Jan 22 th	Lab 2: Latent Heat of Fusion
Jan 24 th	Lab 2: Latent Heat of Fusion
Jan 25 th	Review + First Quiz
Jan 29 th	Problem Solving/Discussion
Jan 31 st	Problem Solving/Discussion
Feb 1 st	First Exam: All of Thermodynamics
Feb 5 th	Lab 3: Voltage vs Time across an Unknown Capacitor: Measurement
Feb 7 th	Lab 3: Voltage vs Time across an Unknown Capacitor: Measurement
Feb 12 th	Lab 4: Oscilloscope
Feb 14 th	Lab 4: Oscilloscope
Feb 15 th	Review + Second Quiz
Feb 19 th	Lab 5: TBA
Feb 21 st	Lab 5: TBA
Feb 22 nd	Review + Third Quiz
Feb 26 th	Problem Solving/Discussion
Feb 28 th	Problem Solving/Discussion
Mar 1 st	Second Exam: Electric Forces, Fields, Potential and Circuits
Mar 5 th	Lab 6: Experimental Determination of the Force on a Current-Carrying Conductor in an External Magnetic Field
Mar 7 th	Lab 6: Experimental Determination of the Force on a Current-Carrying Conductor in an External Magnetic Field
Mar 13 th	Problem Solving/Discussion
Mar 15 th	Problem Solving/Discussion
Mar 15 th	Review + Fourth Quiz
Mar 18 th Monday	Last day of classes

Third and Final Exam: Wednesday March 20, 2013 2:00pm-4:30pm

January 28, 2013 – Last Day to Withdraw from Classes without a "W" being recorded

Laboratories

You will be asked questions about the laboratory exercises on the quizzes and exams. The handouts related to the lab exercises will be posted on the website <http://www.csub.edu/~adzyubenko/Phys222>

Study the handouts before the Lab, print them out and bring to class, this is your responsibility. The handouts should explain what you need to understand. In addition, we will go over the material repeatedly during the Lab exercises.

Quizzes

A quiz will consist of a series of short answer/multiple choice questions, which will make sure that you keep up with the lecture, lab, and problem sets.

Exams

By far, the most important determinant of your grade is exam performance. The exams are heavily biased toward the homework problems but some conceptual questions will be asked, especially pertaining to the lab exercises. So, if you do your homework conscientiously and attend each class and lab session well prepared, you will perform well, gradewise.

Please bring one large **blue** scantron to each quiz and exam if otherwise is not specified.

Homework Problems

Problem solving is the key to mastering physics. In fact, if you master all of the questions and problems at the end of each chapter, you will do very well in the course. On regular basis, I will assign some representative problems. The WebAssign® online homework and grading system <http://www.webassign.net/> will be used in this course.

You are requested to register and pay the registration fee at http://www.webassign.net/user_support/student/. Further details and the assignments will be given later.

Some but *not most* of these questions will be discussed in detail in problem solving sessions. I encourage you to be proactive in class discussions.

Grade Distribution

Three Exams	60%
Quizzes	20%
Labs	10%
Homework	10%