

Cypress College
PHSC104/CHEM104
Physical Science for
Teachers
Fall 2007



PHSC104 Section: 12594. TTh 8-10:50 AM. SEM-112.

Professor: Dr. Ron Armale

Office: SEM-259

Phone: (714) 484-7000 Ext. 48638.

Science/Math Division: (714) 484-7153. FAX: (714) 952-9667.

Email: RArmale@CypressCollege.edu ,

Security: Give course number/title, your full name and ID #.

Web: <http://sem.cypresscollege.edu/~astronomy>

Office hours: MT 1-3PM, or by appointment.

CHEM104 Section: 12791. TTh 8-10:50 AM. SEM-112.

Professor: Ed Nasserri

Email: ANasserri@ivc.edu

Required Text: *Conceptual Physical Science*, 3rd edition by Hewitt.

Supplies: Calculator, ruler, protractor, Scantron forms No. 882.

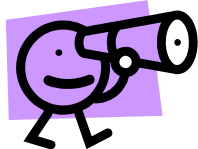
Course Description

4 Units Three hours lecture and Three hours laboratory per week.

This activity-based course introduces the basic concepts of physical science with major emphasis upon their practical importance and application toward understanding natural phenomena in real-world contexts. Laboratory work includes experiments in physics and chemistry. It is intended for students who want to become school teachers.

Prerequisite: MATH 020 C

Teaching Philosophy



Math and memorization of facts are not our goals. We emphasize the understanding of processes and the development of critical thinking skills. Plan to spend at least **seven** hours of study outside of class each week.

Upon completion of the course, the student will have a basic understanding of:

PHYSICS

1. The Scientific Method.
2. Patterns of motion and equilibrium.
3. Newton's Laws of Motion.
4. Momentum and energy.
5. Newton's Law of Universal Gravitation.
6. Projectile and satellite motion.
7. Fluid mechanics.
8. Thermal energy and thermodynamics.
9. Heat transfer and change of phase.
10. Static and current electricity.
11. Magnetism and electromagnetic induction.
12. Sound waves.
13. Light waves.
14. Properties of light

CHEMISTRY

1. Atoms and the Periodic Table.
2. Atomic Models.
3. The Nucleus.
4. Chemical Foundations.
5. Mixtures.
6. Chemical Bonding.
7. Intermolecular Attractions.
8. How and Why Reactions Occur.
9. Acids and Bases.
10. Oxidation and Reduction.
11. Organic and biological compounds.



Ground Rules

- **Attend all classes.** It will influence your grade in borderline cases. If you miss more than **6** lectures or **2** labs, you may not pass this course. Note that it is **your responsibility** to officially drop the course if you want to withdraw.
- **Be on time.** Tardiness and leaving early are rude and disruptive. If you are late, be as quiet as possible.
- **Respect your teacher and classmates.** Go outside to talk.
- **Eat and drink before or after class.**
- **Turn off phones before you enter the classroom.**
- **Be honest.** Cheating in any form will not be tolerated. Copying from your lab partners is cheating.

Grading

Lab Reports	25%
Homework	15%
Exams	60%

A normal distribution (**curve**) will be used, which usually results in **approximately** the following grade distribution:

A = 85-100%
B = 75-84%
C = 60-74%
D = 50-59%
F = 0-49%

At the end of the semester, your grades from physics and chemistry will be combined. Each portion will count equally. You must obtain a C or higher in each portion to obtain a passing grade for the course.



Homework

You are required to read the entire assigned chapters prior to coming to class. Take notes while you read and during class, and **ask questions**. Can you learn how to swim without getting wet? Can you learn science without solving problems? The answer is "No!" to both questions. Therefore, homework will be assigned in class every week. These assignments will consist of 10-

15 questions and problems. Doing the exercises yourself is the best way to do well on the exams. The lowest homework score may be dropped. Late homework will not be accepted. All physics homework assignments may be viewed online at <http://sem.cypresscollege.edu/~astronomy/courses/phsc104>

Collaboration: Initially, attempt all the exercises yourself. Then, work in small groups to verify your answers. Once your group reaches a solution, write the answer in your own words. Simply copying the group answers is cheating and will not help you when you have to swim on your own during exams.

Exams

Several one hour exams and a comprehensive two hour final exam will be given. All exams are open textbook only. The exams will mainly consist of multiple choice questions. Nevertheless, you should be able to answer questions of any type. Make-up exams are possible in cases of documented emergencies only. Call you instructor ASAP.



To succeed in a science course

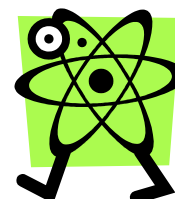
- **Read the book** before class, take notes and write down questions as you read.
- **Ask questions** in class and at office hours and ask your classmates.
- **Take notes** in class. We will write your exams not your textbook authors.
- **Attempt all homework** exercises yourself. If you get stuck, don't give up and assume you can skip this topic. Science builds on previous material, so ask for help.
- **Collaborate** with classmates on homework and exam preparation. Form study groups early in the semester and meet regularly.
- **Explain** difficult concepts to others. "If you can't explain it to your grandmother, then you really don't understand it." Richard Feynman.
- Make use of the Math lab and the Tutoring Center.
- If you have special needs, we will do our best to accommodate you.

PHSC104/CHEM104 Calendar Fall 2007

Wk	Dates	Ch	Topics	Experiment
1 2 3 4	Aug20-24 27-31 Sept 4-7 10-14	P-1 2 3 4-5	PHYSICS Science, Motion Newton's laws Momentum and Energy Gravity, projectiles, and satellites	Science or Nonsense? Is seeing believing? Jump The Pendulum
5 6 7 8	Sept 17-21 24-28 Oct 1-5 8-12	9 10, 6 7-8 11	Exam 1 (P-Ch5), Electricity Magnetism. Fluids Temperature and Heat Sound, Exam 2 (Ch6-11)	Exp. 15 Electric current Exp. 16 Circuits Student Presentations Student Presentations
9 10 11 12	Oct15-19 22-26 29-Nov2 Nov 5-9	14 15-16 17-18 19	CHEMISTRY Atoms and the Nucleus Characteristics and Classification of Matter Chemical Bonding	Safety Tools of the trade Density Separation Puzzle
13 14 15 16 17 18	Nov 13-16 19-21 29-30 Dec 3-7 10-11 18-20	20 21 22 23 24	Intermolecular Forces and Solubility Exam 3 (Ch 14-18), Chemi Reactions Acids and Bases Oxidation/Reduction Reactions Organic Chemistry Final Exam (Chemistry): December TBA	Alkenes and V eggies Holiday Acids Organics

Holidays: Monday September 3 Labor Day
Monday November 12 Veteran's Day
November 22-25 Thanksgiving

Exam dates are approximate.



Library LLRC Reserve Desk

- Your textbook and optional workbook.
- Answers to some end of chapter exercises.
- Conceptual Physics Next Time Questions (class discussion/exam practice).
- Inquiry Into Physics and The Physics of Everyday Phenomena (further reading).

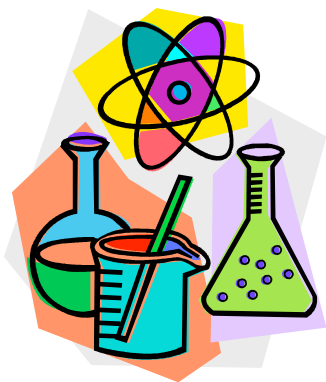
Get more help at the Library (LLRC)

- Math Lab-127
- Tutoring Center.
- Writing Center.

Career Center: Humanities
312/324

Supplemental Instruction (SI)

- Weekly additional hour of instruction by a student may be available.



PHSC104/CHEM104 Physics Laboratory

Why experiment?

No scientific principle is accepted unless it has passed rigorous experimental tests. These ten or so experiments you will perform, will provide you with physical evidence.

Ground Rules

- Read the experiment before you come to class, and arrive on time.
- The three hour laboratory is an essential part of the course, so attendance will be taken and if you are absent, you cannot turn in a lab report using someone else's data.
- You will be penalized for arriving late.
- Lab reports are due at the end of class after the experiment is performed.
- Late reports may not be accepted.
- If you miss more than **two** reports, you may not pass the course.
- No make-up labs will be given, but your lowest lab grade may be dropped.

During lab

- Turn off phones before the start of class.
- Collaborate on all parts of the experiment. However, you are not supposed to divide the labor among your partners.
- Always check your partners' work since you will use whatever data they gather.
- You will collect the data and perform the calculations in **class writing all text in ink (black is preferred, blue is accepted, do not use other colors.)**
- You may use a pencil for numbers.
- Once you and your partners have reached a consensus (or not) **write your own report in your own words.**
- Copying your partner's answers is cheating.
- **Eating or drinking is NOT allowed in the classroom.**
- **Before you leave, you must clean-up your area and neatly put all the equipment back on the carts.**

How to write lab reports

- **Print clearly** and neatly in **black ink**. You may use pencil for numbers, calculations, graphs, and drawings.
- Always explain your answers to the **questions** and always draw a diagram.
- Be clear and concise. **Neatness counts!**

Grading

- The reports are graded based on (1) format, and (2) content.
- A report is given a grade of 40 points if it is perfect. That is if you (1) follow the above guidelines, and (2) you understand the experiment and results.
- You will receive a separate handout that explains Grading and Practices for the Chemistry Laboratory later in the course