



# IMPERIAL VALLEY COLLEGE

## PHYSICAL SCIENCE 110

### Course Syllabus – Fall 2013

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**Office Hours:** Mondays and Wednesdays 7:00-7:30 AM and 1:00-1:30 PM  
Tuesdays and Thursdays 7:00-7:30 AM and 1:10-1:40 PM.

**Code:** # 10755

**Class Meetings:** Tuesdays and Thursdays 10:15 AM - 11:40 AM in Room 2731.

**Textbook:** Conceptual Physics Science (5<sup>th</sup> Edition) (ISBN 978-0321752932).

**Author:** Hewitt, Paul G., John Suchocki, and Leslie A. Hewitt.

**Prerequisite:** None

**Recommended Preparation:** Math 091 with a grade of "C" or better.

**Credit Units:** 3.0

#### Course Philosophy

This course is designed to give an understanding of the fundamental principles of physics and chemistry as they relate to the structure and properties of matter and the principles of motion and energy, for the liberal studies student.

#### Measurable Course Objectives and Minimum Standards for Grade of "C"

Students will be able to:

1. Describe the motion of objects based on position, displacement, velocity, speed, and acceleration.
2. Recognize that forces (pushes and pulls) such as gravity, magnetism and, friction act on objects and may change their motion if these forces are not in balance.
3. Recognize the differences between kinetic energy, potential energy, work, power, and their application to machines.
4. Know the difference between weights and masses and weights of objects using the Universal Law of Gravitation.
5. Know the difference between temperature and heat and know the laws of thermodynamics.
6. Describe the methods of heat transfer and know the phases of matter and how one phase is converted to another.
7. Recognize the differences between electrical forces, voltages, currents, resistance, series circuits, and parallel circuits.
8. Understand the origin of magnetic forces and their application in meters, motors, and generators.

9. Describe wave motion including longitudinal and transverse waves and applications to sound waves.
10. Understand the origin of light waves and the application of frequency to the electromagnetic spectrum and color.
11. Know the difference between reflection and refraction of light.
12. Understand the composition of the atom and the classification of atoms by the periodic table.
13. Understand atomic structure and identification of atoms using a spectroscope.
14. Understand properties of the nucleus including fission, fusion, and radioactive decay.
15. Recognize physical and chemical properties of elements and compounds.
16. Understand mixtures and determining means of classifying and separating them.
17. Understanding ionic, polar, covalent and metallic bonds.
18. Describe chemical reactions.
19. Understand the chemical properties of acids and bases.

#### **INSTITUTIONAL LEARNING OUTCOMES (ISLOs):**

1. Communication Skills
2. Critical Thinking Skills
3. Personal Responsibility
4. Information Literacy
5. Global Awareness

#### **STUDENT LEARNING OUTCOMES (SLOs)**

1. Conceptualize the fundamental differences between mass and weight and between speed and velocity, using illustrative examples.
2. Through experimentation involving the use of levers, students will investigate and apply the principle of Conservation of Energy to simple machines.
3. Distinguish between series and parallel circuits, identifying their advantages and disadvantages.

#### **Grading Criteria**

Course must be taken on a "letter-grade" (LG) basis only.

#### **Grading Policy**

The student's grade will depend on the following areas:

Special Project (Oral/Written)	20% (100points)
Homework	20% (100 points)
Exam # 1	15% (75 points)
Mid-term	20% (100 points)
Final Exam	25% (125 points)
<b>Total</b>	<b>100%</b>

All grades are calculated by using the standard scale of:

<b>A = 100-90%</b>	<b>B = 89-80%</b>	<b>C = 79-70%</b>
D = 69-60%	F = 59% and below	

#### **Class Rules and Expectations**

1. Students are expected to be actively involved in the learning process so failure is not a good choice; apply yourself, study, do not give up on the first try, attend class regularly, ask for help when needed, and always do your best!

2. Students are expected to attend class meetings regularly. After the second absence, if the student does not drop the class via Webstar, he/she will receive an "F" as final grade; so it is the student's responsibility to drop before the deadline.
3. ABSENCES. What constitutes an absence? Not showing up to class during a regular class meeting, or arriving more than 20 minutes after the beginning of the class, or leaving more than 20 before the end of the class.
  - a. Example: Class starts at 10:00 AM and ends at 12:00 PM. If you arrive after 10:20 AM you are absent. If you leave before 11:40 AM you are marked absent. If you leave the room for more than 20 minutes for whatever reason, you are absent.
4. TARDIES. What constitutes a tardy? Arriving within the first 20 minutes after the beginning of the class or leaving within the last 20 minutes before the end of the class (3T = 1A).
  - a. Example: Class starts at 10:00 AM and ends at 12:00 PM. If you arrive between 10:01 AM and 10:20 AM you are marked tardy. If you leave between 11:41 AM and 12:00 PM you are marked tardy as well as if you "disappear" from the room for no more than 20 minutes (i.e. having lunch). If you need to use the restroom, you are expected to return within a reasonable time period.
  - b. If you are late to class, please enter the room quietly, do not distract your classmates, and avoid talking to them to find out what is going on in class (it is your responsibility to arrive on time). On the second offense you will be dropped from class.
5. If a student reaches the third absence after the deadline, his/her grade will be reduced one letter grade for each subsequent absence.
  - a. Example: your current grade is an "A." On the 4<sup>th</sup> absence you will get a final grade of "B." On the 5<sup>th</sup> one, your grade is "C," and on the 6<sup>th</sup> one, a "D." Beyond that, your final grade is "F." Exceptions include- for example- hospitalization for several days and with appropriate documentation.
6. Deadline to drop the class with a "W" is November 09, 2013. Late drops on graded classes will require that the student receive an F.
7. Class materials such as a notebook or binder with lined or quad ruled paper, pen, pencil, scientific calculator (no phone), and the textbook will be brought to every class meeting.
8. It is up most important that students review the material to do well on exams. Students are encouraged to form study groups to meet regularly to keep up with assignments and to study for tests/mid-term/final exam.
9. Late assignments will not be accepted. It is student's responsibility to turn assignments in when they are due regardless he/she is absent (no excuses!).
10. Students will not be allowed to make up an exam or final exam.
11. The work is individual which means that you are responsible for what you turn. Identical assignments will not be accepted; failure to comply will result in a "zero" for that specific assignment.
12. No photocopied textbooks are allowed. No cell phones and music players (IPODs, MP3, etc) allowed during class time. You will be dropped on your second offense for disturbing the class in this manner.
13. No food or drinks are allowed in the classroom.

14. No children are allowed in the classroom.
15. Absences attributed to the representation of the college at officially approved conferences and contests and attendance upon field trips will not be counted as absences (this includes sports). However, the student is responsible for notifying the instructor and for the work done in class. If your absence coincides with an exam, it is student's responsibility to contact the instructor via e-mail or by phone before the following class meeting to make it up. Failure to do so will result in a "zero" for that particular exam.
16. Classroom Etiquette-In class, it is expected that you will treat your instructor and each other with respect. Do not talk when the instructor is lecturing except to ask a question of the instructor or answer a question posed to the class. Feel free to ask questions as needed and listen when someone else is asking a question because you may have the same one.
17. Discipline: you need to understand that this is a college class so appropriate behavior is expected at all times (i.e. not speaking out of turn, raise your hand to talk and wait until acknowledged, paying attention, avoid side comments, not answering your cell phone in class, working in assignments for another class, etc.). For this reason, no discipline problem will be tolerated.
  - a. First offense: warning.
  - b. Second offense: student will immediately be dropped from the class.
18. Academic Integrity- If a student is found cheating in a test or assignment, he/she will receive a grade of zero for the test. If cheating is repeated, he/she will receive a grade of F for the course or may be immediately dropped from the class.
19. Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP & S) office as soon as possible. DSP&S, Room 2117, Health Sciences Building, (760) 355-6312.
20. Special Project:
  - a. Option a: A written report and PowerPoint presentation will be assigned according to students' preferences and presentation dates will be according to the calendar of topics. The written report should be about five pages long, size 12, double space, about five bibliography sources, about 20 slides, and a one-page summary for classmates.
  - b. Option b: You may present to a "group of students" of any grade level of your choice. Refer to [www.cde.ca.gov](http://www.cde.ca.gov) for CA Science Content Standards. Make a detailed lesson plan with the standard(s) addressed, goal(s) of your lesson, activities, and assessment. Bring copies for your classmates and teach the lesson to them. Demos are highly recommended.
  - c. Please refer to grading rubric found in Blackboard.
  - d. Please bring your own computer.
21. Homework: The purpose of homework is to provide students with additional practice to reinforce concepts and help them to get ready for tests. For each chapter you will need to answer any combination of problems, questions, exercises for a total of twenty (20), not answered previously in class.

## 22. Calendar:

WEEK # START DAY	CORE CONTENT	READING	ASSIGNMENT DUE
1 August 19	Syllabus / Introduction Patterns of Motion and Equilibrium	____ Chapter 1	---
2 August 26	Patterns of Motion and Equilibrium Newton's Laws of Motion	Chapter 1 Chapter 2	
3 September 02	Newton's Laws of Motion Momentum and Energy	Chapter 2 Chapter 3	
4 September 09	Newton's Law of Universal Gravitation Thermal Energy and Thermodynamics	Chapter 4 Chapter 6	
5 September 16	Review for Exam # 1 Exam # 1		<b>Exam # 1</b> <b>Chapters 1-4</b>
6 September 23	Heat Transfer and Change of Phase	Chapter 7	
7 September 30	Static and Current Electricity	Chapter 8	<b>Presentations</b>
8 October 07	Magnetism and Electromagnetism	Chapter 9	<b>Presentations</b>
9 October 14	Waves and Sound Light Waves Properties of Light	Chapter 10 Chapter 11	<b>Presentations</b>
10 October 21	Review for Mid-term Mid-term		<b>Mid-term</b> <b>Chapters 6-11</b>
11 October 28	Atoms and the Periodic Table	Chapter 12	<b>Presentations</b>
12 November 04	Atomic Models	Chapter 12	<b>Presentations</b>
13 November 11	The Atomic Nucleus Elements of Chemistry	Chapter 13 Chapter 14	<b>Presentations</b>
14 November 18	Mixtures How Atoms Bond	Chapter 16 Chapter 15	<b>Presentations</b>
15 November 25	Chemical Reactions Acids and Bases	Chapter 17 Chapter 18	<b>Presentations</b>
16 December 02	<b>Day 1: Final Exam</b> <b>Day 2: Final</b> <b>Grades/Questions</b>		<b>Final Exam</b> <b>Chapters 12-18</b>