

SCI 1A Syllabus (Fall 2019)

Course: #51328

M: 4:30 - 7:20 PM, W: 4:30 - 7:20 PM

*Please note that the contents of this syllabus or schedule are subject to change. If changes are necessary, the entire class will be informed and you will receive a new copy through Canvas.

Instructor: Dr. Harinder Singh Bawa (Chemistry part: Dr. Veronica Cornel)

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Textbook: Conceptual Physical Science, 6th edition. Hewitt/Suchocki, Pearson Publisher.

Drop Dates:

August 23 (F) Last day to drop a Fall 2019 full-term class for full refund

August 30 (F) Last day to register for a Fall 2019 full-term class in person

August 30 (F) Last day to drop a Fall 2019 full-term class to avoid a "W" in person

September 2 (M) Last day to drop a Fall 2019 full-term class to avoid a "W" on WebAdvisor

October 11(F) is final deadline to drop with "W"

Course Objective: This course provides an investigation of basic principles of physics and chemistry including matter, physical and chemical properties, energy, motion, light, atomic structure, bonding, solutions and chemical reactions. The interdependence of chemistry and physics will be emphasized. This course is intended for nonscience majors.

Homework: Homework is essential for understanding the material covered in class. Make sure you complete homework assignments on time and are comfortable answering questions about each problem. I encourage you to find a study group and work on the homework assignments together. **Your homework grade will account for 20 % of your overall grade.**

Exams: There will be 4(four) exams over the course of the semester. These tests can be conceptual questions in multiple choice format or descriptive format (Short answers or computational). **The three exams would be from physics and one from chemistry and they combine to form 40% of your overall grade.**

Laboratory: Laboratory experience gives you the chance to test these concepts in a hands on way. Each laboratory class will have a handout that will be turned in by the end of the period. **The laboratory handouts will contribute 15% of your overall grade.**

Final Exam: There will be a final exam for this course that is cumulative with an emphasis on the material at the end of the semester. The final exam would be from physics only and not chemistry. **This will account for 15% of your overall grade.**

Activity: During the course each student will prepare an activity on Physics topic to show the class that demonstrates a concept learned in this course. The activity should use materials that is readily available so that the students can repeat this activity with their school students. **This will account for 10% of your overall grade.**

Grading Policy:

A 90-100%, **B** 80-89%, **C** 70-79%, **D** 60-69%, **F** 0-59%

Homework: 20% Exams: 40% Laboratory: 15% Activity: 10% Final Exam: 15%

Student Conduct: Students are expected to conduct themselves in a responsible manner as outlined by the board policy 5410. Conduct standards are designed to perpetuate the college's educational purposes, allowing students to enjoy the right of freedom to learn. Failure to adhere to the accepted standards will result in disciplinary action.

Accommodations for Students with Disabilities: If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me and DSP&S as soon as possible.

Plagiarism and Cheating: Cheating and plagiarism is prohibited in the class. Incidents of cheating and plagiarism will result a failing grade on the particular examination or assignment in question.

Important Dates(Exam)

1. Midterm 1 (Topics 1& 2 (a-d)) September 11,2019
2. Midterm 2 (Topics 3 & 4) October 2,2019 (By Dr Cornel)
3. Midterm 3 (Topics 2(e-i), 5) November 13,2019
4. Midterm 4 (Topics 6) December 4 ,2019
5. Final December 11, 2019

Lecture Content (Topics)(Class # is LectureSlide on Canvas)

1. Measurement and Fundamental Properties **(All in Class 1)**
 - a. Fundamentals of measuring length, area, volume and mass
 - b. Density of materials
 - c. The scientific method
2. Motion, Forces and Energy
 - a. Motion of objects as related through the concepts of position, displacement, speed, velocity, and acceleration **(Class 2)**
 - b. Interpretation of distance vs. time and speed vs. time graphs **(Class 2)**
 - c. The relationship between a net force and the motion of an object **(Class 2)**
 - d. Explain how action and reaction forces are related to each other **(Class 2)**
 - e. Basic forces in the universe including electrostatic, gravitational and magnetic**(Class 4,7,10)**
 - f. Forms of energy including solar , chemical , magnetic , electric , nuclear , and thermal**(Class07)**
 - g. The relationship between net force, work, and kinetic energy **(Class 03)**
 - h. Conservation of energy, and how energy is transformed form one form to another **(Class 03)**
 - i. The nature of heat (thermal energy) and heat transfer (conductive, convective, radiant) and their relationship to temperature and temperature measurement **(Class 06)**
3. Structure and matter **(All in Class 7)**
 - a. Atomic theory and basic atomic structure including the relationships between sub-atomic particles
 - b. Periodic Table of Elements and periodic trends to atomic structure
 - c. Characteristics of the atomic, ionic, and molecular classes of matter
 - d. Phases of matter (solids, liquids, and gasses) and the connections between the properties using a particle model
 - e. Classification of matter-elements, substances, compounds, mixtures
 - f. Basic characteristics of solutions, including acids and base, and their relationship to the pH scale
4. Matter and its Changes**(All in Class 8)**
 - a. Phases of matter and associated phase changes
 - b. Chemical and physical changes, and classifying chemical and physical properties of matter
 - c. Basic principles of chemical bonding and chemical activity
 - d. Energy changes during chemical reactions
5. Electricity and Magnetism
 - a. Electric charge and how charge is transferred from one object to another
 - b. Models of electric current, voltage, resistance and their interrelationships

- c. The construction and operation of simple electrical circuits and the difference between series and parallel combinations of resistors
6. Waves and Light
- a. Longitudinal and transverse waves
 - b. Properties and sound
 - c. Doppler effect and interference
 - d. Electromagnetic radiation (light), the electromagnetic spectrum and sources of light
 - e. Relationship between wavelength (or frequency) and color
 - f. Color perception
 - g. Reflection and refraction of waves.

Labs to cover:

Physics

1. Measurements
2. Position, displacement, velocity and acceleration
3. Net force from Newton's Laws
4. Energy types and calculating energy conservation
5. Buoyancy
6. Calorimetry
7. Matter phases

Chemistry

8. Lab safety and quiz
9. Chemical and physical reactions
10. acids and bases
11. The mole concept

