

## PSCI 3304: Physical Science II

**CRN:** 12675

**Term:** Fall 2014

**Time:** Thursday 8:30 am -12:00 pm

**Where:** PSCI 220

**Instructor:** Dr. Huiyan Yang  
Office: PSCI 215B  
Phone: 747-7510  
Email: hyang4@utep.edu  
Office Hours: MW 11:00 - 11:50 am, or by appointment

### **Required Materials:**

**Text:** *Conceptual Physics* 11th edition by Paul G. Hewitt.

**Lab Manuals:** 1. *Electricity Labs 1-7* and 2. *Nature of Matter* (Available for \$10 each at the Printing Center in the Library.)

### **Course Overview:**

Electricity will be the focus of roughly the first half of the course. Matter (the solids, liquids, and gases around you every day) will be the focus of the second half. Most importantly you'll better learn the physical science (physics and chemistry) that your future students deserve to understand.

### **Learning Objectives:**

A working understanding of

1. the concept of charge (positive and negative).
2. simple electrical circuits containing:
  - a. batteries, wires and light bulbs
  - b. batteries, wires and motors
  - c. batteries wires and capacitors
3. the concept of magnetism
  - a. permanent magnets
  - b. polarity
  - c. electromagnets
4. the atomic and molecular nature of matter
5. a sense of scale (size)
6. the concepts of mass, volume, density and their relationship

Understanding of concepts is to be demonstrated by:

- accurately communicating them in written and verbal formats
- correctly answering both short and long answer questions
- completing hands-on activities

### **Textbook Chapters:**

|                              |  |
|------------------------------|--|
| Chapter 22: Electrostatics   | Chapter 11: Atoms                          |
| Chapter 23: Electric current | Chapter 12: Solids                         |
| Chapter 24: Magnetism        | Chapter 13: Liquids      Chapter 14: Gases |

**Assessment and Grading:**

|   |     |
|---|-----|
| Lab reports (completed in class)                | 20% |
| Homework (course outline and assigned in class) | 20% |
| Quizzes   | 12% |
| Midterm exams (2)                               | 28% |
| Final exam                                      | 20% |

**Homework Standards:**

- Must write the question before the answer for completeness.
- May be typed or hand-written.
- Due at start of each class. You are responsible to hand in all assignments. Late assignments accepted, but penalized. Remember, completing tasks on time makes a good impression!

**Exams:**

- Make up exams will be given only in extraordinary cases of illness or emergencies. In all cases documentation will be required.
- Bring a calculator; cell phones will not be allowed.

**Additional Course Policies:**

- Punctual attendance is critical. Class begins promptly at 1:00 pm. Quizzes given at start of class.
- We will have breaks and you may eat and drink (if you're careful).
- Cell phones should be turned off during class.
- If you miss 2 classes you will be dropped from the course. Three lates (10 minutes or more) will count as an absence.
- When absences occur, it is your responsibility to obtain handouts and notes from your peers. You are responsible to complete the activities you have missed.

These policies will be strictly enforced for two reasons: 1) you are going to be professionals and these policies are typical of professional behavior; and 2) I take your learning very seriously and simply do not want to waste one minute of the time that I have with you.

**Military:** Students being called for military duties need to contact the instructor as soon as possible.

**UTEP Policies on Academic Dishonesty**

If an instructor suspects a student of cheating, he/she is to collect evidence that he/she believes indicates this (e.g. exams, student work, etc). This evidence is then turned over to the Assistant Vice President for Student Affairs (VPSA). The student will receive an incomplete on whatever piece of work is under consideration. No other actions will be taken by the instructor until the case is closed: no discussion, no accusation, and no different treatment. The student is encouraged to continue participating in the class. The VPSA will consider the evidence provided her and then contact the accused student (and possibly peers) and investigate the allegations. She will then make a decision as to whether cheating occurred and determine what the consequences will be. The instructor will be consulted by the VPSA as to whether the results of the investigation are acceptable to him/her. If acceptable, the instructor will simply carry out the consequences sent to both the student in question and the instructor in a formal letter from Student Affairs. While the seriousness of the identified dishonest actions determines the nature of the consequences, possible consequences include: a counted "zero" on the piece of work, a letter grade reduction, or being placed on academic probation. Students have the right to appeal a decision and participate in a formal public hearing.

### Tentative Timeline:

| Week | Date   | Topic  | In-Class   | Homework  |
|------|--------|--|--|---|
| 1    | Aug 28 | Electric Charge<br>Atoms and Electrons                   | Electricity Labs 1<br>- Charge   | All homework is due at the start of class on the date in the "Date" column to the left. Write both questions and answers clearly. |
| 2    | Sep 4  | Conductors<br>Electric Current<br>Units                  | <b>Quiz 1</b><br>Electricity Lab 2<br>Electricity Lab 5<br>- Current & Resistivity | Read Ch 11 p. 196-201; Read Ch 22 p. 382-387<br><b>HW 1: RQ 9-11</b> p. 210; <b>RQ 3-6</b> p. 400                                 |
| 3    | Sep 11 | Resistance<br>Ohm's Law<br>DC/AC Current                 | <b>Quiz 2</b><br>Electricity Lab 3<br>- Circuits & Ohm's Law                       | Read Ch 22 p. 387-392; Read Ch 23 p. 404-407<br><b>HW 2: RQ 12-13, 17-19, 22, Rank 1</b> p. 400;<br><b>RQ 3</b> p. 418            |
| 4    | Sep 18 | Circuits (Series and<br>Parallel)                        | <b>Quiz 3</b><br>Electricity Lab 4<br>- Circuits Practice                          | Read Ch 23 p. 407-413<br><b>HW 3: RQ 4, 7-8, 10-15</b> p. 418-419,<br><b>P&amp;C 2</b> , p. 420                                   |
| 5    | Sep 25 | Capacitors   | <b>Quiz 4</b><br>Electricity Labs 6 & 7<br>- Capacitance                           | Read Ch 23 p. 413-418<br><b>HW 4: RQ 25-26, 28-32</b> p. 419,<br><b>Ex 54, 57</b> p. 422  |
| 6    | Oct 2  | Magnetism  | <b>Quiz 5</b><br>Magnetism Lab<br>Review for Exam 1                                | Read Ch 22 p. 397-399<br><b>HW 5: RQ 29</b> p. 400, <b>Ex 55, 57, 60</b> p. 402   |
| 7    | Oct 9  | Elements<br>Isotopes                                     | Investigation M6.3<br><b>Exam 1:</b> Electricity,<br>Magnetism, and Atoms          | Read Ch 24 p. 424-436<br><b>HW 6: RQ 2-6, 8, 10, 24-26</b> p. 437   |
| 8    | Oct 16 | Molecule<br>Solids                                       | <b>Quiz 6</b><br>Review Exam 1<br>Volume Measurement                               | Read Ch 11 p. 201-208<br><b>HW 7: RQ 13, 17-19, 22, Rank 1</b> p. 210,<br><b>Ex 22-23</b> p. 211                                  |
| 9    | Oct 23 | Volume<br>Density  | Investigation M1.1, 1.2,<br>1.3<br>Density Measurements                            | Read Ch 12 p.212-215<br>Read Nom M1.1-1.2 p. 95-97<br><b>HW 8: RQ 3-4, Ex 8-9, 12</b> p. 224-225<br><b>Prob 2</b> p. 227          |
| 10   | Oct 30 | Density  | <b>Quiz 7</b><br>Investigation M1.6  | Read Ch 13 p. 228-234<br><b>HW 9: RQ 2-5, 9, 10, 12</b> p. 242  |
| 11   | Nov 6  | Liquids<br>Buoyancy                                      | <b>Quiz 8</b><br>Archimedes Lab  | Read Ch 13 p. 235-237<br><b>HW 10: RQ 13, 14, 16, 17</b> p. 242<br><b>Ex 31</b> p. 245, <b>Prob 5</b> p. 246                      |
| 12   | Nov 13 | Floatation   | Course Evaluation<br><b>Quiz 9</b><br>Flotation Lab<br>Review for Exam 2           | TBA   |
| 13   | Nov 20 | Physical Changes   | <b>Exam 2:</b> Elements,<br>Solids, Liquids, Density<br>Investigation M4.1-4       | Study for the exam!   |
| 14   | Nov 27 |  | Thanksgiving Day   |   |
| 15   | Dec 4  |  | Course Review  | Read NoM M4.1 p.101-103<br><b>HW 11: NoM M4.1</b> p. 112-113  |
| 16   |        | <b>Thursday, Dec 11th 10:00 am – 12:45 pm Final Exam</b> |  |   |

### Notes:

**RQ** = Review Questions; **P&C** = Plug and Chug; **Rank** = Ranking; **Ex** = Exercises; **Prob** = Problems in *Conceptual Physics, 11<sup>th</sup> Edition*; **NoM** = Nature of Matter (pink book)