CHEMISTRY 1306

Call Number 23159
Summer II 2015
MTWRF 8:15 - 10:20 a.m., UGLC 128

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Office hours: **MWF, 10:30 A.M. - 11:30 and by appointment**
Textbook: ***Chemistry*, Raymond Chang, 11th edition.** (Any edition is ok)**,** and **General Chemistry II Resource Book (ISBN 978-0-9896205-8-1).** (Both available at the UTEP bookstore).
Software: **CONNECT** (bundled with new textbook or to be purchased separately).

NATURE OF THE COURSE

This is the second part of General Chemistry for scientists, engineers and pre-medical students. It covers the role of intermolecular forces in Nature (Chapter 11, 12), the rate of chemical change and reaction mechanisms (13), chemical equilibrium (14,16,18), acids and bases (15), electrochemistry (19), nuclear chemistry (23), and the structure and reactivity of inorganic and organic chemicals in medicine (22,24).

PREREQUISITES

CHEM 1305 and CHEM 1105 (laboratory) are prerequisites for this course and must be completed with a passing grade of "C" or better before taking CHEM 1306. The laboratory CHEM 1106 is a co-requisite for everyone but a few engineer majors, who are also exempt from CHEM 1105.

EXAMS

There will be four unit exams (100 points each), homework (200 points), quizzes (50 points), workshop (150 pts), and a final exam (200 points) for a total of **1,000 points**. There will be no makeup exams under any circumstances. **You cannot pass the course without taking and passing the Final Exam.** You will only need a simple calculator for these exams, preferably one with a logarithm key but no other electronic devices, including cell phones, CD players, or iPODS are permitted. If you have them with you, they must be kept in a bag and turned off or left at the front of the room. Caps and hats cannot be worn during exams.

The final exam will be the American Chemical Society exam, a multiple-choice test that includes everything that might be covered in a second semester of general chemistry anywhere in the US. This exam was designed to demonstrate the basic competency in general chemistry of the student. The instructor will make his best effort to prepare you for this exam. A strong commitment and discipline of the student is essential to achieve success. Given the high national standards of the ACS examination, the top score to be expected in this exam is less than 100%; this will be taken into account in the computation of the class grades. Exams must be above suspicion to be acceptable. If there is reasonable doubt that an exam is your own work or if there is some questions about it, you will be required to take a special exam to demonstrate that you know the material.

HOMEWORK

Homework will be based on CONNECT (www.connect.mheducation.com) . If you purchased your textbook used or from an older edition, please purchase access to CONNECT for one semester so you can do the HW. The Access Code to the software comes free with your textbook purchased in the UTEP Bookstore or the off-campus bookstore. Any PC (Windows based only) computer with internet access may be used. Computers with internet access to internet are available in the Physical Science Building ACES Center. ACES is available to **all** UTEP students.

DROP DEADLINE & INCOMPLETES

As indicated on the calendar, July 16 is the last day to drop with an automatic W. According to university policy, students may attempt a course at most **three** times, including W's. A grade of C or better cannot be improved by retaking the course. Grades of incomplete are given rarely and only in the most unusual circumstances. If an incomplete is not changed within one year, it automatically becomes an F. College of Science policy requires that a student sign a contract agreeing to complete the necessary course work by a specific date in order to receive a grade of incomplete.

CLASSROOM ETIQUETTE

Anything that detracts from the classroom experience should be avoided. Cell phones and beepers must be turned off at the beginning of the period. You may tape the lecture if you ask permission first. Smoking is illegal in university buildings. Eating and drinking is not permitted in class. Tardiness is distracting and is discouraged. Casual coming and going should be avoided. **Unless there is an emergency, leaving early is permitted only with consent of the instructor which must be obtained before class. Students should not talk to each other while the instructor is lecturing or while other students are asking questions.** The Golden Rule is the best guide. If in doubt, check with the instructor.

STUDY SKILLS

Success in college is highly dependent on developing good habits, particularly regarding studying. Good habits include keeping perfect attendance, taking useful notes, asking questions inside and outside the classroom, joining or leading study groups, doing all the homework, and attending office hours regularly. Good grades come from a steady discipline and from prioritizing your higher education.

ACADEMIC HONESTY

Students are expected to do their own work on exams. Cheating, including using crib notes, copying, etc. will be reported to the Dean of Students and your grades will be put on hold until a ruling is made.

GOALS AND OBJECTIVES

We will cover the following material, not necessarily in the order indicated. Tentative dates for the coverage of this material and other important dates are given in the accompanying calendar.

1) **Intermolecular Forces, Liquids and Solids (Chapter 11)**
   a) **Intermolecular Forces**
   b) **Properties of Liquids**

c) **Solids**
d) **Phase Changes**
e) **Phase Diagrams**

2) **The Properties of Solutions (Chapter 12)**
   a) **Solutes and Solvents**
   b) **Concentration Units**
   c) **Factors Affecting Solubility**
   d) **Colligative Properties**
   e) **Colloids**
3) **Chemical Kinetics (Chapter 13)**
   a) **Concentration and Rate**
   b) **Rate Laws**
   c) **Integrated Rate Laws**
   d) **Activation Energy and Temperature**
   e) **Reaction Mechanisms**
   f) **Catalysis**
4) **Chemical Equilibrium (Chapter 14)**
   a) **Equilibrium and Composition**
   b) **Using Equilibrium Constants**
   c) **Response of Equilibrium to Changes in the Conditions: LeChâtelier's Principle**
5) **Acids and Bases (Chapter 15)**
   a) **Bronsted-Lowry Acids and Bases: pH**
   b) **Weak Acids and Bases**
   c) **Solutions of Weak Acids and Bases**
   d) **Lewis Acids and Bases**
6) **Additional Aspects of Aqueous Equilibria (Chapter 16)**
   a) **The pH of Ionic Solutions**
   b) **Titration**
   c) **Buffer Solutions**
   d) **Solubility Equilibria**
7) **Chemical Thermodynamics (Chapter 18)**
   a) **Spontaneous Change and Entropy: Second Law**
   b) **Gibbs Free Energy**
8) **Electrochemistry (Chapter 19)**
   a) **Balancing Redox Reactions in Aqueous Media**
   b) **Electrolysis**
   c) **Galvanic Cells**
9) **Structure and reactivity of inorganic and organic chemicals in medicine (Chapters 22, 24).**
10) **Nuclear Chemistry (Chapter 23)**