CATALOG DESCRIPTION:

The fundamental laws, theories, and principles of chemistry, with emphasis on atomic structure, chemical bonding, periodic classification of the elements, solutions, equilibrium, reaction kinetics, and the theory and practice of qualitative chemistry of the common ions.

Prerequisite: Elementary Algebra.
Corequisites: CH204L - General Chemistry Laboratory II, Spring

CURRENT TEXTBOOK:

Chemistry 11th Edition by Raymond Chang and Kenneth Goldsby

COORDINATOR: Dr. Arthur R. Murphy (Professor of Chemistry)

Instructor: Mr. Henry H. Hali, (Adjunct Lecturer of Chemistry)

Goal: To present the basic principles of chemistry at a level suitable for students majoring in chemistry, biology, engineering, math, and computer science.

TOPICS TO BE COVERED

Chapter 11: Intermolecular Forces and Liquids and Solids
- The Kinetic molecular theory of liquids and solids
- Intermolecular Forces
- Phase Changes
- Phase Diagrams

Chapter 12: Physical Properties of Solutions
- Types of Solutions
- The molecular view of the Solution Process
- The Effect of Temperature on Solubility
- The Effect of Pressure on Solubility of Gases
- Colligative Properties of Nonelectrolytes
- Colligative Properties of Electrolyte Solutions
Chapter 13: Chemical Kinetics

- The Rate of a Reaction
- The Rate Law
- The Relationship between Reactant Concentration and Time
- Activation Energy and Temperature Dependence of the rate constant
- Reaction Mechanism

Chapter 14: Chemical Equilibrium

- The Concept of Equilibrium and the Equilibrium Constant
- Writing Equilibrium Constant Expression
- The Relations between Chemical Kinetics and Chemical Equilibrium.
- What Does the Equilibrium Constant Tell Us?
- Factors that Affect Chemical Equilibrium

Chapter 15: Acids and Bases

- Bronsted Acids and Bases
- The Acid-Base Properties of Water
- pH – A Measure of Acidity
- Strength of Acids and Bases
- Weak Acids and Acid Ionization Constants
- Weak Bases and Base Ionization Constants
- Relationship between the Ionization Constants of Acids and Their Conjugate Bases
- Diprotic and Polyprotic Acids
- Molecular Structure and the Strength of Acids
- Acid-Base Properties of Salts
- Acid-Base Properties of Oxides and Hydroxides
- Lewis Acids and Base

Chapter 16: Acid-Base Equilibria and Solubility Equilibria

- Homogeneous versus Heterogeneous Solution Equilibria
- The Common Ion Effect
- Buffer Solutions
- Acid-Base Titration
- Acid-Base Indicators
- Solubility Equilibria
- Common ion Effect
- PH and Solubility
- Complex Ion Equilibria and Solubility
- Qualitative Analysis
Chapter 17. Entropy, Free Energy, and Equilibrium

- The Three Laws of Thermodynamics
- Spontaneous Processes and Entropy
- Second Law of Thermodynamics
- Gibbs Free Energy
- Free Energy and Chemical Equilibrium
- Thermodynamics of Living Systems

Chapter 18: Electrochemistry

- Redox Reactions
- Electrochemical Cells
- Standard Reduction Potentials
- Spontaneity of Redox Reactions
- The Effect of Concentration on Cell Emf
- Electrolysis

Chapter 19: Nuclear Chemistry

- The Nature of Nuclear Reactions
- Nuclear Stability
- Nuclear Radioactivity
- Nuclear Transmutation
- Nuclear Fission
- Nuclear Fusion
- Uses of Isotopes
- Biological Effects of Radiation

Chapter 24: Organic Chemistry

- Classes of Organic Compounds
- Aliphatic Hydrocarbons
- Aromatic Hydrocarbons
- Chemistry of Functional Groups
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<td><strong>Spring Break March 11 – 15, Bahamas, England, Rome, Mexico, Florida</strong></td>
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13  April 29  May 1
   Chapter 23  Chapter 24
14  May 6  May 8
   Chapter 24  Chapter 24
15  May 13  May 15
Exam #4 Chapters 23 & 24  Final exam chapters 11-16, 18-19, 23-24

**Academic Calendar**

Classes Begin, 8:00 a.m. (Monday)
   January 28
Last Day for New Registrations and Final Drop/Add Changes
   February 8
Spring Recess
   March 11-16
Classes Resume, 8:00 a.m. (Monday)
   March 18
Last Day for Student Withdrawal from Classes
   April 8
Priority Registration for Fall Semester 2013
   April 15-26
Last Day of Classes (Saturday)
   May 11
Final Examinations (Monday–Saturday)
   May 13-18

**PROCEDURES**

(1) **Attendance is mandatory.** Students who have failed my course in the past are those who did not attend class or failed to do the minimum requirements. If you are absent 4 or times, you should seriously consider dropping the course.

(2) Dates for the mandatory hourly exams are given on the above schedule. Make up Exams/tests will be given with valid medical excuse.

(3) **Homework will be assigned and graded.** The average of all homework assignments will equal one test grade. Late homework will not be accepted.

(4) The schedule above is tentative and subject to change.
(5) Lowest Homework Grade will be dropped. Lowest test grade will be dropped as well.
**GRADING POLICY**

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<td>Average Home work</td>
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A  =  95 %
A- =  92 %
B+ =  89 %
B  =  85 %
B- =  82 %
C+ =  79 %
C  =  75 %
C- =  74 %
D  =  64 %
F <  64 %

If you need help, I will be available each Wednesday from 4:30 PM – 5:20 PM in Edwards Williams College Room 205. If you wish to contact me, my email addresses are:

- hhali@fdu.edu
- henryhali@yahoo.com