SCHOOL OF STEM SYLLABUS

TERM:

INSTRUCTOR:

COURSE CODE: CHP-111

OFFICE HOURS:

COURSE TITLE: College Chemistry I

OFFICE LOCATION:

DAY(S) AND TIME(S):

EMAIL:

LOCATION:

PHONE:

COURSE PREREQUISITE: MAT-100 OR MAT-106

CREDITS: 4

COURSE DESCRIPTION:

This course is an introduction to common physical and chemical properties of substances and solutions. Topics cover scientific measurements and SI units, atomic structure and the periodic table, inorganic nomenclature, gas laws, chemical stoichiometry, chemical bonding, molecular geometry and polarity, thermochemistry, liquid properties, cubic crystals, and solutions. Laboratory work illustrates common lab techniques as well as chemical principles.

STUDENT LEARNING OUTCOMES:

Upon completion of this course, students will be able to:

- Define properties of matter
- Perform conversions of units and dimensional analysis
- Discus atomic structure, chemical bonds, molecules and ions
- Name inorganic compounds
- Balance chemical equations and perform calculations (stoichiometry)
- Discuss aqueous reactions (precipitation, acid-base, oxidation-reduction)
- Explain laws of thermochemistry
- Define characteristics of gases and gas laws
- Describe molecular geometry
- Apply proficient laboratory skills:
  - *select proper sample size, equipment size, and experimental setup*
  - *correctly use laboratory equipment*
  - *apply lecture concepts in the laboratory*

TEXTBOOK AND SUPPLEMENTAL MATERIALS:

"Chemistry: The Central science" 15th Edition, Prentice Hall (Pearson Education)

Publishing Author(s): Theodore L. Brown; H. Eugene LeMay; Bruce E. Bursten; Catherine J. Murphy; Patrick M. Woodward; Matthew W. Stoltzfus

ISBN-13: 978-0-13-749360-9

GRADING POLICY:

Three Exams	75 points
Quizzes	5 points
Lab	15 points
Homework	5 points

SAMPLE COURSE SCHEDULE:

Week	Schedule
1	Introduction to the course, grading policy, course Requirements. **Safety Rules** in the laboratory, Glassware Chapter 1, Introduction: Matter & Measurement
2	Chapter 1, Introduction: Matter & Measurement
2	Chapter 1, Introduction: Matter & Measurement
3	Chapter 2, Atoms, Molecules and Ions
3	**Lab 1: Density of Liquids and Solids**
4	Chapter 2, Atoms, Molecules and Ions
4	**Lab 2: Chemical Nomenclature**
5	Chapter 3, Stoichiometry: Calculations with Chemical Formulas and Equations
5	**Lab 3: The Composition of Potassium Chromate**
6	Chapter 3, Continued

6	**Lab 4: Mole Ratios and Reaction Stoichiometry**
7	Chapter 3, Continued**, Review**
8	Exam 1
8	Chapter 4, Reactions in Aqueous Solution
8	**Lab 5: Electrical Conductivity**
9	Chapter 5, Thermochemistry
9	**Lab 6: Colorimetry: Beer's Law**
9	**Lab 7: Volumetric Analysis: Acid-Base Titration**
10	Chapter 6, Electronic Structure of Atoms
10	**Lab 8: Endothermic-Exothermic Reactions and Calorimetry-Determination of the Specific Heat of a Metal**
11	Chapter 7, Periodic Properties of the Elements, Review
12	Exam 2
12	**Lab 9: Flame Tests and Atomic Spectra**
12	Chapter 8, Basic Concepts of Chemical Bonding
13	Chapter 9, Molecular Geometry and Bonding Theories
13	**Lab 10: Lewis Structures and Molecular Shapes**
14	Chapter 10, Gases
14	**Lab 11: Molar Mass of a Volatile Liquid**
15	Chapter 11, Liquids and Intermolecular Forces Chapter 12, Solids and Modern Materials
15	***Final Exam***

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https://www.hccc.edu/administration/academic-affairs/syllabus-addendum.html