

**EMPEROR'S COLLEGE
MTOM COURSE SYLLABUS
CHEMISTRY**

COURSE DESCRIPTION

This course is designed to teach elementary principles of chemistry and chemical elements and compounds. It includes an investigation of the constituents of matter, electron arrangement, the periodic table, chemical bonds and reactions, phase states, solutions, acids, bases and electrolytes.

LEARNING OBJECTIVES

Upon completion of this course, the student will be able to understand the pervasiveness of the application of chemical principles of daily life.

COURSE PREREQUISITIES

None

REQUIRED TEXTS

Bauer, R. C., Birk, J. P., & Marks, P. S. (2016). *Introduction to Chemistry*, 4th edition. McGraw-Hill Education ISBN-13: 978-0073523002

RECOMMENDED TEXTS

none

COURSE REQUIREMENTS

50% = Module 1 Exam

50% = Module 2 Exam

Classroom lectures represent the instructor's emphasis and focus on certain aspects of the course material. The student is responsible for the assigned readings.

GRADING SCALE: 100-90% A, 89-80% B, 79-70% C, 69% and below F

SPECIAL NOTES

No texting or phone use permitted in class. No video recording is permitted under any circumstances.

Professionalism and Full and Prompt Attendance: To pass any course (separate from academic performance) all students must meet requirements for professionalism in coursework. Professionalism includes full and prompt attendance: students who miss more than 2 class meetings in a 10-week course or 1 class meeting in a 7-week course will earn an F in that course. Additionally, students who arrive more than 15 minutes to class or leave class before it ends will be given ½ absence towards attendance. NOTE: Students who leave and return to class late from a break or leave during the class (especially if this is repeated) or who disrupt the class in other ways may earn an F in that class and/or be referred to the Academic Dean for professionalism.

CHEMISTRY

CLASS ONE (The syllabus is subject to change at the discretion of the instructor.)

Introduction

Matter

Unit Conversion

Atomic Theory

Electron Arrangement

Periodic Table

Assignment: Bauer Chapters 1,2

CLASS TWO

Electron Configuration

Ionic Bonds

Covalent Bonds

Electronegativity

Polar and Non-Polar Molecules.

Assignment: Bauer Chapter 8

CLASS THREE

Balancing Chemical Reactions

Volume Relationships

Avogadro's Number

Mole and Mass Relationships

Reaction Rates, Equilibrium

Assignment: Bauer Chapter 5

CLASS FOUR

Oxidation and Reduction

Chemical Properties of Oxygen

Chemical Properties of Hydrogen

Oxidizing and Reducing Agents.

Assignment: Bauer Chapter 14

CLASS FIVE

Air: Mixture of Gasses

Kinetic-molecular Theory

Atmospheric Pressure

Gas Laws

Intermolecular Forces

Interionic Forces

Dipole Forces

Hydrogen Bonds

Phases and phases changes

Assignment: Bauer Chapter 9, 10

CLASS SIX

MODULE 1 EXAM

CLASS SEVEN

Solutions
Solubility
Molarity
Concentration
Solutions and Cell Membranes
Colloids

Assignment: Bauer Chapter 11

CLASS EIGHT

Acids & Acid Strength Bases
Bases and Base Strength
The pH Scale Neutralization Reactions
Acid-base Titration
Buffers

Assignment: Bauer Chapter 13

CLASS NINE

Radioactivity
Nuclear Reactions
Rates of Radioactive Decay
Medical Applications of Isotopes
Biological Effects of Radiation
Nuclear Energy

Assignment: Bauer Chapter 15

CLASS TEN

Organic Chemistry
Biochemistry
a. Proteins
b. Nucleic Acids
c. Carbohydrates
d. Lipids

Assignment: Bauer Chapter 16, 17

**CLASS ELEVEN
MODULE 2 EXAMINATION**

REFERENCE MATERIAL
will be provided as necessary

FACULTY INFO

Please contact Dr. Downie with questions at docdownie.emperors@gmail.com

Check for Course notes, materials and Course Manual links at EmperorsWesternScience.wordpress.com