

Pittsburg State University  
**Chem 105-01: Introductory Chemistry**  
Spring 2018

**Instructor:** Dr. K Mijares Office: HW 112

**Email:** (best done through Canvas)

**Lecture room:** Grubbs 109 (T/Th; 9.30-10.45am)

**Office Hours:** Posted outside my office and on Angel or can be made by appointment.

**Required Textbook and other materials:**

- Web-link to lecture book supplemental: [http://higher.mcgrawhill.com/sites/0073375667/student\\_view0/chapter1/figures\\_alive\\_.html](http://higher.mcgrawhill.com/sites/0073375667/student_view0/chapter1/figures_alive_.html)
- Calculator (Non-programmable scientific with a LOG and “EE or E” button)

**Course description:**

This course will cover Basic Chemistry and its relationship to everyday experiences. The material covered this semester will include classification and structure of matter, basic principles of chemical reactions and their environmental and social impact, organic chemistry, and selected topics in biochemistry. This course is designed for non-science majors, and applied health majors. Occasionally during lectures, you will be asked to work in small groups to solve given problem sets, for this reason it is important to have a good attendance and to be prepared for lectures.

**Pre-requisite/Co-requisite:**

Chem 106 (Introductory Chemistry Laboratory) is a pre-requisite or co-requisite to this course. If you drop CHEM 105 at anytime during the semester, you are also required to drop the CHEM 106 lab. If you drop CHEM 106 you will also be required to drop CHEM 105.

**Content to be covered and Anticipated Learning Outcomes:**

- Utilize the language and communication commonly used in context of this field.
- Recognize and use Atomic Composition, Measurements, Matter and Chemical Composition.
- Recognize and draw Lewis dot structures and determine their 3D (electron and molecular geometry using VSEPR Theory. Including different types of inter-atomic and molecular bonding present in a molecule.
- Demonstrate an understanding and concepts involved with the naming of ionic, covalent compounds, chemical formulas and write the chemical formulas/structures from a given chemical name.
- Demonstrate the ability to recognize common quantitative concepts (moles, molar mass, molecular weights, Avogadro’s number) associated with calculating amounts of elements and compounds.
- Demonstrate the ability to recognize molecular formulas of compounds and be able to translate them into molar mass from names and structures for ionic, covalent and simple organic compounds.
- Demonstrate an understanding and determine balanced chemical equations and utilize these for stoichiometry. To be used for balancing chemical equations and

conduct *mass* to *mole* and mole to mass conversions using these balanced chemical equations.

- Demonstrate an understanding and determine the energy associated with a chemical reaction (atom up approach).
- Demonstrate an understanding and recognize the concepts involved in basic electrochemistry (i.e. REDOX reactions, voltaic cells, galvanic cells and electrochemical half-cells).
- Determine and identify the relationships between acids and bases with strong and weak electrolytes. As well as the ability classify a chemical as an electrolytic solution, solutes from non-electrolytic solutions and measure the pH scale used to distinguish between strong and weak acids and bases.
- Demonstrate the relevance of temperature relative to molecular potential and kinetic energy to chemical reactions.

### **Attendance Policy:**

There are several group activities during the semester; a student attendance in class is required. An official note (a doctor's or nurses note, accident report, official programs for events or a letter from the club advisor on university letterhead stating the date and a student name) is required to excuse an absence due to any of the following:

- (i) University sponsored activity (athletic team obligations, choir or theatre practice, etc.)
- (ii) or medical or family emergency. It is a student responsibility to submit written documentation to support the absence. Absences without appropriate documentation will be considered unexcused. Attendance will be taken during lectures, it is a student responsibility to sign the roster. If the roster does not show a student signature, it will be counted as an unexcused absence. Signing the roster for another student will be considered Academic Dishonesty and may result in an "XF" and/or removal from the course.

There will be a number of in-class group activities throughout the semester, participation and attendance is expected and common courtesy to a student group members. The groups will be assigned by the instructor and is subject to change throughout the semester. These activities are designed to be done as a group and points can only be earned if a student is in class (regardless of an excused or unexcused absence).

### **Methods of Assessment:**

Homework, Quizzes, In-Class Activities and Exams

Homework is due at the beginning of the lecture according to the syllabus, and should be formatted as shown in Canvas (Modules folder). Late Homework will not be accepted so that the key/solution can be posted as soon as possible. It is recommended that a student scan or photo-copy a student homework.

### **Topics:**

Chapter 1-The Air We Breathe

Chapter 2-Protecting the Ozone Layer

Chapter 3-The Energy of Global Warming

Chapter 4-Energy, Chemistry, and Society

Chapter 5-The Water We Drink

Chapter 6-Neutralizing the Threat of Acid Rain

Chapter 8-Energy from Electron Transfer

Chapter 9-The World of Polymers and Plastics  
Chapter 10-Manipulating Molecules and Designing Drugs  
Chapter 11-Nutrition: Food for Thought  
Chapter 12-Genetic Engineering and the Molecules of Life

**GRADES:**

- Grades will be based on 4 exams, 4 quizzes  
7 sets of homework problems, 10 Group Activities and a comprehensive final exam.
- The distribution of grades are as follows:  
4 Exams 50 pts each  
4 Quizzes 20 pts each  
10 Group Activity Worksheets 5 pts each  
Picture+First post on blog/discussion 5 pts  
7 Homework Sets 20 pts each  
Final Exam 100 pts  
Maximum Total at end of semester 535 pts  
Final letter grades, before the attendance policy is taken into consideration, will be based on the following grading scale:  
A > 90 %  
B > 80 %  
C > 65 %  
D > 55 %  
F < 55 %

**ACADEMIC HONESTY:**

Help from other students or other third party is not allowed during quizzes and exams and will be viewed as academic dishonesty. Use of other materials, information or persons, cell-phones during a quiz or exam will be viewed as academic dishonesty (i.e. collaborative efforts to answer quiz or exam questions are not acceptable). Calculators (TI-89 or equivalent or computers) with alphabet capabilities may be restricted for quizzes and exams. Everyone should have scientific calculator capable of basic math, trig and log operations (this does not necessarily mean a TI-89 or equivalent). All calculator memories are to be cleared at the beginning of all quizzes and exams. Academic dishonesty on any exam or quiz will result in an automatic zero for the quiz or exam and maybe removal from the course (even if it involves only one question). Further offences will result in an overall “F” grade and immediate removal from the course. Please consult the policy on Student Academic Dishonesty in the University Catalog (2007-2009).