OC005: Honors Chemistry

Course Description
Honors Chemistry is a year-long seminar-style course that introduces the fundamental language, ideas and tools used in the study of chemistry. This advanced introductory high school chemistry course covers key topics such as chemical nomenclature, stoichiometry, the periodic table, chemical bonding, equilibrium, kinetics, thermodynamics, nuclear chemistry, and common laboratory practices. Emphasis will be placed on the use of chemistry in the natural world, physical world and our daily lives. Honors Chemistry will give students the skills necessary to describe chemical processes and behaviors and to solve numerical and verbal problems in chemistry. Upon completion, students will have a solid foundation in chemistry and will be prepared for AP Biology, AP Chemistry, and college-level chemistry courses.

Goals
- To communicate chemical information using proper terms of measurement, units, and significant figures.
- To communicate and understand the language of chemistry using atomic symbols.
- To recognize and describe the states of matter, the transition between these states and the differences between atoms, molecules, compounds and mixtures.
- To recognize and describe the types of reactions and their stoichiometry.
- To describe and explain the organization of the periodic table, the structure, periodic trends, physical and chemical properties of the elements.
- To apply concepts of molecular structure and bonding to draw and predict the structure and behavior of simple molecules.
- To apply the relationships described by the rules and laws of thermochemistry, equilibria, kinetics, electrochemistry and nuclear chemistry to predict chemical reactivity, and describe reactions verbally and mathematically.
- To understand the use of common chemistry laboratory equipment, techniques and procedures.
- To apply and recognize the proper application of the scientific method in investigations of the physical world.
- To observe and perform laboratory experiments, collect and/or analyze experimental data graphically and make conclusions about the chemical properties or reactions based on these observations.
- To gain an enduring appreciation for the chemistry that surrounds you each day as a citizen, consumer, and student.

Required Textbook
*Introductory Chemistry*, By Nivaldo J. Tro

Key Assignments
Each semester, the final letter grade will be determined through the following types of assignments:
• **Class Participation:** This portion of the grade will be determined based on attendance and regular participation in the discussion including asking and answering questions. Each semester there are 1-2 in-class group presentations focusing on a current topic that also count toward the participation score.

• **Homework:** Weekly problem sets are taken from the textbook.

• **Quizzes:** Weekly quizzes that are either written problems or multiple choice questions to test learning objectives from each unit.

• **Lab Reports:** Laboratory worksheets or notebook entries will be required for all at-home lab work. These build the skills necessary to write a formal lab report in later courses.

• **Midterm and Final Exams:** There will be a comprehensive, written, proctored midterm and final exam that will include multiple-choice questions regarding material covered in lecture, discussions, and lab work and free-response questions that will probe knowledge of problem-solving skills, knowledge of laboratory work, conceptual knowledge and chemical nomenclature.