

Heights Tutorial Class Description

Course Title: Chemistry with lab

Teacher: Dr. Ed Balducci (BS Biology (Chemistry minor), M. Eng Environmental (Radiation & Air Pollution Control), Th.M. Dallas Theological Seminary, D.Min. Midwestern Baptist Theological Seminary)

Grade Range: Grades 9 – 12 (see Prerequisites below)

Day of week: Thursday

Time: 10:05-11:30am

Must have 6 enrolled students to start

Credit (for high school): 1.0 full credit with lab

Cost:

Tuition:\$475

Fee: \$75

Course Description

This course covers fundamental aspects of chemistry such as the classification of matter, atomic structure, spectroscopy, chemical bonding, molecular geometry, physical change, chemical change, stoichiometry, solutions, ideal gases, acid/base chemistry, reduction/oxidation reactions, thermochemistry, thermodynamics, kinetics, and chemical equilibrium. Weaving together concepts and their mathematical applications, the course teaches students how to think as a chemist so they can analyze the major changes that occur in matter.

The course contains 46 separate experiments that illustrate various concepts being explored. Many are quantitative in nature, including measuring the wavelength of microwaves, determining the number of water molecules in a hydrated compound, calculating percent yield, measuring the concentration of a hydrogen peroxide solution, determining the concentration of acetic acid in vinegar, measuring the specific heat of a metal, and determining the change in enthalpy for a chemical reaction. Others are qualitative, such as performing flame tests, examining the interference of light waves, comparing metals to nonmetals, exploring Boyle's Law, doing litmus tests, and electroplating.

Throughout the course, the student is shown how chemistry reveals the amazing design that exists all around us. From the details of atomic structure to the makeup of the very air that we breathe, chemistry shows us the marvelous handiwork of God.

Students will learn how elements and compounds react, how to design experiments, how to measure and analyze data, as well as how to reach conclusions and document results in a clear, concise lab report.

Prerequisites: Successful completion of Algebra 1

Required Textbooks: *Discovering Design with Chemistry* by Dr. Jay L. Wile
ISBN: 978-0-9962784-6-1

Supply List:

*2" 3-ring binder

*Dividers

*College ruled notebook paper

*Pens/pencils

*Lab notebook (unlined if preferred)

*Required Graphing Calculator- TI-84 or TI-83