

Chemistry Syllabus

I. Course Overview:

Chemistry describes the properties and changes that occur in matter. A basic understanding of this course's principles allows the Christian to gain a better perspective of the complexity, harmony and order God employs in his creation. Good scientific thinking mirrors good Biblical thinking – those thinking and analytical skills will be developed, studied and evaluated.

The impact of chemistry on everyday life extends from medicine to cooking. This basic chemistry course provides students the understanding to apply chemical principles to basic problems and to draw conclusions from laboratory data.

II. Instructor's name and contact information: Greg Dyk gkdyk@yahoo.com (507)631-0061

III. Required texts and materials:

- Modern Chemistry
- Loose leaf notebook paper
- Scientific calculator – a TI – 30X or a TI-83
- A composition notebook – this notebook is for labs.

IV. Introduction:

This course is a general chemistry course covering introductory theory of structure and reactions. Areas of study will include: defining chemistry, matter and energy, the classification of matter, using measurements, problem solving, atomic structure, electron configurations, the periodic law, chemical bonding, naming chemical formulas, writing chemical formulas, balancing chemical equations, types of chemical reactions, stoichiometry, phases of matter, solutions acids and bases and basic organic chemistry. Students will see how chemical principles and concepts are developed from experimental observation and data, and how these principles can be used to explain phenomena in daily life as well as in the lab.

V. Course Standards/Goals

A. Science will encourage students to take joy and delight in exploring and coming to understand God's world

(-Unifying Concepts and Processes)

- a. Systems, order, and organization
 - b. Evidence, models, and explanation
 - c. Change, consistency, and measurements
 - d. Evolution and equilibrium
 - e. Form and Function
- B. Students are involved in designing experiments, making observations and contributing to existing knowledge in science

(-Science as Inquiry)

- a. Identify questions and concepts that guide scientific investigation
- b. Design and conduct scientific investigations
- c. Use technology and mathematics to improve scientific investigations
- d. Formulate and revise scientific explanations and models using logic and evidence
- e. Recognize and analyze alternative explanations and models
- f. Communicate and defend a scientific argument
- g. Understand scientific inquiry

C. Students will learn that physical and living things are created by God and not merely nature, environmental or natural resources

(-Physical Science)

- a. Structure of the atom
- b. Structure and properties of matter
- c. Chemical reactions
- d. Conservation of energy and the increase of disorder
- e. Interactions of energy and matter

D. Science is a human cultural activity through which God can be glorified and human life enhanced or used in life distorting ways

(-Science and Technology)

- a. Identify a problem or design an opportunity
- b. Propose designs and choose between alternative solutions
- c. Implement a proposed solution
- d. Evaluate the solution and its consequences
- e. Communicate the problem, process, and solution
- f. Understand science and technology

E. Through the study of science, students gain a deepened understanding of how they are the care-takers of creation and responsible to God for maintaining, developing and restoring it

(-Science in Personal and Social Perspectives)

- a. Personal and community health
- b. Population growth
- c. Natural resources
- d. Environmental quality
- e. Natural and human-induced hazards
- f. Science and technology in local, national, and global challenges

F. Students will study science in the context of human history and develop a Biblical perspective in personal and communal decision making

(-History and the Nature of Science)

- a. Science as a human endeavor
- b. Nature of scientific knowledge
- c. Historical perspective

VI. Class Schedule by Quarter:

	<i>Main topics covered</i>	<i>Major assignments</i>
Quarter 1	Definition of chemistry, matter and energy, atoms and moles, and the periodic table	3-4 chapter tests and 3-4 labs will make up the major assignments.
Quarter 2	Ions and ionic compounds, covalent compounds, mole and chemical composition, and chemical equations and reactions	Same as the first quarter
Quarter 3	Stoichiometry, causes of chemical change, states of matter and intermolecular forces, and gases	Same as the first quarter
Quarter 4	Solution, chemical equilibrium, acids and bases – as time allows reaction rates	Same as the first quarter

VII. Policies and Procedures

- a. Grading – Grading is done on a percentage basis. (An exception is on occasion a completion grade will be used.)
- b. Grade Components
-Homework 15% -- Students will typically have 2-3 graded homework assignments each week. In addition, end of chapter reviews will be assigned on the first day of each new unit. **ALL HOMEWORK MUST BE COMPLETED BEFORE YOU CAN TAKE ANY END OF THE UNIT TEST!** Late homework will receive a 10% reduction in score for each day it is late. Also, an accumulation of late assignments will result in a detention: 5 /quarter. Then 4 followed by 3, 2, and then a detention for each late assignment.
- c. Periodic Table Quizzes 20%. On the last day of each week, a Periodic Table quiz will be given. See handout with the added requirements for each given week.

- d. Tests 20%- Students can expect a test about every two to three weeks. There will be between 3-4 chapter tests each quarter.
- e. Labs and Quizzes 25% -- Students will complete two to five major labs each semester. There will be three grades given for each lab. The pre-lab write-up is required to start the lab. This pre-lab write up will include the safety equipment and cautions applicable to this particular lab, the procedures for the lab, and any data tables for the lab. Students will be given a grade on laboratory technique – obeying lab safety rules, performing the proper technique according to instructions given prior to the lab. The third grade will be the largest of the three grades. This will consist of answering questions, quantitative and qualitative, over the lab.
- f. Each student is expected to participate in class and each student is expected to allow his neighbor and the rest of the class to participate. In almost all cases, a student's inattentions will cause their grade to go down. (As upper class men, this should already be understood.) Examples of behavior that could reduce your grade include; talking during lectures, interrupting, and working on class work other than chemistry, which will not be tolerated.
- g. Other expectations- Behavioral Expectations – Students are expected to act in accordance with the scriptures, as a disciple of Christ. Students are expected to use their time wisely during class with the first priority being chemistry during the chemistry class time. There will be times when the lesson finishes early, but students should direct their attention to homework, reading assignments and preparing for future graded events.
- h. Absence/ Makeup policy – Authorized absences allow students to make up the work with no penalty, as long as the student does so within a reasonable time. It is this teacher's policy to allow students the same amount of time to make up a quiz, homework or test in the same amount of time they were absent. For example, a student is absent two days for illness. That student has two days to schedule and make up any graded work. After that the student will receive a 10% grade penalty for being late. Periodic Table Quizzes must be taken in the weekly order given. If absent on the last day of the week, make-up quizzes should be taken on Monday. Note: students may not take more than 1 Periodic Table quiz/day.
- i. Help given to other students – Students need to practice care when helping other students to answer questions or working problems. Allowing another student to copy work to provide answers on any graded assignment will be considered cheating. Plus, this type of behavior will “catch-up” with the student since much of what we do in Chemistry builds on previous lessons. Comparing answers to problems or providing help on how to approach a problem on homework assignments or labs is acceptable. If students are found

giving or receiving inappropriate help, both students will receive a zero on the assignment.

- j. Laptops may be used for work during the class. Students may not use the computers to work on tasks other than chemistry during the period without asking permission.