

Tree of Life School

*"Wisdom is a tree of life to those who embrace her."
Proverbs 3:18*

Chemistry Course Outline

***(for use with *Exploring Creation with Chemistry*, 3ed.)

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Course Outline Introduction

This course is a general introduction to chemistry, the scientific study of the composition and reaction of chemical substances as created by God. The topics of chemistry form a foundation for any future studies in the life and physical sciences, and cover a wide variety of important applications to agriculture, industry, technology, and the environment. The variety of assignments and tests will focus on factual information as well as understanding of concepts, practical experiments, research, and writing. **This course in chemistry will be different from all previous science courses in regard to the amount of mathematical calculations required;** therefore, math skills will be called upon. The goal of this course is to introduce the student to the language and systematic study of chemistry as well as to instill an appreciation and wonder of God's creation.

How to Work Through The Course

This course has been divided into a **140 day schedule**. This will allow the student to follow a **four-day school week** and still complete the course in a normal academic year. The **fifth day** of each week can be used to **catch up on assignments**, do **extra reading**, or simply **take the day off** from the course. If, however, a five-day school week is more desirable, the student is encouraged to pursue this course and will be rewarded by early completion of the material. Care has been taken to provide specific instructions for each day's work. Therefore, **all work is to be completed in the order presented in the daily schedule**.

The guide provides a suggested day-by-day sequence of lessons that will pace you through the reading material, experiments, assignments, and tests. This course uses the textbook *Exploring Creation with Chemistry, 3rd edition* by Plourde and Hughes, but the textbook is not itself the course, but only the main reading source you will use as you study the science. This course guide offers important suggestions over the next few pages on **how to study this course** as well as comments and tips throughout the 140 day plan. The beginning of the textbook also describes how the textbook should be used during study.

For general instructions on how to access course materials, prepare and send in assignments, and expectations, see **The Tree of Life Student Handbook**.

Calculating Your Final Grade

Every module (chapter) of the course has either an assignment or a test to send for marking. **Please note that Tree of Life doesn't use the test package that comes with your textbook.** Your final mark in the course will be based on the following percentages:

6 Tests	50%
10 Assignments	50%

***See the Tree of Life Student Handbook for a guide and samples to writing lab reports.

How To Study Chemistry

Reading and Note-Taking

The backbone of the course is the textbook, which poses questions and provides scientific information and discussion in a very understandable and conversational tone. However, simply reading the textbook will yield little learning if there is no critical interaction with the material. One does not read science as one read novels of fiction, for example. Some people can read novels very quickly. But for science, you must slow down and sometimes read every word in the sentence to understand the concept. You might need to look back and forth five times between a diagram and a paragraph you are reading in order to “connect the dots”. This type of careful reading is necessary for learning science.

One very important learning method you should employ for this and following science courses is **note-taking** or **reading notes**. When reading a section of the textbook, you should always have at your side a notebook used for recording important terminology, definitions, explanations, facts, diagrams, and illustrations. The best time to write down notes is the moment your mind is on them. The purpose of reading notes is threefold. First, the act of note-taking forces you to think about what are the most important things in what is being said – that’s what to write down. Second, good notes give you a quick reference to the most important information from the textbook. You can find the main points more easily when studying for the test. Thirdly, as in the case of copying diagrams, note-taking causes you to look carefully and think harder about what you are looking at. If you take good notes while reading, you might accumulate 2-3 pages per module (not including practice questions).

How to use this Study Guide

This study guide is intended to provide a sequence of learning steps to pace you through the course. Each day gives a suggested number of pages for reading, practice questions, experiments, and tips. Some days will require more time and work; in this case, take an extra day if you need. If you are able to move faster, that’s fine too. However, good study habits are still important to develop, so following every lesson step is recommended. A good memory for terminology and concepts in science only goes so far, and a failure to develop study methods will eventually make learning harder or less enjoyable.

A few other tips and notes...

- Try to **follow the example calculations as closely as possible** - this includes numbers, units, chemical names/formulas, and equations. While different people have different ways of working out problems on paper, you should always follow a set procedure when you first learn things. Once you become comfortable and successful at the type of math in this chemistry course, then you can "skip" steps a bit.
- You should always check the **answers to the Practice Questions** (“On Your Own” questions); the answers are at the end of the module. Don’t “peek” if you aren’t sure of

an answer; give your honest effort first, then check afterward.

- Keep up to date with the **Study Guide questions at the end of each module**. If you wait until the day before the test, they will be of little value in preparation. Perhaps doing about 3 study guide questions per day will help keep the material fresh in your mind.
- It is a good idea to **review the lab supplies required for different experiments** *before* the day of the lab. That way, you can be prepared. It is very important to pre-read the entire procedure for the experiment before you start.

Why should we do the experiments?

The experiments in this course are very important to do for several reasons. First, many experiments can help turn abstract scientific concepts into observable events and memorable pictures in your mind that help develop understanding. Another reason for the experiments is that they are fun and sometimes entertaining! They give variety to the course. Thirdly, experiments are an important activity of working scientists who make hypotheses about their observations in nature, and then set out to test their predictions within controlled conditions. Although you must learn the foundations of science before practicing like real scientists, the kind of experiments in this course emulate the same thinking processes in natural science. **You should do as many of the experiments in this course as possible, regardless of whether it needs to be evaluated.**

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Chemistry (*Exploring Creation with Chemistry, 3ed.*)

Assignment #	Test #	Description	Mark
1		Calculations Assignment	
	1	Test 1 (Modules 1-2)	
2		Lab Report	
3		Research Assignment	
	2	Test 2 (Modules 3-5)	
4		Lab Report	
5		Calculations Assignment	
	3	Test 3 (Modules 6-8)	
6		Lab Report	
7		Lab Report	
	4	Test 4 (Modules 9-11)	
8		Calculations Assignment	
9		Calculations Assignment	
	5	Test 5 (Modules 13-14)	
10		Lab Report	
	6	Test 6 (Modules 15-16)	
		6 Tests	(50%)
		10 Assignments	(50%)
		Final Mark	