Biology Syllabus 2014/2015

I. **Southwest Christian's mission statement:** To challenge students to grow in knowing, loving, and serving God and others.

II. **Course Description:**

Welcome! You are about to embark on a 36 week course of study that will change the way you view the world in which we live. Biology, one of the major disciplines in science, is the study of God's created (put together) and sustained order of living things. God created living things to "multiply after kind" (Genesis 1), each with a special role to play for the good of His creation. The theme remains the same- one God with a common plan uniting all living things. Plan and Purpose- these are the patterns we find in each "fearfully and wonderfully made" creature. I want you to share in the excitement of uncovering and understanding the processes God placed within the living created order. We will move from genes to Genesis to science and scripture. As a student you will be given the opportunity to experience these processes through the use of the scientific inquiry process. Therefore, a major goal of this course is to provide you with the opportunity to function in the laboratory as a true scientist. You will solve problems by designing and performing original experiments, collect and interpret data, and form conclusions based on your work. Lastly, it is my hope that a greater understanding of what is around us will give each of us a greater understanding of the God we worship. So, let's together role-up our sleeves and begin this wonderful journey!

III. **Teacher information:**

Instructor: Gregory Dyk
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IV. **Instructional/Assessment Philosophy: tied to mission**

In this introductory Biology course, we will focus on two main areas: 1) the biological parts and 2) what each of the parts were made to accomplish. The study of Biology, then, is the processes these parts perform in order to sustain life. Ultimately, Biology is the study of life. Thus, an understanding of how God allows life to continue and the parts needed to keep it going will be looked at. In order to accomplish this goal, the approach used in this classroom is shaped around inquiry. We start with questions and then use scientific methods, techniques, and data to answer basic biological questions.

As a student of Biology, you will be expected to be able to complete the following items:

1) the memorization of biological terms
2) the application of the Scientific Method
3) completion of daily homework
4) be an active participent in group labs
5) be prepared for unit quizzes
6) be able to satisfy the requirements for unit examinations

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. **Course Texts, Readings, and Materials**

1. Biology: As Scientific Inquiry by Ronald Thompson
2. Building Blocks in Life Science by Gary Parker
3. POGIL Activities

VII. **Course Map**

Unit I: An Introduction to Biology and the Scientific Method
Unit II: Cells and Cell Processes
Unit III: Genetics
Unit IV: Plant Processes
Unit X: Reproduction and Development
Unit XI: Animal and Human Processes
Unit XII: Classification

VIII. **Description of Major Projects and Assignments including rubrics, assessment strategies**

a. Term Quizzes: A 10 question quiz given every Friday or last day of the week
b. Content Quizzes based on particular content objectives
c. Readings/Questions from Building Blocks in Life Science
d. POGIL Activities to go along with the units of study
e. Inquiry Lab activities
f. Unit Exams- (Note: a student will be allowed to take a unit exam once all unit work is complete.)
g. Unit Lab Exams

IX. **Tests and Quizzes**

a. **Unit** Tests that cover the unit material. Each test will be administered following the completion of an inquiry booklet.
b. Quizzes- numerous content quizzes throughout each unit.

X. **Assessment Plan and Policy:**

All assignments and labs are designed to show whether students have met the standards for the course and can follow the proper procedure in applying the scientific method. Students must complete ALL assignments and labs before being allowed to take a unit test.

XI. Distribution of Grading Components

Labs/Lab notebooks- 20%
Homework (completion grades)/Class work- 5%
Scored Assignments -10%
Term Quizzes- 15%
Content Quizzes- 15%
POGIL assignments-15%
Unit Exam/Lab Exam- 20%

IX. Grading Scale and possible description of work

Grade Scale Description of Work

A 92-100% Consistently demonstrates an exceptional level of quality and effort. Having all work in on time and completed to exceed expectations. Mastery in evaluation, synthesizing, and applying the principles of …

96-100 A
92- 95 A-

B 80-91% Consistently demonstrates proficient knowledge with a good effort and quality of work. All assignments are complete and on time. Demonstrates the ability to evaluate, analyze, synthesize and apply the principles of …

87-91 B+
83-86 B
80-82 B-

C 70-79% Demonstrates proficient knowledge and the ability to apply and analyze principles. Work shows average effort. A few assignments may be missed or late.

77-79 C+
73-76 C
70-72 C-

D 60-69% Work shows minimal effort and some assignments are late. Demonstrates a basic understanding of recalling or comprehending principles.

66-69 D+
63-65 D
60-62 D-

F Below 60% Understanding is below basic in relation to principles. Work is of poor quality and does not meet standards of expectations.

IX. Course Schedule (weekly, due dates, tentative):

NOTE: Terms quizzes are scheduled for the last day of each week