Life Science
SCI0700

Course Description
Life science is an amazing journey that allows students to know God better through the study of His creation. This life science course will expand upon previous learning and set the foundation for science in high school. Students need to know the better they learn and understand the concepts presented in the life science course, the easier and more rewarding their high school courses will be. The student's understanding should encompass both the micro and macro aspects of life, and this life science course includes both. The major concepts covered are scientific inquiry, cells, organization of life, classification, cell processes, population dynamics, differences between and effects of biotic and abiotic factors, ecosystem dynamics, genetics and its applications, and change over time (micro-evolution vs. macro-evolution).

Rationale
Students at this level should show development in their ability and understanding of scientific inquiry. The units contain experiments and projects that seek to develop a deeper conceptual meaning for the student and actively engage the student. The continued exposure of science concepts and scientific inquiry will serve to improve the student's skill and understanding as well as teach the student how his or her life is affected by these factors and how he or she affects the environment in which they live. Scientific inquiry will be introduced in module one, but will be seen and utilized throughout a series of activities through this course. The goal is to ensure that each student has a thorough understanding and feel for the entire process of scientific inquiry.

Prerequisite
None

Biblical Integration Outcomes
A. The student will identify and describe Creation and The Universe from a biblical worldview

Measurable Learning Outcomes
A. Demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations.
B. Investigate and understand that all living things are composed of cells.
C. Investigate and understand that living things show patterns of cellular organization.
D. Investigate and understand how organisms can be classified.
E. Investigate and understand the basic physical and chemical processes of photosynthesis and its importance to plant and animal life.
F. Investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment.
G. Investigate and understand that interactions exist among members of a population.
H. Investigate and understand interactions among populations in a biological community.
I. Investigate and understand how organisms adapt to biotic and abiotic factors in an ecosystem.
J. Investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment.
K. Investigate and understand the relationships between ecosystem dynamics and human activity.
L. Investigate and understand that organisms reproduce and transmit genetic information to new generations.

Course Materials
See LUOA’s Systems Requirements for computer specifications necessary to operate LUOA curriculum. Also view Digital Literacy Requirements for LUOA’s expectation of users’ digital literacy.

This course contains additional physical materials. See the materials page toward the end of this syllabus for a listing of course materials.

This course makes use of third-party digital resources to enhance the learning experience. LUOA staff and faculty have curated these resources. Students can safely access them to complete coursework. Please ensure that internet browser settings, pop-up blockers, and other filtering tools allow for these resources to be accessed. See Technologies and Resources Used in this Course below for a specific list.

- Note: Embedded YouTube videos may be utilized to supplement LUOA curriculum. YouTube videos are the property of the respective content creator, licensed to YouTube for distribution and user access. As a non-profit educational institution, LUOA is able to use YouTube video content under the YouTube Terms of Service. For additional information on copyright, please contact the Jerry Falwell Library.

Technologies and Resources Used in this Course
The following resource(s) are used throughout this course:

- Education City
- RightNow Media
- Reading Eggspress
Course Grading Policies

The student’s grades will be determined according to the following grading scale and assignment weights. The final letter grade for the course is determined by a 10-point scale. Assignments are weighted according to a tier system, which can be referenced on the Grades Page in Canvas. Each tier is weighted according to the table below. Items that do not affect the student’s grade are found in Tier 0.

<table>
<thead>
<tr>
<th>Grading Scale</th>
<th>Assignment Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 90-100%</td>
<td>Tier 0 0%</td>
</tr>
<tr>
<td>B 80-89%</td>
<td>Tier 1 25%</td>
</tr>
<tr>
<td>C 70-79%</td>
<td>Tier 2 35%</td>
</tr>
<tr>
<td>D 60-69%</td>
<td>Tier 3 40%</td>
</tr>
<tr>
<td>F 0-59%</td>
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</tbody>
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Course Policies

Students are accountable for all information in the Student Handbook. Below are a few policies that have been highlighted from the Student Handbook.

Types of Assessments

To simplify and clearly identify which policies apply to which assessment, each assessment has been categorized into one of four categories: Lesson, Assignment, Quiz, or Test. Each applicable item on the course Modules page has been designated with an identifier chosen from among these categories. Thus, a Quiz on the American Revolution may be designated by the title, “1.2.W Quiz: The American Revolution.” These identifiers were placed on the Modules page to help students understand which Honor Code and Resubmission policies apply to that assessment (see the Honor Code and Resubmission policies on the pages that follow for further details).

- **Lesson**: *Any item on the Modules page designated as a “Lesson”*
  These include instructional content and sometimes an assessment of that content. Typically, a Lesson will be the day-to-day work that a student completes.

- **Assignment**: *Any item on the Modules page designated as an “Assignment”*
  Typical examples of Assignments include, but are not limited to, papers, book reports, projects, labs, and speeches. Assignments are usually something that the student should do his or her best work on the first time.

- **Quiz**: *Any item on the Modules page designated as a “Quiz”*
  This usually takes the form of a traditional assessment where the student will answer questions to demonstrate knowledge of the subject. Quizzes cover a smaller amount of material than Tests.

- **Test**: *Any item on the Modules page designated as a “Test”*
  This usually takes the form of a traditional assessment where the student will answer questions to demonstrate knowledge of the subject. Tests cover a larger amount of material than Quizzes.
Resubmission Policy
Students are expected to submit their best work on the first submission for every Lesson, Assignment, Quiz, and Test. However, resubmissions may be permitted in the following circumstances:

- **Lesson**: Students are automatically permitted two attempts on a Lesson. The student may freely resubmit for their first two attempts without the need for teacher approval.
- **Assignment**: Students are intended to do their best work the first time on all Assignments. However, any resubmissions must be completed before the student moves more than one module ahead of that Assignment. For example, a student may resubmit an Assignment from Module 3 while in Module 4 but not an Assignment from Modules 1 or 2. High School students may not resubmit an Assignment without expressed written permission from the teacher in a comment.
- **Quiz**: Students may NOT resubmit for an increased grade.
- **Test**: Students may NOT resubmit for an increased grade.

If a student feels that he or she deserves a resubmission on a Lesson, Assignment, Quiz, or Test due to a technical issue such as a computer malfunction, the student should message his or her teacher to make the request, and that request will need to be approved by a Department Chair.

Consequences for Violations to the Honor Code
Every time a student violates the Honor Code, the teacher will submit an Honor Code Incident Report. The Student Support Coordinator will review the incident and allocate the appropriate consequences. Consequences, which are determined by the number of student offenses, are outlined below:

- **Warning**: This ONLY applies to high school Lessons and elementary/middle school Assignments and Lessons. Students should view these actions as learning opportunities.
  - **Lessons**: A zero will be assigned for the question only.
  - **Elementary/Middle School Assignment**: The student must redo his or her work; however, the student may retain his or her original grade.
- **1st Offense**:
  - **Lesson, Quiz, or Test**: The student will receive a 0% on the entire assessment.
  - **Assignment**: The student will either:
    - Receive a 0% on the original assignment
    - Complete the Plagiarism Workshop
    - Retry the assignment for a maximum grade of 80%
- **2nd Offense**: The student will receive a 0% and be placed on academic probation.
- **3rd Offense**: The student will receive a 0% and the Faculty Chair will determine the consequences that should follow, possibly including withdrawal from the course or expulsion from the academy.
Materials List

Module 1
No extra materials needed

Module 2
- Materials for 3D Cell Project – examples: wood, clay, baking ingredients, or any materials from backyard

Module 3
- Drawing paper
- Colored pencils or markers
- Pencil

Module 4
- Materials for 3D Ecosystem – examples: colored paper, play-dough, clay, and paint, etc.

Module 5
- Poster board

Module 6
- 10 pairs of shoes – do not need to be new

Module 7
No extra materials needed

Module 8
- Household materials for 2D or 3D DNA molecule – examples: noodles, candy, fabric, etc.
- Two pennies
- Pencil, colored pencils, markers
- Paper

Module 9
No extra materials needed

Module 10
No extra materials needed.
Scope and Sequence
Life Science

Module 1: Scientific Inquiry
Week 1: What is Scientific Inquiry?
Week 2: Research and Hypothesis
Week 3: Data
Week 4: Scientific Method

Module 2: Cells and Organ Systems
Week 5: The Microscope
Week 6: Cell Theory
Week 7: Specialized Cells
Week 8: Organ Systems of the Body

Module 3: Organ Systems and Photosynthesis
Week 9: Organ Systems of the Body
Week 10: Organ Systems of the Body
Week 11: Photosynthesis
Week 12: Community

Module 4: Biomes and Food Chains
Week 13: Predators and Prey
Week 14: Biomes
Week 15: Food Chains and Biomes
Week 16: Food Chains and Biomes

Module 5: Biomes and Semester Exam
Week 17: Biomes
Week 18: Semester Exam

Module 6: Classifying Organisms
Week 19: Dichotomous Key
Week 20: Classifying Organisms
Week 21: Exploring the Kingdoms
Week 22: Investigating the Kingdoms

Module 7: Reproduction
Week 23: Succession and Symbiosis
Week 24: Asexual Reproduction
Week 25: Meiosis and Mitosis
Week 26: History of Genetics

Module 8: Genetics
Week 27: DNA
Week 28: Punnett Squares
Week 29: Mutations and Disorders
Week 30: Pedigree Charts
Week 31: Mark Your Own Charts

Module 9: Creation vs. Evolution
Week 32: Creation and Evolution Debunked
Week 33: Where Evolution Breaks Down
Week 34: Macro and Micro Evolution and a Creationist Perspective

Module 10: Semester Review and Final Exam
Week 35: Semester Review
Week 36: Final Exam