

## **REAL Science Odyssey LIFE, level 2 (grades 5-8)**

### **Class Description:**

RSO Biology (Level 2) is a comprehensive course for life science at the middle school level (grades 5 through 8). But unlike many science textbooks, RSO Biology 2 is not a dry collection of facts and worksheets but rather an in-depth course that engages young people's minds at the same time they are actively participating in the learning of biology. Biology 2 uses natural settings that encourage students to explore the world around them. Topics include cells, genetics, evolution, organisms, classification, and ecology. (Description and Activities taken from REAL Science Odyssey's website.)

### **Learning Materials:**

Main Curriculum:

Real Science Odyssey: LIFE Level 2 by Pandia Press

RSO Life level 2 Teacher's Guide

**Learning Goals/Performance Objectives:** 1.3.8 Understand how individual organisms, including cells, obtain matter and energy for life processes.

2.1.1 Understand how to generate a question that can be answered through scientific investigation.

2.1.2 Understand how to plan and conduct scientific investigations.

2.1.4 Analyze how models are used to investigate objects, events, systems, and processes.

2.1.5 Apply understanding of how to report investigations and explanations of objects, events, systems, and processes.

**Learning Activities:** The course is contained in two books (student text and parent/teacher's text). The student text starts each chapter with an entertaining written lesson that is followed by several components intended to reinforce the lesson, address the needs of different learning styles, and engage students in hands-on learning and research. These components include lab sheets, lab reports, problem sets, activities, famous science research assignments, coloring sheets, microscope labs, poetry, and vocabulary review. The parent/teacher's text provides all the help a science novice needs to assist her student including suggested course scheduling, summaries, additional material and explanations, sample reports, learning objectives, answers and suggestions, tests, and quizzes. Divided into 32 chapters, both texts together provide a rigorous and complete middle school biology course that covers a 36 week school year.

RSO Biology (Level 2) Scope and Sequence:

Cells

Cell theory

Unicellular organisms

Animal cell structure and function

Plant cell structure and function  
Cell chemistry and nutrition  
Diffusion and cellular transport  
Photosynthesis and cellular respiration  
Virus life cycle

Genetics  
DNA, RNA  
Purpose of DNA, protein synthesis  
Life cycle of a cell and mitosis  
Meiosis  
Heredity  
Structure and function of chromosomes  
Punnett Squares

Organisms  
Multicellular organisms  
Dissection  
Plant organisms and systems  
Human organisms and organ systems  
Human anatomy and physiology

Evolution  
Theory of evolution  
History of evolution  
Evidence for evolution  
Natural selection  
Fossils and dating

Ecology and population dynamics  
Biomes  
Abiotic interactions  
Ecosystems  
Food web – producers, consumers, decomposers  
Biotic interactions- predator/prey relationship, camouflage, symbiotic relationships, mimicry, competition  
Biology cycles  
Greenhouse Effect  
Environment balance and threats

Classification  
History of classification  
Modern classification  
Dichotomous Key  
Binomial nomenclature  
Branching diagrams  
Phylogeny  
Cladistics  
Archaea and Bacteria  
Eukarya  
Protists and fungi  
Plantae  
Animal

**Progress Criteria/Methods of Evaluation:** For successful completion of this course, the student will complete at least 70% of the lessons/goals, at a minimum of 70% accuracy, following the timeline below. The timeline includes reviews and student work. Formative assessments will be given as deemed necessary, and there will be a summative assessment at the end of each unit.

September Complete Chapters 1 – 4  
October Complete Chapters 5 - 8  
November Complete Chapters 9 – 11  
December Complete Chapters 12 – 14  
January Complete Chapters 15 – 18  
February Complete Chapters 19 – 21  
March Complete Chapters 22 – 25  
April Complete Chapters 26 - 28  
May Complete Chapters 29 – 32  
June Review