

# 8<sup>th</sup> Grade Science Course Syllabus

## Description:

Middle School Comprehensive Science 3 is the third in a series of three consecutive middle school science classes. It builds on concepts introduced in the first and second courses of the series, including the disciplines of life science, physical science, and earth-space science. In addition, technology, engineering, and mathematics (STEM) concepts are integrated throughout the course. Students learn about properties of matter, physical and chemical changes, atoms and the periodic table of elements, photosynthesis and cellular respiration, the universe, and the solar system. Hands-on and virtual laboratory investigations are included throughout the course to provide students opportunities for exploration through scientific inquiry, research, measurement, problem solving, and experimental procedures. By the end of the course, students will be practicing, experimenting, thinking, and talking like a scientist!

**Estimated Completion Time:** 2 segments / 32-36 weeks.

## Major Topics and Concepts:

### Segment 01:

#### Module 01: Matter

- 01.00 Module Pretest
- 01.01 Scientific Knowledge
- 01.02 Measurements of Matter
- 01.03 Volume and Density
- 01.04 Physical Properties
- 01.05 Measuring Physical Properties
- 01.06 Discussion-Based Assessment
- 01.07 Module Exam

#### Module 02: Changes in Matter

- 02.00 Module Pretest
- 02.01 States of Matter
- 02.02 Physical Versus Chemical Changes
- Segment One Collaboration
- 02.03 Conservation of Mass
- 02.04 Thermal Energy and Chemical Change
- 02.05 Physical Models
- 02.06 Discussion-Based Assessment
- 02.07 Module Exam

#### Module 03: Elements and Compounds

- 03.00 Module Pretest
- 03.01 Atomic Theory
- 03.02 The Periodic Table

- 03.03 Advanced Valence Electrons
- 03.04 Compounds
- 03.05 pH and Salts
- 03.06 Mixtures and Pure Substances
- 03.07 Discussion-Based Assessment
- 03.08 Module Exam
- 03.09 Segment One Exam

## **Segment 02:**

### **Module 04: Cycles and Conservation**

- 04.00 Module Pretest
- 04.01 Conservation
- 04.02 Photosynthesis
- 04.03 Cellular Respiration
- 04.04 Advanced Interrelated Nature
- 04.05 The Carbon Cycle
- 04.06 Conservation Models
- Segment Two Collaboration
- 04.07 Discussion-Based Assessment
- 04.08 Module Exam

### **Module 05: The Universe**

- 05.00 Module Pretest
- 05.01 Space and Beyond
- 05.02 Galaxies
- 05.03 Stars
- 05.04 Solar Properties
- 05.05 Advanced Space Weather
- 05.06 Electromagnetic Spectrum
- 05.07 Space Technology
- 05.08 Discussion-Based Assessment
- 05.09 Module Exam

### **Module 06: Our Solar System**

- 06.00 Module Pretest
- 06.01 Formation of the Solar System
- 06.02 Exploring the Solar System
- 06.03 Seasons and Tides
- 06.04 Eclipses and Moon Phases
- 06.05 Discussion-Based Assessment
- 06.06 Module Exam
- 06.07 Segment Two Exam

## **Course Assessment and Participation Requirements:**

To achieve success, students are expected to submit work in each course weekly. Students can learn at their own pace; however, “any pace” still means that students must make progress in the course every week. To measure learning, students complete self-checks, practice lessons, multiple choice questions, projects, discussion-based assessments, and discussions. Students are expected to maintain regular contact with teachers; the minimum requirement is monthly. When teachers, students, and parents work together, students are successful.