



RADNOR TOWNSHIP SCHOOL DISTRICT  
Course Overview



Accelerated 7<sup>th</sup> Grade Science

**General Information**

Credits: N/A

Weighted: N/A

Prerequisite: 6<sup>th</sup> grade science; teacher recommendation based on rubric; and/or GIEP

Length: Full Year

Format: Meets Daily

Grade: 7

**Course Description**

Accelerated 7<sup>th</sup> Grade Science is a rigorous hands-on, inquiry-based learning experience. This course focuses heavily on scientific investigation through experimental design while incorporating data interpretation/analysis, advanced math and reading skills to solve problems. Students will utilize the scientific method and other problem solving skills to answer questions about the world around them. They will focus their study on cell structure and function including DNA and genetics. Students will also discover similarities and differences between living organisms. During the study of ecology, students will explore various land biomes and how organisms adapt to their environment. Finally, the course allows students to examine the big picture as they identify various components of our environment and how it is affected by human impact.

Accelerated students are expected to demonstrate critical thinking skills, depth and complexity of thought with exemplary success. The Accelerated 7<sup>th</sup> Grade Course covers the topics included in the traditional 7<sup>th</sup> Grade Science Course described above but in an accelerated manner, and primarily through scientific laboratory investigations and a variety of non-fiction readings. This allows time for deeper studies into the subject and topics. Projects, examinations, and other assignments are challenging and will require more critical thinking.

**Course Objectives:**

At the conclusion of this course, students will be able to:

- Apply the scientific method to solve problems
- Work collaboratively to obtain data using appropriate scientific equipment and tools
- Create appropriate graphical representations of data
- Formulate testable questions and hypotheses to make predictions and design experiments
- Write a scientific lab report
- Use the compound light microscope accurately to view specimen
- Identify what living things need to survive and how they are classified
- Compare differences between prokaryotic (bacteria) and eukaryotic cells
- Compare / contrast organic and inorganic molecules
- Identify how cell processes move molecules in living cells
- Explain the transfer of energy in cells
- Explain how traits are inherited
- Identify clues of evolution
- Identify factors that influence changes in population size
- Describe how energy flows through ecosystems
- Compare renewable and nonrenewable resources
- Identify alternatives to fossil fuel
- Identify similarities and differences between various land biomes

**Common Assessments:**

**1<sup>st</sup> Semester:**

- Numbers in Science Lab
- Scientific Tools Identification Quiz
- Metric Conversion Quiz
- Vertruvian Man Lab

- Quarter 1 Independent Project: Scientist Research
- Drops on a Penny Formal Lab
- Write it Up
- Scientific Method Quiz
- Graphing Lab
- Graphing Calculator Lab
- Microscopic Measurement Lab
- Plant and Animal Cell Lab
- Cell Webquest
- Cell Project
- Chemistry of Life Quiz
- Mitosis Mardi Gras Lab
- Cancer Growth Animation
- Cell Respiration and Photosynthesis Webquest
- Mitosis Project
- Cell Processes Test
- 2<sup>nd</sup> Quarter Independent Project: "Scientist for the Day"
- Heredity Test
- DNA Model
- DNA Extraction Lab
- Thumbs Up Lab
- Punnett Squares Lab
- Midterm
- 2<sup>nd</sup> Semester:**
- Quiz for Beak vs. Food
- 3<sup>rd</sup> Quarter Independent Project / The Omnivore's Dilemma by Michael Pollan
- Bean Bunny Evolution Lab
- Classification Webquest
- Bacteria Lab
- Bacteria and Virus Quiz
- Protist and Fungi Quiz
- Flower Model
- Plant Lab
- Plant Webquest
- Why did the seed cross the road Lab
- Clouds / Cockatoos and Cacti Lab
- Field of Beans Lab
- Biome Project
- Alternative Energy Project
- Final Exam

### **Major Units of Study:**

- Unit 1: Science is...Experimental Design
- Unit 2: Cells and Cell Processes
- Unit 3: Heredity and Genetics
- Unit 4: Adaptations and Natural Selection
- Unit 5: Bacteria, Viruses, Protists and Fungi
- Unit 6: Plants
- Unit 7: Environment and Ecology

### **Materials & Texts**

**Textbooks:** Life's Structure and Function, Glencoe/McGraw-Hill, 2002, Bacteria to Plants, Glencoe/McGraw-Hill 2002, Ecology, Glencoe/McGraw-Hill, 2002

**Lab Supplies:** including but not limited to microscopes, prepared kits, scientific tools and measuring

equipment (stop watch, scales, beakers, graduated cylinders, meter stick, rulers, etc.), prepared slides, specimen(protists, plants, fungi, plant and animal cells) , Petri dishes, pipettes, test tubes, etc.

**Art Supplies:** paper, scissors, pencils, graph paper, highlighters, post-its, etc. for in class projects and models

**Technology:** Computers, scientific software, DVD's , teacher webpage, on-line tutorials and web-quests

**Literature:** Fiction and nonfiction novels (Silent Spring by Rachel Carson, Young Readers Edition of The Omnivore's Dilemma by Michael Pollan, The Immortal Life of Henrietta Lacks by Rebecca Skloot, and a Science Fiction novel of choice), weekly scientific articles/journals related to current curriculum topics, What on Earth? An Ecology Reader, Perfection Learning, 2000

### ***Summer Assignment***

Students are required to choose a science novel to read (from a selection provided) during the summer prior to the taking the class. Students will be required to complete a dialectical journal and create 3 essential questions from the novel. Assessments would be administered the first week of school related to the novel(s) content including, but not limited to, a book talk and essay responses.