



Accelerated Science 7

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I. COURSE DESCRIPTION:

Accelerated Life Science is a year-long introductory biological science courses that integrate middle school biology with chemistry, meteorology content and the history and nature of science.

This course introduces basic science concepts through inquiry labs, models, and hands-on activities. The topics covered are; cells, ecology, human body, genetics and evolution, properties of matter, chemical changes, meteorology, and environmental concepts. Students will develop skills of scientific inquiry and laboratory investigations. This Life Science class meets the life science requirements for middle school, MYP requirements, and prepares students for 8th Grade Accelerated Earth Science.

II. UNITS OF STUDY/MN STATE STANDARDS:

The standards addressed in this course are the Minnesota Academic Science Standards for 7th grade. These standards and benchmarks are covered in the following units.

Duration	Unit of Study	MN State Standards
8 weeks	Nature of Science and Engineering	<p><i>7.1.3.4.2 Determine and use appropriate safety procedures, tools, measurements, graphs and mathematical analyses to describe and investigate natural and designed systems in a life science context.</i></p> <p><i>7.1.1.2.3 Generate a scientific conclusion from an investigation, clearly distinguishing between results (evidence) and conclusions (explanation).</i></p> <p><i>7.1.1.2.2 Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables, ensuring that one variable is systematically manipulated, the other is measured and recorded, and any other variables are kept the same (controlled).</i></p> <p><i>7.1.1.1.2 Understand that when similar investigations give different results, the challenge is to judge whether the differences are significant, and if further studies are required.</i></p>
4 weeks	Cells	<p><i>7.2.1.1.3 Recognize that a chemical equation describes a reaction where pure substances change to produce one or more pure substances whose properties are different from the original substance(s).</i></p> <p><i>7.4.1.2.1 Recognize that cells carry out life functions, and that these functions are carried out in a similar way in all organisms, including animals, plants, fungi, bacteria and protists.</i></p>
8 weeks	Disease and Human Body	<p><i>7.4.1.1.2 Describe how the organs in the respiratory, circulatory, digestive, nervous, skin and urinary systems interact to serve the needs of vertebrate organisms.</i></p> <p><i>7.4.4.2.1 Explain how viruses, bacteria, fungi and parasites may infect the human body and interfere with normal body functions.</i></p>
4 weeks	Genetics	<p><i>7.4.3.1.1 Recognize that cells contain genes and that each gene carries a single unit of information that either alone, or with other genes, determines the inherited traits of an organism.</i></p>
4 weeks	Evolution	<p><i>7.4.3.2.3 Recognize that variation exists in every population and describe how a variation can help or hinder an organism's ability to survive.</i></p> <p><i>7.4.4.1.2 Describe ways that human activities can change the populations and communities in an ecosystem.</i></p>
4 weeks	Ecology	<p><i>7.4.2.1.1 Identify a variety of populations and communities in an ecosystem and describe the relationships among the populations and communities in a stable ecosystem.</i></p> <p><i>7.4.2.2.1 Recognize that producers use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.</i></p> <p><i>7.4.2.2.2 Describe the roles and relationships among producers, consumers and decomposers in changing energy from one form to another in a food web within an ecosystem.</i></p>
4 weeks	Climate and Weather	<p><i>8.3.2.2.2 Analyze changes in wind direction, temperature, humidity and air pressure and relate them to fronts and pressure systems.</i></p> <p><i>8.3.2.3.2 Describe how the water cycle distributes materials and purifies water.</i></p> <p><i>8.3.2.2.1 Describe how the composition and structure of the Earth's atmosphere affects energy absorption, climate, and the distribution of particulates and gases.</i></p>

III. GRADING:

In order to promote mastery of the MN Science Standards and MYP criteria students will be receiving scores on daily work and summative assessments. **Summative assessments make up 100% of each student's final grade!!** Daily work (formative assessments) are critical and provide students practice and feedback for the summative assessment. Formative work will be scored using a one point scale: 1 (exceeds expectations), 0.5 (meets expectations) or 0 (below expectations)

The school year at Highland Park Middle School is divided into four quarters with a mid-term progress report and a final grade report for each quarter. Student achievement on summative assessments will be based on the MYP criteria below. **Each criterion will be assessed a minimum of two times per year.**

MYP Level	Percentage on an 8 point scale	Letter Grade Translation
8 7	100% 87%	A
6 5	75% 62%	B
4 3	50% 37%	C
2	25%	D
1 0	12% 0%	N

MYP Criteria:

(Criterion A) Knowledge and Understanding of Science- Students develop scientific knowledge (facts, ideas, concepts, processes, laws, principles, models and theories) and apply it to solve problems and express scientifically supported judgments.

(Criterion B) Inquiring and Designing- Students design, analyze and perform scientific investigations.

(Criterion C) Processing and Evaluating- Students collect, process and interpret qualitative and/or quantitative data, and explain conclusions that have been appropriately reached.

(Criterion D) Reflecting on the impacts of science- Students gain global understanding of science by evaluating the implications of scientific developments and their applications to a specific problem or issue.

IV. CONTENT-BASED INSTRUCTIONAL PRACTICES:

This course uses inquiry activities in an experimental setting, with strong emphasis on the content and the process of science. Students will explore scientific concepts through group and individual work. Activities may include hands-on activities, modeling, projects, scientific investigations, real-world observations, data collection, data analysis and presentations.

V. INSTRUCTIONAL MATERIALS:

1. Science Explorer: Life Science, Pearson/Prentice Hall, 2009
2. Concepts and Challenges Life, Earth & Physical Science, Pearson /AGS 2009

VI. MATERIALS NEEDED FOR CLASS:

You will need a notebook, folder, writing utensil and your iPad on a regular basis. Students will also need all materials required for their science fair project. Students will be notified of any other needed materials well in advance. A \$10 donation is used for science fair display boards, board materials, dissection specimens and tools, and consumable lab materials.