**Warren County School District**

**PLANNED INSTRUCTION**

# COURSE DESCRIPTION

**Course Title:** Science 6

**Course Number:** 00303

**Course Prerequisites:** none

**Course Description:** (Include "no final exam" or "final exam required") grammatical/mechanical changes
This interactive science course leads students from the center of the earth to the universe as a whole. In the *Earth's Structure* students will explore different types of minerals and rocks, the structure of the earth, and how plate tectonics influence earthquakes, and volcanoes. In the *Earth's Surface* students will learn about mapping systems, the geologic time scale, and how erosion and deposition affect the mineral components of the earth. In *Water and the Atmosphere* students will explore aquatic and marine environments, as well as how the water component of planet Earth determines our temperature and weather patterns. Students will also explore how climate changes could affect life on earth. All of the abiotic elements to the earth combine to create an environment that can sustain life. In *Ecology and the Environment* students will study populations and communities and the divisions of the earth into regions of study called Biomes. Students will be introduced to environmental and natural resource issues as they affect, and are affected by the human population. Lastly, students will look at the earth as part of a larger system in the universe in *Astronomy and Space Science*. Students will learn how the sun and moon affect the earth as well as our solar system and the stars and galaxies that lay beyond it. Students will learn how scientists study such large and distant expanses of our universe.

**Suggested Grade Level:** grade 6

**Length of Course:** _____ One Semester x Two Semesters _____Other (Describe)

**Units of Credit:** 1 (Insert ***NONE*** if appropriate.)

**PDE *Certification and Staffing Policies and Guidelines (CSPG)* Required Teacher Certification(s)** (Insert certificate title and CSPG#) Certifications may vary as per PDE regulations

**Certification verified by WCSD Human Resources Department:**
x Yes _____ No

**Board Approved Textbooks, Software, Materials:**
**Title:** Earth's Structure
**Publisher:** Pearson
**ISBN #:** 0-13-373487-0
**Copyright Date: 2011**
**Date of WCSD Board Approval:** 4/12/10

**Title:** Water and the Atmosphere
**Publisher:** Pearson
**ISBN #:** 0-13-373519-2
**Copyright Date: 2011**
**Date of WCSD Board Approval:** 4/12/10

**Title:** Ecology and Environment
**Publisher:** Pearson
**ISBN #:** 0-13-373488-9
**Copyright Date: 2011**
**Date of WCSD Board Approval:** 4/12/10

**BOARD APPROVAL:**

**Date Written:** January 2011

**Date Approved:** February 14, 2011

**Implementation Year:** 2010-2011

**Suggested Supplemental Materials:** (List or insert **None**)

## Course Standards

**PA Academic Standards:** (List by Number and Description)
Unifying Themes: 3.1.7A, 3.1.7.B, 3.1.7.C, 3.1.7.D, 3.1.7.E
Inquiry and Design: 3.2.7.A, 3.2.7.B, 3.2.7.C, 3.2.7.D,
Biological Science 3.3.7.A
Physical Science, Chemistry and Physics 3.4.7.D
Earth Sciences 3.5.7.A, 3.5.7.C, 3.5.7.D
Watersheds and Wetlands 4.1.7.A, 4.1.7.C, 4.1.7.D
Agriculture and Society 4.4.7.B

**WCSD Academic Standards:** (List or **None**)
None

**Industry or Other Standards:** (List, Identify Source or **None**)
Common Core Standards for Literacy in History/Social Studies, Science and Technical Subjects

Beginning the 2010-2011 school year, we will begin implementing the Common Core Standards. This is a three-year implementation plan. By 2012-2013 we should be using the common core standards exclusively.

| **Reading Standards for Literacy in Science and Technical Subjects Grades 6-8** |
|---|
| Key Ideas and Details |
| 1. Cite specific textual evidence to support analysis of science and technical texts. |
| 2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. |
| 3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. |
| Craft and Structure |
| 4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics. |
| 5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic. |
| 6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text. |
| Integration of Knowledge and Ideas |
| 7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). |
| 8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. |
| 9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. |
| Range of Reading and Level of Text Complexity |
| 10. By the end of grade 8, read and comprehend science/ technical texts in the grades 6-8 text complexity band independently and proficiently. |

# Common Core Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects Grades 6 - 8

## Text Types and Purposes

1. Write arguments focused on *discipline-specific* content.

   a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.

   b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrates an understanding of the topic or text, using credible sources.

   c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.

   d. Establish and maintain a formal style.

   e. Provide a concluding statement or section that follows from and supports the argument presented.

2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

   a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.

   b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

   c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.

   d. Use precise language and domain-specific vocabulary to inform about or explain the topic.

   f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

3. The standards require that students be able to incorporate narrative elements

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|---|
| effectively into arguments and informative/ explanatory texts. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step<br><br>procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results. |
| Production and Distribution of Writing |
| 4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. |
| 5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed. |
| 6. Use technology, including the internet, to produce and publish writing and present the relationships between information ad ideas clearly and efficiently. |
| Research to Build and Present Knowledge |
| 7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. |
| 8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. |
| 9. Draw evidence from informational texts to support analysis, reflection, and research. |
| Range of Writing |
| 10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. |

**WCSD EXPECTATIONS**

WCSD K-12 Expectations for instruction in writing, reading, mathematics and, technology have been developed and revised annually. The teacher will integrate all WCSD Expectations into this planned instruction.

**SPECIAL EDUCATION AND GIFTED REQUIREMENTS**

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).

## SPECIFIC EDUCATIONAL OBJECTIVES/CORRESPONDING STANDARDS AND ELIGIBLE CONTENT WHERE APPLICABLE

**PA Standard: 3.1 Unifying Themes**

| | Performance Indicators | 1 | 2 | Assessment |
|---|---|---|---|---|
| | 3.1.7.A Explain the parts of a simple system and their relationship to each other. | | | |
| | 3.1.7.B Describe the use of models as an application of scientific or technological concepts. | | | |
| | 3.1.7.C Identify patterns as repeated processes or recurring elements in science and technology | | | |
| | 3.1.7.D Explain scale as a way of relating concepts and ideas to one another by some measure | | | |
| | 3.1.7.E Identify change as a variable in describing natural and physical systems. | | | |

**PA Standard: 3.2 Inquiry and Design**

| | Performance Indicators | 1 | 2 | Assessment |
|---|---|---|---|---|
| | 3.2.7.A Explain and apply scientific and technological knowledge | | | |
| | 3.2.7.B Apply process knowledge to make and interpret observations. | | | |
| | 3.2.7.C Identify and use the elements of scientific inquiry to solve problems. | | | |
| | 3.2.7.D Know and use the technological design process to solve problems. | | | |

**PA Standard: 3.3 Biological Sciences**

X – performance assessed during that semester

| | Performance Indicators | 1 | 2 | Assessment |
|---|---|---|---|---|
| | 3.3.7.A Describe the similarities and differences that characterize diverse living things. | | | |

**PA Standard: 3.4 Physical Science, Chemistry and Physics**

X – performance assessed during that semester

| | Performance Indicators | 1 | 2 | Assessment |
|---|---|---|---|---|
| | 3.4.7.D Describe essential ideas about the composition and structure of the universe and the earth's place in it. | | | |

**PA Standard: 3.5 Earth Sciences**

X – performance assessed during that semester

| | Performance Indicators | 1 | 2 | Assessment |
|---|---|---|---|---|
| | 3.5.7.A Describe earth features and processes. | | | |
| | 3.5.7.B Recognize earth resources and how they affect | | | |

| | | | | |
|---|---|---|---|---|
| | everyday life. | | | |
| | 3.5.7.C Describe basic elements of meteorology. | | | |
| | 3.5.7.D Explain the behavior and impact of the earth's water systems. | | | |

**PA Standard: 4.1 Watersheds and Wetlands**

X – performance assessed during that semester

| | Performance Indicators | 1 | 2 | Assessment |
|---|---|---|---|---|
| | 4.1.7.A Explain the role of the water cycle within a watershed. | | | |
| | 4.1.7.C Explain the effects of water on the life or organisms in a watershed. | | | |
| | 4.1.7.D Explain and describe characteristics of a wetland. | | | |

**PA Standard: 4.4 Agriculture and Society**

X – performance assessed during that semester

| | Performance Indicators | 1 | 2 | Assessment |
|---|---|---|---|---|
| | 4.4.7.B Investigate how agricultural science has recognized the various soil types found in Pennsylvania. | | | |

## WCSD EXPECTATIONS

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## SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).

## ASSESSMENTS

**PSSA Assessment Anchors Addressed**: The teacher must be knowledgeable of the PDE Assessment Anchors and/or Eligible Content and incorporate them into this planned instruction. Current assessment anchors can be found at pde@state.pa.us.

**Formative Assessments:** The teacher will develop and use standards-based assessments throughout the course.

**Portfolio Assessment:** _____ Yes __X__ No

**District-wide Final Examination Required:** _____ Yes __X__ No

**Course Challenge Assessment** (Describe):

## REQUIRED COURSE SEQUENCE AND TIMELINE

(Content must be tied to objectives)

| Content Sequence | Dates |
|---|---|

Earth's Structure (12 weeks)
Introducing Earth
- The Earth System
- Earth's Interior
- Convection and the Mantle

Minerals and Rocks
- Properties of Minerals
- Classifying Rocks
- Igneous Rocks
- Sedimentary Rocks
- Metamorphic Rocks
- The Rock Cycle

Plate Tectonics
- Drifting Continents
- Sea-Floor Spreading
- The Theory of Plate Tectonics

Earthquakes
- Forces in Earth's Crust
- Earthquakes and Seismic Waves
- Monitoring Earthquakes

Volcanoes
- Volcanoes and Plate Tectonics
- Volcanic Eruptions
- Volcanic Landforms

Water and the Atmosphere (12 weeks)
Fresh Water
- Water on Earth
- Surface Water
- Water Underground
- Wetland Environments

The Oceans
- Exploring the Ocean
- Wave Action
- Currents and Climate
- Ocean Habitats

The Atmosphere
- The Air Around You
- Air Pressure
- Layers of the Atmosphere
- Energy in Earth's Atmosphere
- Heat Transfer
- Winds

Weather

Water in the Atmosphere
Clouds
Precipitation
Air Masses
Storms
Predicting the Weather

Climate and Climate Change
What Causes Climate?
Climate Regions
Changes in Climate
Human Activities and Climate Change

Ecology and the Environment (12 weeks)

Populations and Communities
Living Things and the Environment
Populations
Interactions Among Living Things
Changes in Communities

Ecosystems and Biomes
Energy Flow in Ecosystems
Cycles of Matter
Biomes
Aquatic Ecosystems
Biogeography

Resources and Living Things
Introduction to Environmental Issues
Introduction to Natural Resources
Human Population Growth
Forests and Fisheries
Biodiversity

Land, Air, and Water Resources
Conserving Land and Soil
Waste Disposal and Recycling
Air Pollution and Solutions
Water Pollution and Solutions
Ocean Resources

Energy Resources
Fossil Fuels
Alternative Sources of Energy
Energy Use and Conservation

**Objectives:**

- Identify and describe the main components of the Earth system.
- Summarize the effects of constructive and destructive forces.
- Explain how minerals are identified, formed, located and used.
- List the characteristics used to identify rocks, and identify the three major groups of rocks.
- Explain the theory of plate tectonics and how it effects the Earth's surface, including earthquakes and volcanoes.
- Identify the needs that must be met by an organism's surroundings

- Describe the levels of organization within an ecosystem.
- Describe how populations change in size.
- Explain how adaptations help an organism survive.
- Describe the biotic and abiotic forces that shape an ecosystem.
- Explain how energy moves through an ecosystem.
- Define and describe the major ecological cycles on Earth.
- Describe the six major biomes found on Earth as well as the aquatic ecosystems.
- Discuss current environmental issues.
- Describe resources may be managed as renewable resources.
- Explain limited resources and how they can be conserved.
- Identify ways that human activity threatens and protects biodiversity.
- Describe how various types of pollution can be reduced.
- Identify and describe various renewable and nonrenewable sources of energy.
- Describe the composition of the atmosphere, and its properties.
- Explain how energy reaches the earth, how it is transferred and the forms it takes on Earth.
- Explain how air masses move and create weather in many different forms.
- Explain how weather forecasters use observations, data, and technology to predict the weather.
- Describe what can be learned from information shown on weather maps.
- Identify factors that influence weather and climate

**WRITING TEAM:** Sally Beckerink, Diane Finley, Susan Howe, Stephanie Massa, Rhonda Thompson.

**WCSD STUDENT DATA SYSTEM INFORMATION**

1. Is there a required final examination? _____ Yes __X__ No
2. Does this course issue a mark/grade for the report card?

   __X__Yes _____ No
3. Does this course issue a Pass/Fail mark? _____Yes __X__ No
4. Is the course mark/grade part of the GPA calculation?

   __X__ Yes _____ No
5. Is the course eligible for Honor Roll calculation? __X__ Yes _____ No
6. What is the academic weight of the course?

   _____ No weight/Non credit X Standard weight

   _____ Enhanced weight (Describe)