

## WARREN COUNTY SCHOOL DISTRICT

### PLANNED INSTRUCTION

#### **COURSE DESCRIPTION**

**Course Title:** Science 6

**Course Number:** 00303

**Course Prerequisites:** None

**Course Description:** In this sixth-grade general science course, students develop understanding of a wide range of topics that build upon science concepts from elementary school through more advanced content, practice, and crosscutting themes. Through engaging experiments, hands-on activities, and interactive discussions students will explore a diverse range of topics. These include thermal energy, weather, climate, & water cycling, plate tectonics & rock cycling, natural hazards, and cells & systems. Science 6 also includes the required middle level band Meaningful Watershed Educational Experiences (MWEE) that allows for student action and voice. The performance expectations in Science 6 blend core ideas with scientific and engineering practices and crosscutting concepts to support students in developing usable knowledge across the science disciplines. Standards from multiple branches of science and areas of the STEELS standards are integrated to ensure a cohesive and integrated science experience, aligning with the three-dimensional design of the standards. District assessments are required.

**Suggested Grade Level:** Grade 6

**Length of Course:** Two Semesters

**Units of Credit:** 1

**PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:**

CSPG 32 Biology, CSPG 34 Chemistry, CSPG 40 Earth and Space Science, CSPG 41 Elementary Education K – 6, CSPG 45 Environmental Science, CSPG 46 General Science, CSPG 54 Middle Level Science, CSPG 56 Physics, CSPG 70 Grades 4 – 8 (3100-05)

To find the CSPG information, go to [CSPG](#)

**Certification verified by the WCSD Human Resources Department:** ☒ Yes ☐ No

#### **WCSD STUDENT DATA SYSTEM INFORMATION**

**Course Level:** Academic

**Mark Types:** Check all that apply.

☒ F – Final Average ☒ MP – Marking Period ☒ EXM – Final Exam

**GPA Type:** ☐ GPAEL-GPA Elementary ☒ GPAML-GPA for Middle Level ☐ NHS-National Honor Society  
☐ UGPA-Non-Weighted Grade Point Average ☐ GPA-Weighted Grade Point Average

**State Course Code:** 03236

To find the State Course Code, go to [State Course Code](#), download the Excel file for SCED, click on SCED 6.0 tab, and choose the correct code that corresponds with the course.

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#### **TEXTBOOKS AND SUPPLEMENTAL MATERIALS**

##### **Board Approved Textbooks, Software, and Materials:**

**Title:** OpenSciEd  
**Publisher:** OpenSciEd  
**ISBN #:** NA  
**Copyright Date:** NA  
**WCSD Board Approval Date:** 5/8/2023

**Supplemental Materials:** OpenSciEd kits and digital platform through Carolina Biological and MWEE Equipment, Content specific videos/video clips from OpenSciEd, Carolina Biological, Swank, YouTube, PBS or other WCSD approved source.

#### **Curriculum Document**

##### **WCSD Board Approval:**

**Date Finalized:** 12/18/2023  
**Date Approved:** 6/10/2024  
**Implementation Year:** 2024-2025

#### **SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS**

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

**SCOPE AND SEQUENCE OF CONTENT AND CONCEPTS**

**Marking Period 1**

- Meaningful Watershed Education Experience
  - o Local Waterway Testing
  - o Macroinvertebrate Investigation
  - o Riverine Survey
  - o Action Plan Development
- Thermal Energy
  - o Structure and Property of Matter
  - o Definitions of Energy
  - o Conservation of Energy and Energy Transfer
  - o Wave Properties
  - o Developing Possible Solutions

**Marking Period 2**

- Weather and Climate
  - o The Roles of Water in Earth's Surface Processes
  - o Weather and Climate
  - o Structure and Properties of Matter
  - o Thermal Energy
  - o Electromagnetic Radiation
- Meaningful Watershed Education Experience
  - o MWEE Action Plan Development – On going and student led

**Marking Period 3**

- Plate Tectonics and Rock Cycling
  - o History of Planet Earth
  - o Earth's Materials and Systems
  - o Plate Tectonics and Large-Scale Interactions
  - o The Roles of Water on Earth's Surface Processes
- Natural Hazards
  - o Mapping History of Natural Hazards
  - o Design Solutions and Technologies to Mitigate the Effects
- Meaningful Watershed Education Experience
  - o Action Plan Development – On going and student led

**WARREN COUNTY SCHOOL DISTRICT****PLANNED INSTRUCTION****Marking Period 4**

- Natural Hazards
  - o Mapping History of Natural Hazards
  - o Design Solutions and Technologies to Mitigate the Effects
- Cells & Systems
  - o Structure and Function
  - o Information Processing
- Meaningful Watershed Education Experience
  - o Action Plan Implementation – Completion of MWEE

**Standards/Eligible Content and Skills**

<b>Performance Indicator</b>	<b>PA Core Standard and/or Eligible Content</b>	<b>Marking Period Taught</b>
Gather, read, and synthesize information from multiple sources to investigate how Pennsylvania environmental issues affect Pennsylvania's human and natural systems.	3.4.6-8.D	MP1
Collect, analyze, and interpret environmental data to describe a local environment.	3.4.6-8.E	MP1
Obtain and communicate information on how integrated pest management could improve indoor and outdoor environments.	3.4.6-8.F	MP1
Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.	3.4.6-8.G	MP 1
Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	3.4.6-8.H	MP1 MP 2
Construct an explanation that describes regional environmental conditions and their implications on environmental justice and social equity.	3.4.6-8.I	MP 1
Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.	3.1.6-8.I	MP 1 MP 4
Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	3.1.6-8.L	MP1 MP3 M4
Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	3.1.6-8.U	MP1 MP2
Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	3.2.6-8.B	MP 1
Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	3.2.6-8.M	MP 1

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<b>Performance Indicator</b>	<b>PA Core Standard and/or Eligible Content</b>	<b>Marking Period Taught</b>
Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	3.2.6-8.N	MP 1
Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.	3.2.6-8.O	MP 1
Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	3.2.6-8.R	MP 1
Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	3.5.6-8.M (ETS)	MP 1
Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	3.2.6-8.B	MP2
Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	3.3.6-8.H	MP2
Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	3.3.6-8.J	MP2
Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	3.3.6-8.I	MP2
Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.	3.3.6-8.D	MP3
Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	3.3.6-8.E	MP3
Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	3.3.6-8.G	MP3
Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	3.3.6-8.F	MP3
Integrate qualitative scientific and technical information to support the claim that digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information.	3.2.6-8.S	MP3 MP4
Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	3.3.6-8.L	MP3 MP4
Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	3.5.6-8.W	MP3 MP4

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<b>Performance Indicator</b>	<b>PA Core Standard and/or Eligible Content</b>	<b>Marking Period Taught</b>
Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	3.5.6-8.P	MP3 MP4
Conduct an investigation to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells.	3.1.6-8.A	MP4
Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	3.1.6-8.B	MP4
Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	3.1.6-8.C	MP 4
Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.	3.1.6-8.H	MP4
Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	3.4.6-8.H	MP4
Cite specific textual evidence to support analysis of science and technical texts.	CC.3.5.6-8.A	MP1 MP2 MP3 MP4
Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	CC.3.5.6-8.B	MP1 MP2 MP3 MP4
Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	CC.3.5.6-8.C	MP1 MP2 MP3 MP4
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.	CC.3.5.6-8.D	MP1 MP2 MP3 MP4
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.	CC.3.5.6-8.E	MP1 MP2 MP3 MP4
Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	CC.3.5.6-8.F	MP1 MP2 MP3 MP4
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).	CC.3.5.6-8.G	MP1 MP2 MP3 MP4

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<b>Performance Indicator</b>	<b>PA Core Standard and/or Eligible Content</b>	<b>Marking Period Taught</b>
Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	CC.3.5.6-8.H	MP1 MP2 MP3 MP4
Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	CC.3.5.6-8.I	MP1 MP2 MP3 MP4
By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.	CC.3.5.6-8.J	MP1 MP2 MP3 MP4
Write arguments focused on discipline-specific content. • 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. • Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. • Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. • Establish and maintain a formal style. • Provide a concluding statement or section that follows from and supports the argument presented.	CC.3.6.6-8.A	MP1 MP2 MP3 MP4
Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. • 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. • Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. • Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. • Use precise language and domain-specific vocabulary to inform about or explain the topic. • Establish and maintain a formal style and objective tone. • Provide a concluding statement or section that follows from and supports the information or explanation presented.	CC.3.6.6-8.B	MP1 MP2 MP3 MP4
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	CC.3.6.6-8.C	MP1 MP2 MP3 MP4

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Performance Indicator	PA Core Standard and/or Eligible Content	Marking Period Taught
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.	CC.3.6.6-8.D	MP1 MP2 MP3 MP4
Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	CC.3.6.6-8.E	MP1 MP2 MP3 MP4
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.	CC.3.6.6-8.F	MP1 MP2 MP3 MP4
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.	CC.3.6.6-8.G	MP1 MP2 MP3 MP4
Draw evidence from informational texts to support analysis, reflection, and research.	CC.3.6.6-8.H	MP1 MP2 MP3 MP4
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.	CC.3.6.6-8.I	MP1 MP2 MP3 MP4

## **ASSESSMENTS**

**PDE Academic Standards:** The teacher must be knowledgeable of the PDE STEELS Standards as well as the Reading and Writing in Science and Technology Standards and incorporate them regularly into planned instruction.

**Formative Assessments:** The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

**Effective formative assessments for this course include:** Bell ringers, exit tickets, notice and wonderings, initial models, driving question boards, progress checks, quizzes, lab assignments, practice tests, writing prompts, teacher questioning, class discussions, individual and team-based projects.



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**Summative Assessments:** The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

**Effective summative assessments for this course include:** Lab reports, tests, district marking period assessments, CER Responses, consensus models, MWEE Activities and Projects.