

## WARREN COUNTY SCHOOL DISTRICT

### PLANNED INSTRUCTION

#### **COURSE DESCRIPTION**

**Course Title:** Science 6

**Course Number:** 00303

**Course Prerequisites:** None

**Course Description:** Students in Science 6 develop understanding of a wide range of topics in Earth and space science (ESS) that build upon science concepts from elementary school through more advanced content, practice, and crosscutting themes. There are six ESS standard topics in middle school: Space Systems, History of Earth, Earth's Interior Systems, Earth's Surface Systems, Weather and Climate, and Human Impacts. Science 6 also includes the required middle level band Meaningful Watershed Educational Experience (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 useable knowledge across the science disciplines.

**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

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:** 6/12/2023

**Supplemental Materials:** OpenSciEd kits and digital platform through Carolina Biological and MWEE Equipment

#### **Curriculum Document**

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

**Date Finalized:** 5/22/2023  
**Date Approved:** 6/12/2023  
**Implementation Year:** 2023-2024

#### **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
  - Local Waterway Testing
  - Macroinvertebrate Investigation
  - Riverine Survey
  - Action Plan Development
- Weather and Climate
  - The Roles of Water in Earth's Surface Processes
  - Weather and Climate
  - Structure and Properties of Matter
  - Thermal Energy
  - Electromagnetic Radiation

**Marking Period 2**

- Weather and Climate
  - The Roles of Water in Earth's Surface Processes
  - Weather and Climate
  - Structure and Properties of Matter
  - Thermal Energy
  - Electromagnetic Radiation
- Plate Tectonics and Rock Cycling
  - History of Planet Earth
  - Earth's Materials and Systems
  - Plate Tectonics and Large-Scale Interactions
  - The Roles of Water on Earth's Surface Processes
- Meaningful Watershed Education Experience
  - MWEE Action Plan Development – On going and student led
- Natural Hazards
  - Mapping History of Natural Hazards
  - Design Solutions and Technologies to Mitigate the Effects

**Marking Period 3**

- Natural Hazards
  - Mapping History of Natural Hazards
  - Design Solutions and Technologies to Mitigate the Effects
- Earth's Resources and Human Impact
  - Distribution of Earth's Minerals, Energy, and Ground Water
  - Global Warming

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- Evaluate Design Solutions
- Meaningful Watershed Education Experience
  - Action Plan Development – On going and student led

**Marking Period 4**

- Earth's Resources and Human Impact
  - Distribution of Earth's Minerals, Energy, and Ground Water
  - Global Warming
  - Evaluate Design Solutions
- Earth in Space
  - The Universe and Its Stars
  - Earth and the Solar System
  - Gravitational Force
  - Electromagnetic Radiation
- Meaningful Watershed Education Experience
  - 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
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	MP1 MP 2
Model the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle.	3.3.6-8.H	MP1 MP 2

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<b>Performance Indicator</b>	<b>PA Core Standard and/or Eligible Content</b>	<b>Marking Period Taught</b>
Develop a model to describe how watersheds and wetlands function as systems, including the roles and functions they serve.	3.4.6-8.C	MP1 MP 2
Collect data to serve as the basis for evidence for how the motions and complex interactions of air masses result in changes in weather conditions.	3.3.6-8.J	MP1 MP 2
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	MP1 MP 2
Develop a model that predicts and describes changes in particle motion that could include molecules or inert atoms or pure substances.	3.2.6-8.B	MP1 MP 2
Use cause-and-effect relationships to predict changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed in natural or designed systems.	3.2.6-8.B	MP1 MP 2
Construct a scientific explanation based on valid and reliable evidence from rock strata obtained from sources (including the students' own experiments).	3.3.6-8.D	MP2
Construct a scientific explanation based on rock strata and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	3.3.6-8.D	MP2
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	MP2
Construct a scientific explanation for how geoscience processes have changed Earth's surface at varying time and spatial scales based on valid and reliable evidence obtained from sources (including the students' own experiments).	3.3.6-8.E	MP2
Construct a scientific explanation for how geoscience processes have changed Earth's surface at varying time and spatial scales based on the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.	3.3.6-8.E	MP2
Collect evidence about processes that change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges).	3.3.6-8.E	MP2
Collect evidence about processes that change Earth's surface at time and spatial scales that can be small (such as rapid landslides or microscopic geochemical reactions), and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events.	3.3.6-8.E	MP2
Analyze and interpret data such as distributions of fossils and rocks, continental shapes, and sea floor structures to provide evidence of past plate motions.	3.3.6-8.G	MP2

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<b>Performance Indicator</b>	<b>PA Core Standard and/or Eligible Content</b>	<b>Marking Period Taught</b>
Analyze how science findings have been revised and/or reinterpreted based on new evidence about past plate motions.	3.3.6-8.G	MP2
Analyze and interpret data on natural hazards to determine similarities and differences and to distinguish between correlation and causation.	3.3.6-8.L	MP2 MP 3
Integrate qualitative scientific and technical information in written text with that contained in media and visual displays to clarify claims that digitized signals are a more reliable way to encode and transmit information than analog signals are.	3.2.6-8.S	MP2 MP 3
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 (ETS)	MP2 MP 3
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 (ETS)	MP2 MP 3
Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	3.4.6-8.H	MP3
All human activities draw on Earth's land, ocean, atmosphere, and biosphere resources and have both short and long-term consequences, positive as well as negative, for the health of people and the natural environment.	3.3.6-8.K	MP3 MP4
Obtain evidence from sources, which must include the student's own experiments.	3.3.6-8.K	MP3 MP4
Construct a scientific explanation based on the assumption that theories and laws that describe the current geosciences process operates today as they did in the past and will continue to do so in the future.	3.3.6-8.K	MP3 MP4
Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	3.3.6-8.M	MP3 MP4
Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.	3.3.6-8.N	MP3 MP4
Ask questions to identify and clarify a variety of evidence for an argument about the factors that have caused the rise in global temperatures over the past century.	3.3.6-8.O	MP3 MP4
Ask questions to clarify human activities and natural processes that are major factors in the current rise in Earth's mean surface temperature.	3.3.6-8.O	MP3 MP4
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 (ETS)	MP3 MP4
Develop and use a physical, graphical, or conceptual model to describe patterns in the apparent motion of the sun, moon, and stars in the sky.	3.3.6-8.A	MP4

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Develop and use models to explain the relationship between the tilt of Earth's axis and seasons.	3.3.6-8.B	MP4
Analyze and interpret data to determine scale properties of objects in the solar system.	3.3.6-8.C	MP 4
Analyze and interpret data to determine similarities and differences among objects in the solar system.	3.3.6-8.C	MP4
Construct and present oral and written arguments supported by empirical evidence and scientific reasoning to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	3.2.6-8.J	MP4
Use models to represent the gravitational interactions between two masses.	3.2.6-8.J	MP4
Develop and use models to describe the movement of waves in various materials.	3.2.6-8.R	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
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



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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, Assessment Anchors, and Eligible Content:** The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content 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, worksheets, quizzes, lab assignments, practice tests, writing prompts, teacher questioning, class discussions, individual and team based projects, MWEE

**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, MWEE