

WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Science 7

Course Number: 00305

Course Prerequisites: None

Course Description: Students in this seventh-grade general science course continue to develop an understanding of key concepts to help them make sense of the world around them. Through engaging experiments, hands-on activities, and interactive discussions students will explore a diverse range of topics. These include chemical reactions & matter, chemical reactions & energy, metabolic reactions, matter cycling & photosynthesis, ecosystem dynamics, and Earth's resources and human impact. The six units in this general science course blend core ideas with science and engineering practices, incorporating crosscutting concepts. This approach supports students in developing usable knowledge across various 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 7

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 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: 03237

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, 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

- Chemical Reactions and Matter
 - Structure and Properties of Matter
 - Chemical Reactions
 - Information Processing
- Chemical Reactions and Energy
 - Chemical Reactions
 - Developing Possible Solutions
 - Optimizing the Design Solution

Marking Period 2

- Chemical Reactions and Energy
 - Chemical Reactions
 - Developing Possible Solutions
 - Optimizing the Design Solution
- Metabolic Reactions
 - Structure and Function
 - Growth and Development
 - Organization of Matter and Energy Flow in Organisms
 - Energy in Processes and Everyday Life

Marking Period 3

- Matter Cycling and Photosynthesis
 - Organization for Matter and Energy Flow in Organisms
 - Cycle of Matter and Energy Transfer in Ecosystems
 - Structure and Properties of Matter
 - Chemical Reactions
 - Energy in Chemical Processes and Everyday Life
- Ecosystem Dynamics
 - Interdependent Relationships in Ecosystems
 - Cycles of Matter and Energy Transfer in Ecosystems
 - Ecosystem Dynamics, Functioning, and Resilience
 - Biodiversity and Humans
 - Developing Possible Solutions
 - Human Impacts on Earth Systems

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

- Ecosystem Dynamics
 - Interdependent Relationships in Ecosystems
 - Cycles of Matter and Energy Transfer in Ecosystems
 - Ecosystem Dynamics, Functioning, and Resilience
 - Biodiversity and Humans
 - Developing Possible Solutions
- Human Impacts on Earth Systems
- Earth's Resources and Human Impact
 - Distribution of Earth's Minerals, Energy, and Ground Water
 - Global Warming
 - Evaluate Design Solutions

Standards/Eligible Content and Skills

Performance Indicator	PA Core Standard and/or Eligible Content	Marking Period Taught
Develop models to describe the atomic composition of simple molecules and extended structures.	3.2.6-8.A	MP1
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	3.2.6-8.B	MP1
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	3.2.6-8.E	MP1
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	MP1
Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	3.2.6-8.F	MP1 MP2
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)	MP1 MP2
Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	3.5.6-8.N (ETS)	MP1 MP2
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)	MP1 MP2
Develop models to describe the atomic composition of simple molecules and extended structures.	3.2.6-8.A	MP2

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Performance Indicator	PA Core Standard and/or Eligible Content	Marking Period Taught
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	3.2.6-8.B	MP2
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	MP2
Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	3.1.6-8.G	MP2
Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.	3.1.6-8.E	MP2
Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	3.2.6-8.C	MP3
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	MP3
Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.	3.1.6-8.F	MP3
Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	3.1.6-8.K	MP3
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	MP3 MP4
Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	3.1.6-8.L	MP3 MP4
Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	3.1.6-8.J	MP3 MP4
Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	3.1.6-8.U	MP3 MP4
Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	3.3.6-8.C	MP3 MP4
Develop a model to describe how agricultural and food systems function, including the sustainable use of natural resources and the production, processing, and management of food, fiber, and energy.	3.4.6-8.A	MP3 MP4
Analyze and interpret data about how different societies (economic and social systems) and cultures use and manage natural resources differently.	3.4.6-8.B	MP3 MP4
Collect, analyze, and interpret environmental data to describe a local environment.	3.4.6-8.E	MP3 MP4
Obtain and communicate information on how integrated pest management could improve indoor and outdoor environments.	3.4.6-8.F	MP3 MP4

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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	MP3 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	MP3 MP4
Construct an explanation that describes regional environmental conditions and their implications on environmental justice and social equity.	3.4.6-8.I	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 (ETS)	MP3 MP4
Construct a scientific explanation based on evidence for how the uneven distributions of Earth’s mineral, energy, and groundwater resources are the result of past and current geoscience processes.	3.3.6-8.K	MP4
Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	3.3.6-8.O	MP4
Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	3.3.6-8.M	MP4
Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.	3.3.6-8.N	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)	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

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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
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

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Performance Indicator	PA Core Standard and/or Eligible Content	Marking Period Taught
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
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.