Pennsylvania
Science, Technology & Engineering and Environmental Literacy & Sustainability Standards (STEEL)

Grade 3

Adopted 2022

Life Science 3.1

Structure and Function

na1. Not applicable at this level. 3.1.3.NA1

Growth and Development of Organisms

A. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. 3.1.3.A

Organization for Matter and Energy Flow in Organisms

na2. Not applicable at this level. 3.1.3.NA2

Information Processing

na3. Not applicable at this level. 3.1.3.NA3

Interdependent Relationships in Ecosystems

na4. Not applicable at this level. 3.1.3.NA4

Cycles of Matter and Energy Transfer in Ecosystems

na5. Not applicable at this level. 3.1.3.NA5

Ecosystem Dynamics, Functioning, and Resilience

na6. Not applicable at this level. 3.1.3.NA6

Social Interactions and Group Behavior

B. Construct an argument that some animals form groups that help members survive. 3.1.3.B

Inheritance of Traits

C. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. 3.1.3.C

Variation of Traits

D. Use evidence to support the explanation that traits can be influenced by the environment. 3.1.3.D

Evidence of Common Ancestry and Diversity

E. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. 3.1.3.E

Natural Selection

F. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. 3.1.3.F

Adaptation

G. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. 3.1.3.G

Biodiversity and Humans

H. Make a claim supported by evidence about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. 3.1.3.H

Physical Science 3.2

Structure and Properties of Matter

na1. Not applicable at this level. 3.2.3.NA1

Chemical Reactions

na2. Not applicable at this level. 3.2.3.NA2

Nuclear Processes

na3. Not applicable at this level. 3.2.3.NA3

Forces and Motion

A. Make and communicate observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion. 3.2.3.A

B. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. 3.2.3.B

Types of Interactions

C. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. 3.2.3.C

D. Define a simple design problem that can be solved by applying scientific ideas about magnets. 3.2.3.D

Definitions of Energy

na4. Not applicable at this level. 3.2.3.NA4

Conservation of Energy and Energy Transfer

na5. Not applicable at this level. 3.2.3.NA5

Relationship Between Energy and Forces

na6. Not applicable at this level. 3.2.3.NA6

Energy in Chemical Processes and Everyday Life

na7. Not applicable at this level. 3.2.3.NA7

Wave Properties

na8. Not applicable at this level. 3.2.3.NA8

Electromagnetic Radiation

na9. Not applicable at this level. 3.2.3.NA9

Information Technologies and Instrumentation

na10. Not applicable at this level. 3.2.3.NA10

Earth and Space Science 3.3

The Universe and Its Stars

na1. Not applicable at this level. 3.3.3.NA1

Earth and the Solar System

na2. Not applicable at this level. 3.3.3.NA2

The History of Planet Earth

na3. Not applicable at this level. 3.3.3.NA3

Earth Materials and Systems

na4. Not applicable at this level. 3.3.3.NA4

Plate Tectonics and Large-Scale System Interactions

na5. Not applicable at this level. 3.3.3.NA5

The Roles of Water in Earth's Surface Processes

na6. Not applicable at this level. 3.3.3.NA6

Weather and Climate

A. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. 3.3.3.A

B. Obtain and combine information to describe climates in different regions of the world. 3.3.3.B

Biogeology

na7. Not applicable at this level. 3.3.3.NA7

Natural Resources

na8. Not applicable at this level. 3.3.3.NA8

Natural Hazards

C. Make a claim supported by evidence about the merit of a design solution that reduces the impacts of a weather-related hazard. 3.3.3.C

Human Impact on Earth Systems

na9. Not applicable at this level. 3.3.3.NA9

Environmental Literacy & Sustainability 3.4

Agricultural Systems

A. Analyze how living organisms, including humans, affect the environment in which they live, and how their environment affects them. 3.4.3-5.A

Environment and Society

B. Make a claim about the environmental and social impacts of design solutions and civic actions, including their own actions. 3.4.3-5.B

Watersheds and Wetlands

C. Examine ways you influence your local environment and community by collecting and displaying data. 3.4.3-5.C

Investigating Environmental Issues

D. Develop a model to demonstrate how local environmental issues are connected to larger local environment and human systems. 3.4.3-5.D

Environmental Experiences

na1. Refer to other standards in this document to build a learning progression. 3.4.3-5.NA1

Evaluating Solutions

E. Construct an argument to support whether action is needed on a selected environmental issue and propose possible solutions. 3.4.3-5.E

Environmental Sustainability

na2. Refer to other standards in this document to build a learning progression. 3.4.3-5.NA2

Environmental Stewardship

F. Critique ways that people depend on and change the environment. 3.4.3-5.F

Environmental Justice

G. Investigate how perspectives over the use of resources and the development of technology have changed over time and resulted in conflict over the development of societies and nations. 3.4.3-5.G

Technology & Engineering 3.5

Applying, Maintaining, and Assessing Technological Products and Systems

A. Use appropriate symbols, numbers, and words to communicate key ideas about technological products and systems. 3.5.3-5.A

B. Examine information to assess the trade-offs to using a product or system. 3.5.3-5.B

C. Follow directions to complete a technological task. 3.5.3-5.C

D. Predict how certain aspects of their daily lives would be different without given technologies. 3.5.3-5.D

E. Explain why responsible use of technology requires sustainable management of resources. 3.5.3-5.E

F. Classify resources used to create technologies as either renewable or nonrenewable. 3.5.3-5.F

G. Describe the helpful and harmful effects of technology. 3.5.3-5.G

H. Determine factors that influence changes in a society's technological systems or infrastructure. 3.5.3-5.H

I. Design solutions by safely using tools, materials, and skills. 3.5.3-5.I

J. Explain how technologies are developed or adapted when individual or societal needs and wants change. 3.5.3-5.J

K. Judge technologies to determine the best one to use to complete a given task or meet a need. 3.5.3-5.K

L. Demonstrate how tools and machines extend human capabilities, such as holding, lifting, carrying, fastening, separating, and computing. 3.5.3-5.L

Design and Design Thinking in Technology and Engineering Education

M. Demonstrate essential skills of the engineering design process. 3.5.3-5.M

N. Identify why a product or system is not working properly. 3.5.3-5.N

O. Describe requirements of designing or making a product or system. 3.5.3-5.O

P. Evaluate the strengths and weaknesses of existing design solutions, including their own solutions. 3.5.3-5.P

Q. Practice successful design skills. 3.5.3-5.Q

R. Apply tools, techniques, and materials in a safe manner as part of the design process. 3.5.3-5.R

S. Illustrate that there are multiple approaches to design. 3.5.3-5.S

T. Apply universal principles and elements of design. 3.5.3-5.T

U. Evaluate designs based on criteria, constraints, and standards. 3.5.3-5.U

V. Interpret how good design improves the human condition. 3.5.3-5.V

Integration of Knowledge, Technologies, and Practices

W. Describe the properties of different materials. 3.5.3-5.W

X. Explain how various relationships can exist between technology and engineering and other content areas. 3.5.3-5.X

Y. Identify the resources needed to get a technical job done, such as people, materials, capital, tools, machines, knowledge, energy, and time 3.5.3-5.Y

Z. Create a new product that improves someone's life. 3.5.3-5.Z

Nature and Characteristics of Technology and Engineering

AA. Create representations of the tools people made, how they cultivated to provide food, made clothing, and built shelters to protect themselves. 3.5.3-5.AA

BB. Illustrate how, when parts of a system are missing, it may not work as planned. 3.5.3-5.BB

CC. Describe how a subsystem is a system that operates as a part of another larger system. 3.5.3-5.CC

DD. Demonstrate how simple technologies are often combined to form more complex systems. 3.5.3-5.DD

EE. Explain how solutions to problems are shaped by economic, political, and cultural forces. 3.5.3-5.EE

FF. Compare how things found in nature differ from things that are human-made, noting differences and similarities in how they are produced and used. 3.5.3-5.FF

GG. Describe the unique relationship between science and technology, and how the natural world can contribute to the human-made world to foster innovation. 3.5.3-5.GG

HH. Differentiate between the role of scientists, engineers, technologists, and others in creating and maintaining technological systems. 3.5.3-5.HH