

# High School: Foundations of Science Literacy

Adopted 2018

## High School - Foundations of Science Literacy

### 1. History of Science and Impacts on Society **FSL.1**

1A. Students will relate the importance of significant historical experiments and their impact on research and development. **FSL.1A**

1. Trace and model the historical development of scientific ideas and theories (e.g., atomic theory, plate tectonics, evolution, genetics, discovery of cells) through the development of a timeline. **FSL.1A.1**
2. Research, analyze, explain, and communicate how scientific enterprise relates to society and classic inventions (e.g., microscope, telescope, computer, and telephone). **FSL.1A.2**
3. Identify and communicate the impact of mathematics and technology in the development of scientific thought and the practice of science (e.g., space exploration, the human genome project, and ocean exploration). **FSL.1A.3**
4. Enrichment: Research, analyze, explain, and communicate the influence of society, including cultural components, on the direction and progress of science and technology (e.g., medical treatments, antibiotic resistance, alternative energy development, and biomimicry). **FSL.1A.4**

---

### 2. Nature of Technology and Engineering **FSL.2**

2A. Students will identify, research, and communicate the development of technology and engineering practices. **FSL.2A**

1. Research and present a technology that was developed through engineering design. Identify its purpose, how it has advanced through alterations in design (e.g., systems that provide homes and businesses with utilities, parking structures, park and recreational structures, and traffic flow), and careers related to its use). **FSL.2A.1**
2. Use an engineering design process to identify a problem within the local community, and propose and develop a possible solution for that problem. **FSL.2A.2**
3. Enrichment: Use a computer simulation to model the impact of proposed solutions on a complex, real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. **FSL.2A.3**

---

### 3. Nature of Science FSL.3

- 3A.** Students will apply science and engineering practices and skills to scientific investigations. FSL.3A
1. Ask questions and conduct research to generate a hypothesis, determine independent/dependent variables, and appropriate controls for scientific investigations and experiments. FSL.3A.1
  2. Analyze data from simple experiments and construct organized models (e.g., data tables, graphs) detailing results from the experiments. FSL.3A.2
  3. Demonstrate the proper use of safety procedures and scientific laboratory equipment. Select and use appropriate tools and instruments to collect qualitative and quantitative data. FSL.3A.3
  4. Use mathematical and computational thinking to (1) use and manipulate appropriate metric units, (2) express relationships between variables for investigations, and (3) compare or combine data from two or more simple data presentations (e.g., order or sum data from a table, categorize data from a table using a scale from another table). FSL.3A.4
  5. Analyze data sets from experiments for patterns and trends and identify any weaknesses in the experimental designs. FSL.3A.5
- 3B.** Students will apply scientific literacy and thinking skills to analyze and interpret data found in various graphics including, but not limited to, those found in sample ACT science passages. FSL.3B
1. Analyze select data from a simple and complex data presentation (e.g., charts, graphs, diagrams). FSL.3B.1
  2. Compare or combine data from two or more simple data presentations (e.g., order or sum data from a table, categorize data from a table using a scale from another table, relationships between data sets). FSL.3B.2
  3. Translate information into a table, graph, or diagram. Determine patterns, trends, and relationships as the values of variables change. FSL.3B.3
  4. Perform a simple interpolation or simple extrapolation using data in a table or graph. Determine and/or use a simple (e.g., linear) mathematical relationship that exists between data. FSL.3B.4
  5. Analyze presented information when given new information (e.g., given a new scenario, how would a given scenario be changed). FSL.3B.5
- 3C.** Students will apply scientific literacy and thinking skills to analyze scientific investigations found in various experimental designs including, but not limited to, those found in sample ACT science passages. FSL.3C
1. Analyze the methods and choice of tools used in simple and complex experimental designs. FSL.3C.1
  2. Determine the validity of scientific questions (e.g., hypothesis) and variables for complex experimental designs. FSL.3C.2
  3. Select and describe an alternate method for testing a hypothesis. FSL.3C.3

4. Predict how modifying the experimental design or adding another measurement in an experimental design will affect results of the experiment. **FSL.3C.4**
  5. Determine which additional trials could be performed in an investigation to enhance the results of an experimental design. **FSL.3C.5**
- 3D.** Students will apply scientific literacy and thinking skills to evaluate theoretical models, inferences, and experimental results found in various experimental designs including, but not limited to, those found in sample ACT science passages. **FSL.3D**
1. Select the hypothesis, prediction, or conclusion that is, or is not, supported by data presentation or pieces of informational text. **FSL.3D.1**
  2. Determine whether given information supports or contradicts a hypothesis or conclusion, and provide support for the reasoning. **FSL.3D.2**
  3. Analyze and interpret data from informational texts and data to (1) reveal patterns and construct meaning (2) support or refute hypotheses, explanations, claims or designs, or (3) evaluate the strength of conclusions. **FSL.3D.3**
  4. Use new information to make a prediction based on a theoretical model. **FSL.3D.4**
  5. Select and explain why a hypothesis, prediction, or conclusion is, or is not, supported by two or more data presentations or theoretical models. **FSL.3D.5**