# Food Science and Safety Next Generation Science Standards Alignment

## Disciplinary Core Ideas

### Life Science

**LS1: From Molecules to Organisms: Structures and Processes**
- LS1.A: Structure and Function
- LS1.B: Growth and Development of Organisms

**LS2: Ecosystems: Interactions, Energy, and Dynamics**
- LS2.A: Interdependent Relationships in Ecosystems
- LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
- LS2.C: Ecosystem Dynamics, Functioning, and Resilience
- LS2.D: Social Interactions and Group Behavior

**LS3: Heredity: Inheritance and Variation of Traits**
- LS3.A: Inheritance of Traits
- LS3.B: Variation of Traits

**LS4: Biological Evolution: Unity and Diversity**
- LS4.B: Natural Selection
- LS4.C: Adaptation
- LS4.D: Biodiversity and Humans

### Earth and Space Science

**ESS1: Earth’s Place in the Universe**
- ESS1.A: The Universe and Its Stars
- ESS1.B: Earth and the Solar System
- ESS1.C: The History of Planet Earth

**ESS2: Earth’s Systems**
- ESS2.A: Earth Materials and Systems
- ESS2.B: Plate Tectonics and Large-Scale System Interactions
- ESS2.C: The Roles of Water in Earth’s Surface Processes
- ESS2.D: Weather and Climate
- ESS2.E: Biogeology

**ESS3: Earth and Human Activity**
- ESS3.A: Natural Resources
- ESS3.B: Natural Hazards
<table>
<thead>
<tr>
<th>Unit 1 – Introduction to Food Science</th>
<th>Unit 2 – Chemistry of Food</th>
<th>Unit 3 – Safety of Our Food</th>
<th>Unit 4 – Food Processing and Preservation</th>
<th>Unit 5 – Food Health and Security</th>
<th>Unit 6 – Product, Preference, and Availability</th>
<th>Unit 7 – Food Product Development</th>
</tr>
</thead>
</table>

- ESS3.C: Human Impacts on Earth Systems
- ESS3.D: Global Climate Change

### Physical Science

**PS1: Matter and Its Interactions**
- PS1.B: Chemical Reactions
- PS1.C: Nuclear Processes

**PS2: Motion and Stability: Forces and Interactions**
- PS2.A: Forces and Motion
- PS2.B: Types of Interactions

**PS3: Energy**
- PS3.A: Definitions of Energy
- PS3.B: Conservation of Energy and Energy Transfer
- PS3.C: Relationship Between Energy and Forces
- PS3.D: Energy in Chemical Processes and Everyday Life

**PS4: Waves and Their Applications in Technologies for Information Transfer**
- PS4.A: Wave Properties
- PS4.B: Electromagnetic Radiation
- PS4.C: Information Technologies and Instrumentation

### Engineering, Technology, and the Application of Science

- ETS1: Engineering Design
- ETS1.A: Defining and Delimiting Engineering Problems
- ETS1.B: Developing Possible Solutions
- ETS1.C: Optimizing the Design Solution

### Science and Engineering Practices

- Asking Questions and Defining Problems
- Developing and Using Models
- Planning and Carrying Out Investigations
- Analyzing and Interpreting Data
- Using Mathematics and Computational Thinking
- Constructing Explanations and Designing Solutions
- Engaging in Argument from Evidence
- Obtaining, Evaluating, and Communicating Information

### Crosscutting Concepts

- Patterns
- Cause and Effect: Mechanism and Prediction
- Scale, Proportion, and Quantity
<table>
<thead>
<tr>
<th>Understandings about the Nature of Science</th>
<th>Unit 1 – Introduction to Food Science</th>
<th>Unit 2 – Chemistry of Food</th>
<th>Unit 3 – Safety of Our Food</th>
<th>Unit 4 – Food Processing and Preservation</th>
<th>Unit 5 – Food Health and Security</th>
<th>Unit 6 – Product, Preference, and Availability</th>
<th>Unit 7 – Food Product Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Systems and System Models</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>• Energy and Matter: Flows, Cycles, and Conservation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>• Structure and Function</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>• Stability and Change</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

- **Understanding about the Nature of Science**
  - Scientific Investigations Use a Variety of Methods
  - Scientific Knowledge is Based on Empirical Evidence
  - Scientific Knowledge is Open to Revision in Light of New Evidence
  - Science Models, Laws, Mechanisms, & Theories Explain Natural Phenomena
  - Science is a Way of Knowing
  - Scientific Knowledge Assumes Order & Consistency in Natural Systems
  - Science is a Human Endeavor
  - Science Addresses Questions About the Natural and Material World.