In grade 1, instructional time should focus on five core ideas:

**ESS**
1. Earth’s Place in the Universe

**LS**
1. From Molecules to Organisms: Structures and Processes
   3. Heredity: Inheritance and Variation of Traits

**PS**
4. Waves and their Applications in Technologies for Information Transfer

**ETS**
1. Engineering Design

In a 1st grade science class you should observe students engaged with at least one science concept and practice:

### 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

### Science Concepts

#### Earth & Space Science (ESS1)
- Observations of the sun, moon, and stars to describe apparent motion
- Analyzing data about seasonal patterns of change (sunrise, sunset, temperature, precipitation, environmental changes)

#### Life Science (LS1, LS3)
- Using evidence to explain the function of animal senses and body parts and the function of plant parts
- Comparing different animals’ behavior that helps offspring survive
- Using observations to compare individuals of the same kind

#### Physical Science (PS4)
- Demonstrating the relationship of vibrating materials and sound
- Experimenting with different materials and light
- Designing and building a device that uses light or sound to send a signal

#### Technology/Engineering (ETS1)
- Gathering information and asking questions that can be solved by developing or improving an object or tool
- Generating and sketching multiple solutions to a problem

**NOTES**

Comments on the Science and Engineering Practices:
- For a list of specific skills, see the Science and Engineering Practices Progression Matrix (www.doe.mass.edu/stem/review.html).
- Practices are skills students are expected to learn and do; standards focus on some but not all skills associated with a practice.
The example below features three Indicators from the CT Common Core of Teaching. These Indicators are just a sampling from the full set of Standards and were chosen because they create a sequence: the educator plans a lesson that sets clear and high expectations, the educator then delivers high quality instruction, and finally the educator uses a variety of assessments to see if students understand the material or if re-teaching is necessary. This example highlights teacher and student behaviors aligned to the three Indicators that you can expect to see in a rigorous 1st-grade science classroom.

### Domain 1: Classroom Environment, Student Engagement and Commitment to Learning

<table>
<thead>
<tr>
<th>What is the teacher doing?</th>
<th>What are the students doing?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Creating culturally responsive lessons that engage and sustain student attention</td>
<td>• Understanding what they will learn in a lesson</td>
</tr>
<tr>
<td>• Supporting inquiry about what evidence is relevant to a scientific question</td>
<td>• Using information from observations to construct an evidence based account for natural phenomena</td>
</tr>
<tr>
<td>• Explaining the difference between a model and the object it represents</td>
<td>• Using scientific language precisely to convey meaning and understanding of concepts</td>
</tr>
<tr>
<td></td>
<td>• Identifying common features and differences between a model and the real object</td>
</tr>
</tbody>
</table>

### Domain 2: Planning for Active Learning

<table>
<thead>
<tr>
<th>What is the teacher doing?</th>
<th>What are the students doing?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Providing opportunities for students to communicate ideas, ask questions, and make their thinking visible in writing and speaking</td>
<td>• Asking questions that can be answered by observations</td>
</tr>
<tr>
<td>• Designing lessons that support successful cooperation in culturally sensitive ways</td>
<td>• Discussing scientific ideas with other students</td>
</tr>
<tr>
<td>• Asking students to describe patterns in observations</td>
<td>• Using counting and numbers to identify and describe patterns</td>
</tr>
<tr>
<td></td>
<td>• Making observations based on prior experiences</td>
</tr>
</tbody>
</table>

### Domain 3: Instruction for Active Learning

<table>
<thead>
<tr>
<th>What is the teacher doing?</th>
<th>What are the students doing?</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Using multiple formative approaches to assess student learning (e.g., classroom conversation, completion of investigation)</td>
<td>• Demonstrating learning in multiple ways (e.g., classroom conversation, completion of investigation)</td>
</tr>
<tr>
<td>• Providing concrete strategies to respond to feedback (e.g., emphasizing importance of recorded observations)</td>
<td>• Engaging in challenging learning tasks regardless of learning needs (e.g., linguistic background, disability, academic gifts)</td>
</tr>
<tr>
<td>• Providing exemplars of work (e.g. historical examples, student work)</td>
<td>• With guidance, planning and conducting an investigation collaboratively with peers</td>
</tr>
</tbody>
</table>

*This document is based on the CT Core Standards Classroom "Look Fors" and the MA Curriculum Guide*