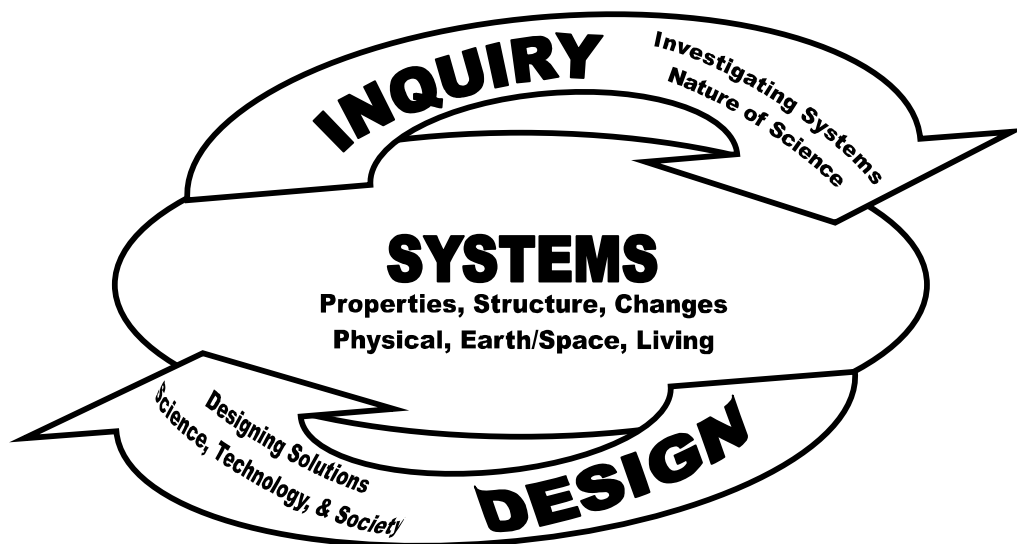




# Essential Academic Learning Requirements

## Science



## Essential Academic Learning Requirements—Science

The science standards for Washington State are called the Essential Academic Learning Requirements (EALRs). These standards describe what all hard working, well taught students should know and be able to do by grade 10. The standards are intended to both inform instruction and curriculum in districts though out the state as well as the design of the measurement of these standards. The measure of these standards is currently accomplished through the Washington Assessment of Student Learning (WASL).

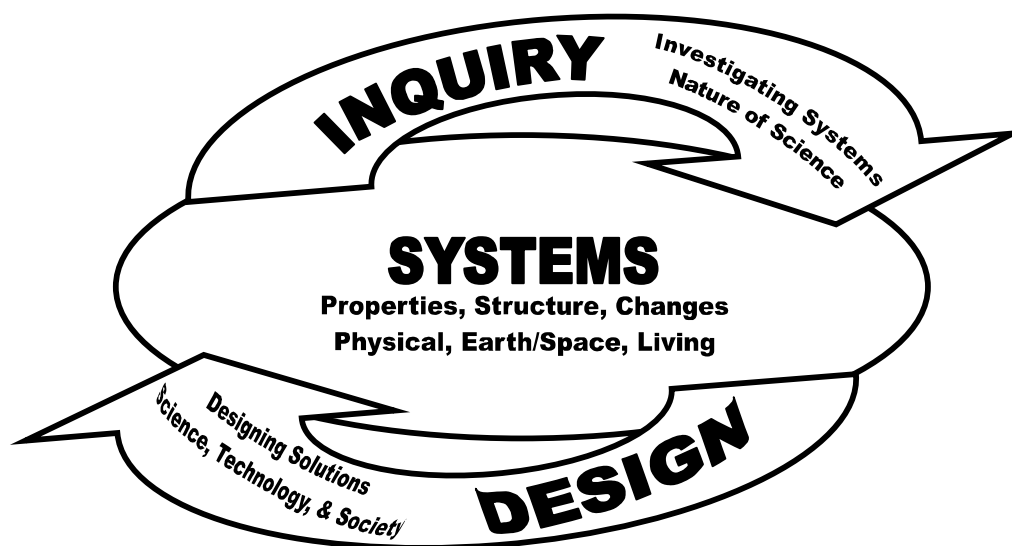
The science standards are organized into three themes: system, inquiry and designing solutions to human problems.

**Systems:** The essential concepts and principles of the physical, earth, space and life sciences are organized in and interwoven by the themes of systems. What science has learned about the universe is described by the properties, structures, and changes in the various systems and subsystems and connections between systems. Students use the systems concepts of inputs, out puts, and transfers of matter, energy, and information to understand how the universe functions.

**Inquiry:** The knowledge and skills necessary to investigate systems are focused on scientific inquiry. Students ask questions and plan valid scientific investigations to answer their questions. In addition, students demonstrate and understand the nature of science inquiry and how inquiry has contributed to the knowledge and understanding of how the universe functions.

**Design:** The knowledge and skills of science are applied when designing solutions to human problems or challenges. Students use design processes to develop and assess scientific solutions to problems in real contexts. In addition, students recognize that science and technology are human endeavors, interrelate to each other and to society and to the workplace.

Science Symbol: Washington State standards are organized using the science symbol illustrated below:

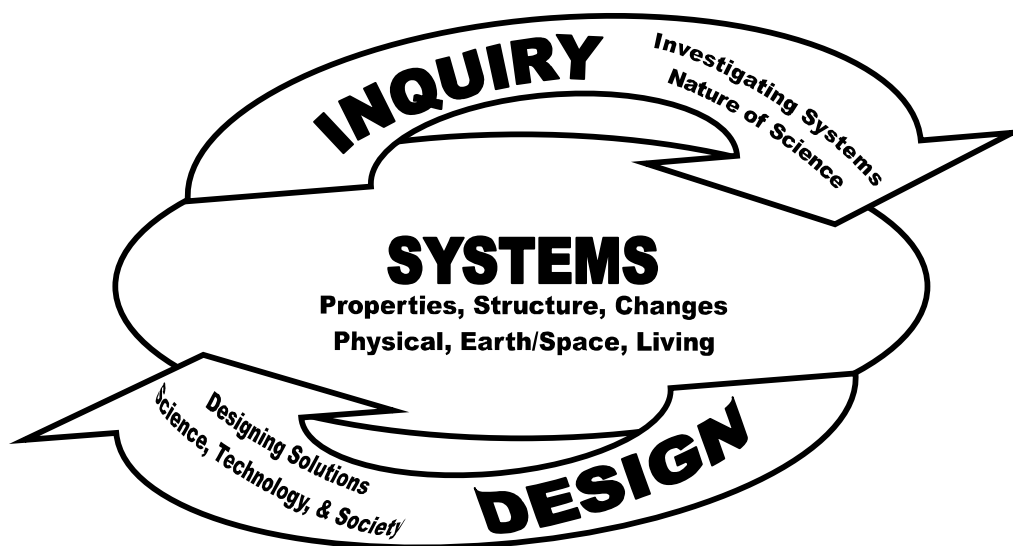


“The important thing is not to stop questioning.”  
Albert Einstein

Learning in science depends on actively doing science. Active engagement in hands-on, minds-on science learning experiences enables students to make sense of the physical world, to develop answers to their questions through research and investigation using inquiry and to design solutions to their problems using design processes. Toward these ends, the Essential Academic Learning Requirements for science were developed based on the following set of guiding principles.

1. All students should be expected to attain proficient level of achievement and performance on all Essential Academic Learning Requirements.
2. All students should have access to a carefully articulated science program each year in kindergarten through 10th grade with opportunities for continued study in grades 11 and 12.
3. All students should receive quality feedback about their performance and achievement in science on a continuous basis.
4. All students, regardless of gender, cultural or ethnic background, physical or learning disabilities, aspirations, or interest and motivation in science, should have the opportunity to attain science literacy.
5. All students should have access to effective and appropriate teaching from well-trained teachers who are supported with high quality instructional resources.

When all students are proficient in the Essential Academic Learning Requirements for science, Washington State will be much closer to attaining the Washington State learning goals including thinking and writing with logic and clarity.



## Essential Academic Learning Requirements—Science

1. **SYSTEMS:** The student knows and applies scientific concepts and principles to understand systems.



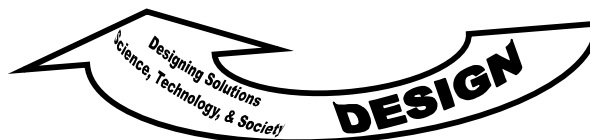
To meet this standard, the student will:

- 1.1. Properties: Understand how properties are used to identify, describe, and categorize substances, materials, and objects and how characteristics are used to categorize living things.
- 1.2. Structures: Understand how the components, structures, and organizations of systems and the interconnections within and among them describe systems.
- 1.3. Changes: Understand how interactions within and among systems cause changes in matter and energy.
2. **INQUIRY:** The student knows and applies the skills, and processes, and nature of scientific inquiry.



To meet this standard, the student will:

- 2.1. Investigate Systems: Develop the knowledge and skills necessary to do scientific inquiry.
- 2.2. Nature of Science: Understand the nature of scientific inquiry.
3. **DESIGN:** The student knows and applies the design process to develop solutions to human problems in societal contexts.



To meet this standard, the student will:

- 3.1. Design Solutions: Apply design processes to develop solutions to human problems or meet challenges using the knowledge and skills of science and technology.
- 3.2. Science, Technology, & Society: Know that science and technology are human endeavors, interrelated to each other, to society, and to the workplace.