Engineering Sciences 1 & 2
Scope & Sequence: Year 1

Semester 1		Semester 2	
Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
Technical Standards: 1.1,1.4,1.5,2.1-2.8,3.2, 3.4, 3.5, 3.6, 4.0, 5.2, 5.6, 5.7 Professional Skills: 2.0 (C), 3.0 (D) 8.0(A, C, D, E)	Technical Standards: 1.0, 2.0, 3.1, 3.3, 3.4, 3.6, 4.0, 5.0, 6.0, 7.0 Professional Skills: 1.0, 2.0, 3.0, 4.0, 8.0	Technical Standards: 2.0, 3.3, 3.4, 3.5, 4.1, 4.3, 4.4, 5.0, 6.0, 7.2 Professional Skills: 1.0, 2.0, 3.0, 4.0, 8.0	Technical Standards: 2.0, 3.1, 3.3, 3.4, 3.6, 4.0, 5.0, 6.0, 7.0 Professional Skills: 1.0, 2.0, 3.0, 4.0, 8.0

Quarter 1

Unit 1

Intro to Engineering

- Compare and contrast various disciplines of engineering.
- Identify the skills and education needed for engineering disciplines.
- Practice safe use of tools, machines, equipment, and materials.

Unit 2

Project #1 Foundation and Start*

(Projects may vary, reflecting the diversity of needs of instructor, school, and community and availability of resources.)

- Use the engineering design process to solve engineering problems
- Identify design criteria and constraints
- Use the relationships among energy, work, and power to solve problems involving mechanical, fluid, electrical, and thermal systems.

Quarter 2

Unit 3

Project #1 Execution

- Collect and analyze data to solve engineering problems
- Use mathematical software to model and display data to solve engineering problems
- Manage time according to organizational expectations.
- Collaborate on a team

Unit 4

Project #1 Completion

- Demonstrate accurate documentation of data and results.
- Communicate results in the form of a technical report and group presentation.

* Examples of Projects:
- Bridge Project
- Solar Panel Reflector
- Flow Visualization of Wing

Quarter 3

Unit 5

Project #2 Foundation**

(Projects may vary, reflecting the diversity of needs of instructor, school, and community and availability of resources.)

- Use the engineering design process to solve engineering problems
- Use mathematical relationships and properties to solve engineering problems
- Use the relationships among energy, work, and power to solve problems involving mechanical, fluid, electrical, and thermal systems

Unit 6

Project #2 Start

- Identify design criteria and constraints
- Identify resources needed
- Interpret graphical data such as plans, diagrams, and working drawings
- Collaborate on a team

Quarter 4

Unit 7

Project #2 Execution

- Collect and analyze data to solve engineering problems
- Use mathematical software to model and display data to solve engineering problems
- Manage time according to organizational expectations
- Assess material properties used in engineering projects

Unit 8

Project #2 Completion

- Demonstrate accurate documentation of data and results.
- Take actions supported by evidence to explain conclusions
- Communicate results in the form of a technical report and group presentation.

**Examples of Projects:
- Balsa Wood Glider
- Series and Parallel Circuits

51% of the entire program will be conducted in a lab setting. The lab consists of hand-on learning projects and experiences where student will practice the necessary skills to complete the current unit study.