

Engineering Sciences 5 & 6
Scope & Sequence: Year 3

Semester 1		Semester 2	
Quarter 1	Quarter 2	Quarter 3	Quarter 4
<p>Technical Standards: 1.0,2.0, 3.2, 3.4, 3.5, 3.6, 4.0, 5.2, 5.6, 5.7, 7.0 Professional Skills: 2.0 (C), 3.0 (D) 8.0(A, C, D, E)</p> <p><u>Unit 1</u> Review of Intro to Engineering</p> <ul style="list-style-type: none"> 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. <p><u>Unit 2</u> Project #1 Foundation and Start* (Projects may vary, reflecting the diversity of needs of instructor, school, and community and availability of resources.)</p> <ul style="list-style-type: none"> Develop a project management plan to implement a solution. Identify design criteria and constraints. Use the relationships among energy, work, and power to solve problems involving mechanical, fluid, electrical, and thermal systems. 	<p>Technical Standards: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0 Professional Skills: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0</p> <p><u>Unit 3</u> Project #1 Execution</p> <ul style="list-style-type: none"> Use mathematical software to model and display data to solve engineering problems. Use 3D CAD software to model and analyze engineering solutions. Fabricate models using multiple methods. Collaborate on a team. <p><u>Unit 4</u> Project #1 Completion</p> <ul style="list-style-type: none"> Demonstrate accurate documentation of data and results. Communicate results in the form of a technical report and group presentation. <p>* Examples of Projects:</p> <ul style="list-style-type: none"> Solar Water Heater Project Bouncy Ball Project Solar Go-Kart Project 	<p>Technical Standards: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0 Professional Skills: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0</p> <p><u>Unit 5</u> Project #2 Foundation** (Projects may vary, reflecting the diversity of needs of instructor, school, and community and availability of resources.)</p> <ul style="list-style-type: none"> Develop a project management plan to implement a solution. Use mathematical relationships and properties to solve engineering problems. Use the laws of conservation of energy, charge, and momentum to solve problems involving mechanical, fluid, electrical, and thermal systems. <p><u>Unit 6</u> Project #2 Start</p> <ul style="list-style-type: none"> Identify design criteria and constraints. Identify resources needed. Interpret graphical data such as plans, diagrams, and working drawings. Collaborate on a team. <p>*Technical Skills Assessment Industry Certification Testing</p>	<p>Technical Standards: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0 Professional Skills: 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0</p> <p><u>Unit 7</u> Project #2 Execution</p> <ul style="list-style-type: none"> Collect and analyze data to solve engineering problems. Use 3D CAD software to model and analyze engineering solutions. Manage time according to organizational expectations. Assess material properties used in engineering projects. <p><u>Unit 8</u> Project #2 Completion</p> <ul style="list-style-type: none"> Take actions supported by evidence to explain conclusions. Communicate results in the form of a technical report and group presentation. <p>**Examples of Projects:</p> <ul style="list-style-type: none"> Solar Tracker Project Wing Project Robotics Project Bridge Project