

CV Guarantee
Engineering/STEM (9-12)

Big Idea: Design and Problem Solving Unit 1			
Standard: <u>HS-ETS1-2</u> Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. Science and Engineering Make and defend a claim based on evidence about the natural world or the effectiveness of a design solution that reflects scientific knowledge and student-generated evidence.		Timeline: 6 weeks	
Key Vocabulary: Assess, assessment, brainstorm, client, creativity, criteria, constraint, design, design brief, design process, design statement, designer, engineer, engineering notebook, innovation, invention, iterative, justifiable, product, prototype, research, valid.		Vocabulary Activities: <ul style="list-style-type: none"> ● Interactive notebook entries ● Worksheets ● Classroom activities ● Quizizz ● Kahoot ● Quizlet ● Frayer Model 	
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> ● Define the steps in The Engineering Design Process. ● List productive actions while working on a Design Team 	<ul style="list-style-type: none"> ● Analyze and interpret data to make valid and reliable claims or determine optimal design solutions. 	<ul style="list-style-type: none"> ● Demonstrate an ability to identify, formulate and solve engineering problems. ● Create a Product Improvement to demonstrate knowledge of iteration and The Design Process. 	<ul style="list-style-type: none"> ● Diagram the different steps in The Design Process. ● Engineering Notebook to document The Design Process, sketches, classwork and ideas.
Resources:			

STEM/Engineering CV Guarantee Technical Sketching and Drawing (9-12)

Big Idea: Technical Sketching and Drawing			
<p>Standard: <u>HS-ETS1-2</u> Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.</p> <p>Science and Engineering Make and defend a claim based on evidence about the natural world or the effectiveness of a design solution that reflects scientific knowledge and student-generated evidence.</p>		<p>Timeline: 6 weeks</p>	
<p>Key Vocabulary: Cabinet pictorial, cavalier pictorial, center line, construction line, depth, dimension, dimension line, documentation, drawing, edge, ellipse, extension line, freehand, grid, height, hidden line, isometric sketch, leader line, line, line conventions, line weight, manufacture, multiview drawing, object line, oblique sketch, orthographic projection, perspective sketch, pictorial sketch, plane, point, profile, proportion, scale, shading, sketch</p>		<p>Vocabulary Activities:</p> <ul style="list-style-type: none"> ● Interactive notebook entries ● Worksheets ● Classroom activities ● Quizizz ● Kahoot ● Quizlet ● Fray Model 	
Knowledge	Reasoning	Performance Skills	Product Examples
<ul style="list-style-type: none"> ● Demonstrate an ability to identify, formulate, and solve engineering problems. ● Identify and define technical drawing representations including isometric, orthographic, projection, oblique, and perspective views. 	<ul style="list-style-type: none"> ● Compare different types of technical drawings to best convey engineering design processes and objectives. 	<ul style="list-style-type: none"> ● Hand sketch isometric views of a simple object at a given scale using the actual object, a detailed verbal description of the object, a detailed verbal description. ● Hand sketch a pictorial view of an object and a set of orthographic projections. 	<ul style="list-style-type: none"> ● Engineering Notebook to document The Design Process, sketches, classwork and ideas.