

St. Michael-Albertville Schools Map Format
Grade 8 Tech Ed and Engineering

September 2020

EQ & CONTENT	SKILLS	LEARNING TARGETS	ASSESSMENT	RESOURCES & TECHNOLOGY
<p>CEQ: WHAT IS THE DESIGN PROCESS AND HOW IS IT USED? UEQ:</p> <ul style="list-style-type: none"> o <i>Why is brainstorming important when modifying or improving a product?</i> o <i>Why do people work in teams when solving design problems?</i> o <i>What is meant by constraints and criteria?</i> o <i>Which step in the design process use a design brief? Why?</i> o <i>Which step in the design process uses a decision matrix? Why?</i> o <i>Why are design elements considered when engineers and designers invent or innovate a product?</i> <p>Design Process ITEEA</p> <ol style="list-style-type: none"> 1. Attributes of design 2. Engineering design 3. Apply the design process <p>Language Arts</p> <ol style="list-style-type: none"> 1. Key Idea and Details 2. Text types and purposes 3. Comprehension and Collaboration 4. Conventions of Standard English <p>Science</p> <ol style="list-style-type: none"> 1. Engineering Design 	<p>Design Process</p> <ol style="list-style-type: none"> 1. Describe the design process and how it is used to aid in problem solving. 2. Describe the elements of design. 3. Recognize design criteria and constraints. 4. Describe the purpose and importance of working in a team. 5. Operate effectively as a member of a team to complete a design project. 6a. Use the design process to solve a technical problem. 6b. Apply the elements of design to the design process 7. Explain a design brief and apply the concept when using the design process. 8. Use a decision matrix to select the best solution to a design. <p>Measurement</p> <ol style="list-style-type: none"> 1. Demonstrate the ability to measure accurately with different devices and scales 2. Explain how to measure in different contexts. 	<p>Design Process</p> <p>LT1. I can explain the design process and how it can solve problems.</p> <p>LT2. I can explain the different parts of the design process.</p> <p>LT4. I know how important it is to work with my group as a team.</p> <p>LT5. I can also work effectively as a group member.</p> <p>LT6. I can follow the steps in the design process to solve a problem.</p> <p>LT7. I am able to communicate how the design brief works and am able to use it.</p> <p>LT8. I can create a design matrix to assist in selecting a solution.</p> <p>Measurement</p> <p>LT1. I can use multiple different measuring tools to correctly measure in standard and metric.</p> <p>LT2. I am able to communicate how to measure.</p>	<p>Design Process CSA= Design Process Test</p> <p>CFA= Group project product</p> <p>CFA= Design Squad videos conclusions in engineering notebooks</p> <p>Measurement CSA= Measurement test</p> <p>CFA= Standard measuring worksheet</p>	<p>Design Process PLTW Engineering Notebook</p> <p>PBS Kids Design Squad</p> <p>PLTW Design Process Powerpoint</p> <p>Key Vocabulary Aesthetics Annotate Brainstorming Constraints Consumer Criteria Decision Matrix Design Design Brief Design Elements Design Process Designer Dimension Engineer Ergonomics Evaluate Experimentation Investigate Model Modify Problem Solving Process Prototype Requirements Research Specification Testing</p> <p>Key Vocabulary Accuracy Denominator Diameter Measurement Metric System Numerator Precision Unit</p>

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October

EQ & CONTENT	SKILLS	LEARNING TARGETS	ASSESSMENT	RESOURCES & TECHNOLOGY
<p>CEQ: How are sketching and dimensioning used in the real world? UEQ:</p> <ul style="list-style-type: none"> ○ <i>What are pictorial drawings and how are they used by engineers?</i> ○ <i>What is an orthographic drawing and how is it used by engineers?</i> ○ <i>Why is it important to follow the rules of sketching and dimensioning?</i> <p>Sketching and Dimensioning ITEEA</p> <ol style="list-style-type: none"> 1. Apply the design process 2. Select and use information and communication technologies <p>Math</p> <ol style="list-style-type: none"> 1. Geometry <p>Language Arts</p> <ol style="list-style-type: none"> 1. Key Ideas and Details 2. Text types and purposes 3. Conventions of standard English 	<p>Sketching and Dimensioning</p> <ol style="list-style-type: none"> 1. Summarize the reasoning for using sketching as a communication tool 2. Use visualization, spatial reasoning, and geometric shapes to sketch two and three dimensional shapes 3. Recognize thumbnail, perspective, isometric and orthographic sketches 4. Create isometric and orthographic sketches 5. Communicate ideas for a design using various sketching methods, notes and drafting views 6. Dimension an orthographic sketch following the guidelines of dimensioning 	<p>Sketching and Dimensioning</p> <p>LT1. I can explain why people use sketches LT2. I can sketch two and three dimensional shapes correctly. LT3. I am able to tell the difference between different styles of sketching LT4. I can create isometric and orthographic sketches LT5. I am able to explain an idea using sketches and notes LT6. I can dimension an orthographic sketch correctly.</p>	<p>Sketching and Dimensioning CSA= Sketching Test</p> <p>CFA= Dimensioning worksheet</p> <p>CFA= Autodesk inventor product</p>	<p>Sketching and Dimensioning PLTW Engineering Notebook</p> <p>Key Vocabulary</p> <p>Annotate Centerline Construction line Depth Diameter Dimension Line Extension Line Height Hidden Line Isometric Leader Line Line Conventions Line Weight Location Dimension Object Line One-Point Perspective Orthographic Projection Perspective Drawing Plane Radius Scale Size Dimension Sketch Three Dimensional Thumbnail Sketch Two Dimensional Two-Point Perspective Vanishing Point Views Visualize Width</p>

March, April and May

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<p>CEQ: HOW CAN A PROJECT BE MANUFACTURED IN A WOOD SHOP?</p> <p>UEQ:</p> <ul style="list-style-type: none"> o <i>Why is safety important in the wood shop?</i> o <i>How does shop safety relate to the band saw, belt sander, drill press and spindle sander?</i> <p>Safety ITEEA 1. Use and maintain technological products (machine safety)</p> <p>UEQ:</p> <ul style="list-style-type: none"> o <i>How is a project properly planned?</i> o <i>What is the manufacturing process in the wood shop?</i> <p>Manufacturing a project ITEEA 1. Attributes of design 2. Engineering design 3. Apply design process 4. Maintain tech. products 5. Manufacturing technologies</p> <p>Language Arts 1. Key Ideas and Details 2. Comprehension and collaboration</p> <p>Science 1. Engineering Design</p>	<p>Safety 1. Model personal safety 2. Exhibit general safety rules 3. Demonstrate machine safety</p> <p>Manufacturing 1. How to manufacture a project 2. Develop a proper project plan 3. Construct a wood project from the project plan</p>	<p>Safety LT1. I will module safety for myself in the shop. LT2. I can describe general safety rules. LT3. I can demonstrate band saw, belt/disc sander, drill press, spindle sander safety.</p> <p>Manufacturing LT1. I will use the drill press, scroll or band saw to create my spinning toy top. LT2. I can sketch and make a CAD file for a CO2 car and shelf/tool box. LT3. I will use the band saw, belt/disc and spindle sanders, and hand tools to create my CO2 car and shelf/tool box. LT4. I will know the difference in Shop tools. LT5. I will know the difference in lumber and sanding tools.</p>	<p>Safety CSA= 100% score on safety test</p> <p>Manufacturing CSA=Final finished CO2 car CSA= Finished shelf/ tool box CSA= Finished spinning top CFA= Teacher observation, review and feedback CFA= Informative writing</p>	<p>Safety and Manufacturing PLTW Engineering Notebook</p> <p>Key Vocabulary Band saw Belt/Disc Sander Drill Press Hand Sander Inside Curve Outside Curve Procedures Spindle Sander Vises</p>