

Engineering Drafting

Power Standards

Students will be able to:

1. To provide the basic information necessary for planning various types of working drawings.
2. Develop the necessary technical skills to communicate engineering concepts in an understandable, efficient and accurate manner.
3. Utilize the latest drawing techniques to incorporate communication and engineering career opportunities.

Power Benchmarks

Students will be able to:

1. Exhibit knowledge of drafting standards.
2. Understand the need for sketching skills.
3. Produce a working drawing.
4. Demonstrate skills in developing orthographic projection.
5. Use proper dimensioning rules.
6. Produce a detailed section drawing.
7. Produce a detailed auxiliary drawing.
8. Produce three different pictorial drawings.
9. Exposure to drafting career paths.
10. Demonstrate knowledge of CAD systems used in the preparation of drawings used in engineering.

Engineering Drafting

Students will be able to:

1. To provide the basic information necessary for planning various types of working drawings.
 - Exhibit knowledge of drafting standards. (1)
 - Understand the need for sketching skills. (2)
 - Use proper dimensioning rules. (5)

2. Develop the necessary technical skills to communicate engineering concepts in an understandable, efficient and accurate manner.
 - Produce a working drawing. (3)
 - Demonstrate skills in developing orthographic projection. (4)
 - Produce a detailed section drawing. (6)
 - Produce a detailed auxiliary drawing. (7)
 - Produce three different pictorial drawings. (8)

3. Utilize the latest drawing techniques to incorporate communication and engineering career opportunities.
 - Exposure to drafting career paths. (9)
 - Demonstrate knowledge of CAD systems used in the preparation of drawings used in engineering. (10)

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 1: To provide the basic information necessary for planning various types of working drawings.</p> <p>Power Benchmark/Competency #1: Exhibit knowledge of drafting standards.</p> <p>Estimated Timeline: 10 school days + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	x	x	x	x	x	Math	Science	Reading	Social Responsibility	Communication	x		x	x	x
Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural																	
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ Lettering on drawings must be legible and suitable for easy and rapid execution. ➤ ANSI standards are used to dimension a drawing. ➤ Use of the alphabet of lines is standardized throughout the world on drawings. ➤ There are two systems of reading dimensions. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ Why is lettering used in drafting and what are characteristics of good lettering? ➤ What makes up the alphabet of lines and when do you use each? ➤ What are the two types of dimensions used on a drawing, why are they needed, and why are they important?
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<p>Students will be able to: (i.e. know)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Demonstrate correct lettering techniques used on a drawing. ➤ Demonstrate proper line selection on a drawing. ➤ Demonstrate correct dimensioning standards on a drawing. ➤ Define words used in drafting standards. <ul style="list-style-type: none"> ○ ANSI, SAE, dimensioning, lettering, standards, notes, symbols, orthographic, technical drawing, alphabet of lines 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Apply alphabet of lines to a drawing. ➤ Apply correct dimensioning standards to a drawing. ➤ Place notes and symbols on a drawing. ➤ Spell terms used in drafting standards. <ul style="list-style-type: none"> ○ ANSI, SAE, dimensioning, lettering, standards, notes, symbols, orthographic, technical drawing, alphabet of lines
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Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Produce a drawing using orthographic views, notes, symbols and dimension. 	<p>Key Criteria: (Rubric) TBD</p>
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Engineering Drafting

Stage 3 – Learning Plan:
Exhibit knowledge of drafting standards.
Power Benchmark/Competency: # 1

Learning Activities:	Resources:
Read a dimensioned drawing.	
Draw extension and dimension lines.	
Draw arrow heads, slashes or dots to show the end of dimension lines or leader.	
Draw an orthographic drawing using dimensions, notes and symbols to A.N.S.I. standards.	
Explain the reasons for different line weights.	

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 1: To provide the basic information necessary for planning various types of working drawings.</p> <p>Power Benchmark/Competency #2: Understand the need for sketching skills.</p> <p>Estimated Timeline: 5 school days + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X	X	Math	Science	Reading	Social Responsibility	Communication	X		X	X	X
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X		X	X	X																	
<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ Sketching is important in the development of consumer products. ➤ Sketching is a tool used to solve problems and capture and express new ideas. ➤ Isometric and oblique are two common types of pictorial drawings. 	<p>Essential Question</p> <ul style="list-style-type: none"> ➤ How is sketching important in the development of consumer products? ➤ What is an isometric drawing? ➤ What is an oblique drawing? ➤ What is a pictorial drawing? 																				
<p>Students will be able to: (<i>i.e. know</i>)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know when to properly use the different forms of sketching. <ul style="list-style-type: none"> ○ sketching, skills, isometric, pictorial, oblique, foreshortened lines 	<p>Students will be able to: (<i>i.e. do</i>)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Create an example of an isometric and oblique pictorial drawings. ➤ Draw and label the two common types of pictorial drawings used in sketching. <ul style="list-style-type: none"> ○ sketching, skills, isometric, pictorial, oblique, foreshortened lines 																				

Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Draw an example of each type of drawing. 	<p>Key Criteria: (Rubric)</p> <p>TBD</p>
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Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 2: Develop the necessary technical skills to communicate engineering concepts in an understandable, efficient and accurate manner.</p> <p>Power Benchmark/Competency #3: Produce a working drawing.</p> <p>Estimated Timeline: 20 school days + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	x	x	x	x	x	Math	Science	Reading	Social Responsibility	Communication	x		x	x	x
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x		x	x	x																	
<p>Understandings: <i>Students will understand:</i></p> <ul style="list-style-type: none"> ➤ A complete working drawing contains views, notes and dimensions. ➤ Working drawings, which normally include assembly and detail drawings, are the specifications for the manufacture of a design. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ How is a working drawing used in the manufacturing process? ➤ What symbols, notes and dimensions are needed for a selected working drawing? ➤ How many views are needed for a working drawing? ➤ What are the contents of a working drawing? 																				
<p>Students will be able to: (<i>i.e. know</i>)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Draw a multi- view working drawing with dimensions, symbols and notes where needed. ➤ Determine what notes, symbols, and dimensions are needed on a drawing. <ul style="list-style-type: none"> ○ working drawing, detail drawing, assembly drawing, dimensions, symbols, notes, orthographic projection, views, placement, multi-view 	<p>Students will be able to: (<i>i.e. do</i>)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Create a complete working drawing. ➤ Using a 3D object, decide what surfaces will be drawn on a multi-view drawing of that object. <ul style="list-style-type: none"> ○ working drawing, detail drawing, assembly drawing, dimensions, symbols, notes, orthographic projection, views, placement, multi-view 																				
Stage 2 – Assessment Evidence																					
<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Draw a complete working drawing. 	<p>Key Criteria: (Rubric) TBD</p>																				

Engineering Drafting

Stage 3 – Learning Plan:

Produce a working drawing.

Power Benchmark/Competency: # 3

Learning Activities:	Resources:
Draw a working drawing.	
Give examples of what makes up a working drawing.	
Model how a working drawing is used to solve problems in an industrial setting.	

Stage 3
Work in Progress

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 2: Develop the necessary technical skills to communicate engineering concepts in an understandable, efficient and accurate manner.</p> <p>Power Benchmark/Competency #4 : Demonstrate skills in developing orthographic projection.</p> <p>Estimated Timeline: 10 school days + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X	X	Math	Science	Reading	Social Responsibility	Communication	X		X	X	X
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X		X	X	X																	
<p>Understandings: <i>Students understand that:</i></p> <ul style="list-style-type: none"> ➤ Different shapes may require a different number of views for accuracy. ➤ The layout process of a multi-view drawing has a specific procedure. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ Why is an orthographic drawing important in the manufacturing process? ➤ How many views are required for a drawing to be complete? 																				
<p>Students will be able to: (i.e. know)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know what views make up an orthographic drawing and how they relate to each other. <ul style="list-style-type: none"> ○ working drawing, dimensioning, symbols, notes, orthographic projection, views, placement, multi-view, projection, line of sight, parallel, perpendicular, frontal plane, profile 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Draw a series of orthographic drawing starting with simple shapes to more complex shapes. <ul style="list-style-type: none"> ○ working drawing, dimensioning, symbols, notes, orthographic projection, views, placement, multi-view, projection, line of sight, parallel, perpendicular, frontal plane, profile 																				
<h2 style="margin: 0;">Stage 2 – Assessment Evidence</h2>																					
<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Draw a variety of orthographic drawings from simple objects to more complex objects. 	<p>Key Criteria: (Rubric) TBD</p>																				

Engineering Drafting

Stage 3 – Learning Plan:

Demonstrate skills in developing orthographic projection.

Power Benchmark/Competency: # 4

Learning Activities:	Resources:
Draw a variety of orthographic drawings from simple objects to more complex objects.	

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 1: To provide the basic information necessary for planning various types of working drawings.</p> <p>Power Benchmark/Competency #5: Use proper dimensioning rules.</p> <p>Estimated Timeline: 10 school days + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X	X	Math	Science	Reading	Social Responsibility	Communication	X		X	X	X
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Math	Science	Reading	Social Responsibility	Communication																	
X		X	X	X																	
<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ Dimensioning rules are very specific. ➤ The two main types of dimensions are size and location. ➤ The two main systems for reading drawings are aligned and unidirectional. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What are the two main types of dimensions? ➤ What are the two main systems of reading dimensions? 																				
<p>Students will:</p> <ul style="list-style-type: none"> ➤ Determine the required dimensions on an orthographic or pictorial drawing. ➤ Recognize the difference between size dimensions and location dimensions. <ul style="list-style-type: none"> ○ ANSI, SI, line weights, arrowheads, symbols, notes, aligned, unidirectional, orthographic projection, pictorial, size, location, linear, angular, scale, leader 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Correctly dimension a drawing. <ul style="list-style-type: none"> ○ ANSI, SI, line weights, arrowheads, symbols, notes, aligned, unidirectional, orthographic projection, pictorial, size, location, linear, angular, scale, leader 																				
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<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Dimension an orthographic drawing. 	<p>Key Criteria: (Rubric) TBD</p>																				

Engineering Drafting

Stage 3 – Learning Plan:

Use proper dimensioning rules.

Power Benchmark/Competency: # 5

Learning Activities:	Resources:
Dimension an orthographic drawing.	

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 2: Develop the necessary technical skills to communicate engineering concepts in an understandable, efficient and accurate manner.</p> <p>Power Benchmark/Competency #6: Produce a detailed section drawing.</p> <p>Estimated Timeline: 5 to 9 school days + on going application</p>	<p>Place 'X' in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X	X	Math	Science	Reading	Social Responsibility	Communication	X		X	X	X
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X		X	X	X																	
<p>Understandings: <i>Students will be able to:</i></p> <ul style="list-style-type: none"> ➤ Sections are used to clarify a view and replace hidden lines on a view. ➤ A cutting plane is used to show where the object has been sliced to expose the interior construction of an object. ➤ Different materials are represented by different symbols. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ Why is a section views needed? ➤ How are the different cutting planes used to show the view profile? ➤ What type of symbol will be used to describe the material being used on your drawing? 																				
<p>Students will be able to: (<i>i.e. know</i>)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know the types of section view- full, half, revolved, removed, partial and broken out. <ul style="list-style-type: none"> ○ section drawing, detail, symbols, material, model, cutting plane, profile, cross section 	<p>Students will be able to: (<i>i.e. do</i>)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Model the proper use of each of the six types of section views. <ul style="list-style-type: none"> ○ section drawing, detail, symbols, material, model, cutting plane, profile, cross section 																				

Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Students will produce drawings that illustrate the use of section drawings. 	<p>Key Criteria: (Rubric) TBD</p>
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Engineering Drafting

Stage 3 – Learning Plan:
Produce a detailed section drawing.
Power Benchmark/Competency: #6

Learning Activities:	Resources:
Utilize worksheet(s) to demonstrate the use of each type of section views.	
Utilize one or more drawings to demonstrate the proper use of section drawings.	

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 2: Develop the necessary technical skills to communicate engineering concepts in an understandable, efficient and accurate manner.</p> <p>Power Benchmark/Competency #7: Produce a detailed auxiliary drawing.</p> <p>Estimated Timeline: 5 school days + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; text-align: center; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">x</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> <td style="padding: 2px;">x</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	x	x	x	x	x	Math	Science	Reading	Social Responsibility	Communication	x		x	x	x
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x		x	x	x																	
<p>Understandings: <i>Students will be able to:</i></p> <ul style="list-style-type: none"> ➤ An auxiliary view is used to show the true surface shape of a part of an object. ➤ The angle of projection is always perpendicular to the inclined plane ➤ The shape of the auxiliary view will change from the orthographic projection views. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ Why is an Auxiliary view needed? ➤ Where is the auxiliary view located? ➤ What is the projection angle from the inclined plane? 																				
<p>Students will be able to: (i.e. know)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know when to use an Auxillary view. <ul style="list-style-type: none"> ○ auxiliary, projection angle, perpendicular, inclined plane, parallel, primary, reference plane 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Model the proper use of an Auxillary view. <ul style="list-style-type: none"> ○ auxiliary, projection angle, perpendicular, inclined plane, parallel, primary, reference plane 																				
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<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Students will produce drawings that illustrate the use of Auxillary drawings. 	<p>Key Criteria: (Rubric) TBD</p>																				

Engineering Drafting

Stage 3 – Learning Plan:
Produce a detailed auxiliary drawing.
Power Benchmark/Competency: #7

Learning Activities:	Resources:
Utilize worksheet(s) to demonstrate the use of an Auxiliary view.	
Utilize one or more drawings to demonstrate the proper use of Auxiliary drawings.	

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 2: Develop the necessary technical skills to communicate engineering concepts in an understandable, efficient and accurate manner.</p> <p>Power Benchmark/Competency #8: Produce three different pictorial drawings.</p> <p>Estimated Timeline: 6 school days + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X	X	Math	Science	Reading	Social Responsibility	Communication	X		X	X	X
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X	X	X	X	X																	
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X		X	X	X																	

<p>Understandings: <i>Students will be able to:</i></p> <ul style="list-style-type: none"> ➤ Pictorial drawings show several faces of an object at one time making it easier for the person without technical training to understand a design object. ➤ Different depth axis, scales, and angles are used in pictorial drawings. ➤ A pictorial drawing may be done in any of the nine different types. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ Why is a pictorial drawing needed? ➤ What are the uses of pictorial drawings? ➤ What are the depth axis angles? ➤ What are the types of pictorial drawings?
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<p>Students will be able to: (i.e. know)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know when to use a pictorial drawing. <ul style="list-style-type: none"> ○ Pictorial drawing, axis, scales, angles, foreshorten, oblique, cabinet, cavalier, isometric, vanishing point, station point, horizon line, picture plane 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Sketch and draw the various types of pictorial drawings. <ul style="list-style-type: none"> ○ Pictorial drawing, axis, scales, angles, foreshorten, oblique, cabinet, cavalier, isometric, vanishing point, station point, horizon line, picture plane
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Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Students will produce drawings that illustrate the use of pictorials. 	<p>Key Criteria: (Rubric) TBD</p>
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Engineering Drafting

Stage 3 – Learning Plan:

Produce three different pictorial drawings

Power Benchmark/Competency: # 8

Learning Activities:	Resources:
Utilize worksheet(s) to demonstrate the use of pictorial drawings.	
Utilize one or more drawings to demonstrate the proper selection of pictorial drawings	

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 3: Utilize the latest drawing techniques to incorporate communication and engineering career opportunities.</p> <p>Power Benchmark/Competency #9: Exposure to drafting career paths</p> <p>Estimated Timeline: 5 school days + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X	X	Math	Science	Reading	Social Responsibility	Communication	X	X	X	X	X
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<p>Understandings: <i>Students will understand:</i></p> <ul style="list-style-type: none"> ➤ The drafting field has specific skills that are standardized through out industry. ➤ Drafting skills are required by other occupations. ➤ Many other careers require the use of drawings produced by draftsman. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What are three drafting occupations? ➤ What are the duties required for drafting career retention?
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<p>Students will be able to: (i.e. know)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Identify skills required of an individual who pursues a career in drafting. ➤ Identify other occupations that require some drafting skills. ➤ Identify other occupations that require use of drawings. <ul style="list-style-type: none"> ○ skills, career, print reading, occupations, drafting, exposure, career paths 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Identify the career and occupations that require drawing skills and/or print reading skills used in industry. <ul style="list-style-type: none"> ○ skills, career, print reading, occupations, drafting, exposure, career paths
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Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Students will write a report describing two drafting occupations. ➤ Students will give an oral report to the class explaining the drafting career that they have written a report on. 	<p>Key Criteria: (Rubric) TBD</p>
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Engineering Drafting

Stage 3 – Learning Plan:
Exposure to drafting career paths
Power Benchmark/Competency: # 9

Learning Activities:	Resources:
Look at references for job titles in the drafting field.	
Visit drafting departments of local industry.	
Bring in a draftsman to talk about the area as a career.	
Bring in representatives of colleges that train draftsman for industry.	
Students are to bring in listings of openings for draftsman from the paper and internet.	

Engineering Drafting

Stage 1 – Desired Results:

<p>Power Standard 3: Utilize the latest drawing techniques to incorporate communication and engineering career opportunities</p> <p>Power Benchmark/Competency #10: Demonstrate knowledge of CAD systems used in preparation of drawings used in engineering.</p> <p>Estimated Timeline: 6 school weeks + on going application</p>	<p>Place ‘X’ in square if goal addresses Essential/Content Standard(s).</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Career</th> <th style="padding: 2px;">Technology</th> <th style="padding: 2px;">Critical Thinking</th> <th style="padding: 2px;">Personal Responsibility</th> <th style="padding: 2px;">Global & Cultural</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;">Math</th> <th style="padding: 2px;">Science</th> <th style="padding: 2px;">Reading</th> <th style="padding: 2px;">Social Responsibility</th> <th style="padding: 2px;">Communication</th> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> <td style="padding: 2px;">X</td> </tr> </tbody> </table>	Career	Technology	Critical Thinking	Personal Responsibility	Global & Cultural	X	X	X	X	X	Math	Science	Reading	Social Responsibility	Communication	X	X	X	X	X
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<p>Understandings: <i>Students will understand that:</i></p> <ul style="list-style-type: none"> ➤ The value of CAD process is repetition and quick changes in comparison to traditional board drawing. ➤ The CAD system uses multiple methods to execute commands. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> ➤ What is the value of using CAD over board drawing? ➤ What are the commands used to create CAD drawing?
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<p>Students will be able to: (i.e. know)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Know benefits and drawbacks of the CAD drawing system. ➤ Students will know how to operate the CAD system. ➤ Know that CAD is the main drawing method for global industry. <ul style="list-style-type: none"> ○ CAD, global, ANSI, software, program, log, board drawing, commands, plot, execute, modify 	<p>Students will be able to: (i.e. do)...(Include vocabulary)</p> <ul style="list-style-type: none"> ➤ Demonstrate proper start-up and shut down logon procedures. ➤ Model CAD drawings that demonstrate knowledge of drawing commands. ➤ Demonstrate proper saving procedures and name change for drawing. ➤ Demonstrate changing CAD drawing to hardcopy. ➤ Demonstrate the ability to edit a drawing. <ul style="list-style-type: none"> ○ CAD, global, ANSI, software, program, log, board drawing, commands, plot, execute, modify
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Stage 2 – Assessment Evidence

<p>Performance Tasks: (i.e. Assessment used to determine proficiency on competency)</p> <ul style="list-style-type: none"> ➤ Student will produce a working drawing using CAD software to ANSI standards. ➤ Student will produce a pictorial drawing using the CAD software. 	<p>Key Criteria: (Rubric) TBD</p>
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Engineering Drafting

Stage 3 – Learning Plan:

Demonstrate knowledge of CAD systems used in preparation of drawings used in engineering.

Power Benchmark/Competency: #10

Learning Activities:	Resources:
Log on and off activities.	
Saving, edit and rename files.	
Execute the Drawing, dimensioning, and modifying commands.	
Plot a CAD drawing.	