

Wallenpaupack Area School District

COURSE: Technology Drawing

GRADE LEVEL: 10-12

LENGTH OF COURSE: 90 Days

TEXT: Basic Technical Drawing

PUBLISHER: Glencoe/Mc Graw-Hill

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WORKBOOK: Key Creator

COURSE DESCRIPTION:

This is a challenging course designed to introduce students to the Language of Industry. This is a computer-based course that requires a student to have a high degree of visual perception. This beginning level course is designed so that a student can communicate ideas clearly and effectively by producing drawings, sketches, graphs, charts, and other graphical data. The use of computers and projects involving analysis and design will enable the student to apply these skills. Technical drawing is a necessary foundation for any student interested in engineering, architecture, design, art, mechanics, construction, graphic arts, drafting, or manufacturing.

CURRICULUM WRITING TEAM:

William L Jollie

DATE OF REVISION:

June 19, 2007

Wallenpaupack Area School District

Course: Technical Drawing

Grade Level: 10-12

Unit: I Introduction to Technical Drawing

PA Standards: 2.2.11
3.1.10
3.1.12
3.6.10
3.6.12
3.8.10
13.1
13.3

Topics:	Skills:
<ul style="list-style-type: none"> Introduction To Course Careers in drawing Designers traits The design team Main stages in development of technical drawings 	<ul style="list-style-type: none"> Outline the procedure for selecting a career Identify the main stages in the development of a technical drawing. Identify the main branches of technical drawing.
Activities:	Performance Assessments:
<ul style="list-style-type: none"> Chapter 1 Assignments : 1) Read Chapter1 "The Graphic language". 2) Write a paragraph explaining the importance of modern drafting to the advancement of Technology. 3) Using Word or Key Creator, Draw out a flow chart of The Design Process. 	<ul style="list-style-type: none"> Conventional Assessments: Quizzes Drawings Performance-Based Assessments: Diagrams Oral Questioning

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Course: Technical Drawing

Grade Level: 10-12

Unit: II Sketching

PA Standards: 2.2.11

3.1.12

3.2.10

Topics:	Skills:
Freehand sketching Sketching straight lines estimating proportions arcs and circles steps in sketching Views of objects	Demonstrate the sketching of a straight line. Demonstrate estimating of proportions. Demonstrate the sketching of a circle.
Activities:	Performance Assessments:
<p>Sketching:</p> <p>Demonstrations</p> <ol style="list-style-type: none"> 1. Sketching Straight Lines 2. Proportioning <ol style="list-style-type: none"> 1. Using a strip of paper 2. Using a pencil 3. Sketch large areas First 3. Sketching Circles and arcs <p>Text Assignments:</p> <ol style="list-style-type: none"> A. Page 30 <ol style="list-style-type: none"> A. Figure 2-16 Straight lines B. Figure 2-17 Parquet Floor C. Figure 2-18 Switch Cover B. Page 31 <ol style="list-style-type: none"> A. Figure 2-20 Cover Plate B. Figure 2-21 Stamping C. Page 32 <ol style="list-style-type: none"> A. Figure 2-24 Kitchen Plan B. Figure 2-27 Rail Stop 	<p>Conventional Assessments:</p> <ul style="list-style-type: none"> Quizzes Drawings <p>Performance-Based Assessments:</p> <ul style="list-style-type: none"> Diagrams Observation Visuals Models/drawings

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Course: Technical Drawing

Grade Level: 10-12

Unit: III Introduction into computer aided drawing

PA Standards: 2.5.11
3.6.10
3.6.12
3.7.10
3.7.12

Topics:	Skills:
<p>Introduction into computer aided drawing Benefits of Cad Cad input devices Moving information Between a variety of software programs Defining x y z axis Understanding 2D drawing & 3D drawings Using create and trim tools Locating views</p>	<p>Identify and use the two main parts of a CAD system. Move and work with Information in a variety of software programs.</p>
Activities:	Performance Assessments:
<p>Demonstrations: 1. Figure 4-44 Inlaid linoleum a. Keying Locations of lines and shapes b. Using parallel Lines c. Using corner trim and length trim tools d. Zoom e. Notes and Dimensions f. Moving notes to a new levels g. Creating student technical Drawing files h. Saving to student files i. Copying Cad Drawings and saving to word. j. Resizing and positioning drawings k. Using picture tool bar. l. Adding notes and word wrap.</p>	<p>Conventional Assessments: Quizzes Drawings Performance-Based Assessments: Diagrams Observation Visuals Models/drawings</p>

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Activities: (continued)	
<p>Assignments: All assignments will be saved as a CAD Drawing (Dimensioned fully)</p> <p>All assignments will be transferred to word, resized, and descriptions added</p> <p>(3) Drawings per page and than printed for grading</p> <ol style="list-style-type: none">1. Page 78<ol style="list-style-type: none">a. Figure 4-46 Inlaid Linoleum Center Designb. Figure 4-47 Brick Wallc. Figure 4-48 Oak Floord. Figure 4-49 Football Grid Iron2. Page 79<ol style="list-style-type: none">a. Figure 4-52 Base Plate3. Page 80<ol style="list-style-type: none">a. Figure 4-54 Shimb. Figure 4-55 Sheet Metal Stamp	

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Course: Technical Drawing

Grade Level: 10-12

Unit: IV Geometry of Technical Drawing

PA Standards: 2.5.11
2.9.11
3.2.12
3.6.10
3.6.12
3.7.10
3.7.12
13.1
13.3

Topics:	Skills:
<p>Geometry of Technical Drawing Geometric Shapes Geometric constructions Cad and Geometry Fields of Work Requiring Knowledge of Geometric constructions</p>	<p>Bisect horizontal and vertical Lines Bisect an angle Drawing regular polygons Drawing Arcs in various relationships to straight lines Drawing ellipse</p>
Activities:	Performance Assessments:
<p>Geometry Demos</p> <ol style="list-style-type: none"> 1. Bisecting a line 2. Bisecting an angle 3. Constructing an Isosceles triangle 4. Constructing an equilateral triangle <ol style="list-style-type: none"> a. Circumscribe a Hexagon about a circle b. Circumscribe an octagon about a circle c. Inscribe an octagon inside a circle d. Draw 1 3/4" arc tangent to line and arc. e. Draw 1 1/2" Arc tangent to two Arcs f. Draw 1 3/4" Arc tangent to two arcs <p>Geometry assignments All assignments will be saved As A CAD drawing. (Dimension Fully) All assignments will be transferred to word, resized, and descriptions added. 3 drawings per page and than printed for grading</p>	<p>Conventional Assessments: Quizzes Drawings</p> <p>Performance-Based Assessments: Diagrams Observation Visuals Models/drawings</p>

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Activities: (continued)	
<ol style="list-style-type: none">1. Page 116<ol style="list-style-type: none">a. #14 Circumscribe a Hexagon about a circleb. #16 Circumscribe an octagon about a circlec. #17 Inscribe an octagon inside a circled. #26 draw 1 ½" arc tangent to line and arc.e. #27 Draw 1 ¼" Arc tangent to two Arcsf. 328 Draw 1 5/16" Arc tangent to two arcs2. Page 81<ol style="list-style-type: none">a. Figure 4-54 Adjusting arm3. Page 82<ol style="list-style-type: none">a. Figure 4-58 Key plateb. Figure 4-59 Gasket4. Page 83:<ol style="list-style-type: none">a. Figure 4-62 Gasketb. Figure 4-64 Template5. Page 117:<ol style="list-style-type: none">a. Figure 6-29 Conveyor linkb. Figure 6-31 cover platec. Figure 6-32 Gasket	

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Course: Technical Drawing

Grade Level: 10-12

Unit: V Pictorial Drawings

PA Standards: 2.9.11

3.1.10

3.1.12

3.6.10

3.6.12

3.7.10

3.7.12

Topics:	Skills:
Using CAD For pictorial Drawings Types of Pictorial drawings. Revolving drawings in Cad Using multi port views Extruding in CAD	Using Key Creator for drawing 3D. Using 3D solids. Using solids tool bars Using Boolean unite Using Boolean subtract Using Solids menu for cutting and shaping drawings Using solids create Using solids modify
Activities:	Performance Assessments:
<p>3D Demonstrations</p> <ol style="list-style-type: none"> 1. Lap Joint 2. Base Block <p>Pictorial Assignments All assignments will be saved As A CAD drawing All assignments will be transferred to word, resized, and descriptions added. 3 drawings per page and than printed for grading</p> <ol style="list-style-type: none"> 1. Page 403 <ul style="list-style-type: none"> • Left Hand Stop • Support • Concrete tile • Concrete steps • Angle Block • Bench stop 2. Page 404 <ul style="list-style-type: none"> • Hex Nut • Special Key 3. Work Sheets 	<p>Conventional Assessments: Quizzes Drawings</p> <p>Performance-Based Assessments: Diagrams Observation Visuals Models/drawings</p>

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Course: Technical Drawing

Grade Level: 10-12

Unit: VI Orthographic Projection,
Multi View Drawings

PA Standards: 2.9.11
3.6.10
3.6.12
3.7.10
3.7.12
13.2
13.3

Topics:	Skills:
<p>Orthographic Projection, Multi View Drawings Techniques and Applications in Cad Basic assembly drawings</p>	<p>To be able to explain the different views of an object. Explain how an object can be revolved to illustrate different views. Be able to identify the necessary views of an object to be draw. Be able to use orthographic projection to assist in determining different views of objects. Be able to draw three or more views using CAD. Be able to place the views correctly on the page.</p>
Activities:	Performance Assessments:
<p>Demonstrations: Lap Joint Complete all drawings using orthographic Projection Dimension fully (include only those dimensions that you needed to make the drawing Include the Pictorial (isometric) drawing in the upper right hand corner. All assignments will be transferred to word, resized, and descriptions added Page 159 Special Key Holder Guide Page 160 Anvil Slide Guide V-Block Locating Finger Page 161 Lock Finger Bearing Frame guide Page 162 Clamp Block Blade Holder Page 163 Guide Bearing Tail Stock Clamp Swing Bracket</p>	<p>Conventional Assessments: Quizzes Drawings Performance-Based Assessments: Diagrams Observation Visuals Models/drawings</p>

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Activities: (continued)	
Page 164	Cross Brace Starting Catch
Page 165	Lap dovetail, fig. 8-37,8-38
Page 166	Dovetail Finger Switch Bracket
Page 167	Hammer Head Guide Base
Page 168	Chuck Jaw Blank Jig Block
Page 173	Bearing Cap Actuator Base
Page 174	Bench Hook, as assembly & assembled
Work Sheets	

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Course: Technical Drawing

Grade Level: 10-12

Unit: VII Manufacturing Process

PA Standards: 2.3.11
2.9.11
3.2.10
3.7.10
3.7.12
13.2

Topics:	Skills:
<p>Technical Drawings function in the Manufacturing Process</p>	<p>Visualize and draw objects that have rough and machined surfaces. Dimension and add shop notes to drawings. Identify the three stages in the manufacture of a machined part (rough forming, finishing, and assembly) Identify the processes by which parts are made. Identify the stages of a casting process.</p>
Activities:	Performance Assessments:
<p>Demonstrations: Clamp Block Complete all drawings using orthographic Projection Dimension fully (include only those dimensions that you needed to make the drawing Include the Pictorial (isometric) drawing in the upper right hand corner. All assignments will be transferred to word, resized, and descriptions added Page 243 Shaft Bracket Fig. 11-32 Clamp Block Fig. 11-33 Page 244 Swivel Fig. 11-34 Plunger Bracket Fig. 11-36 Page 245 Double shifter yoke Fig. 11-38 Double shifter Fig. 11-39 Page 251 Bearing Fig. 11-66 Holder strap Fig. 11-57 Work Sheets</p>	<p>Conventional Assessments: Quizzes Drawings Performance-Based Assessments: Diagrams Observation Visuals Models/drawings</p>

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Course: Technical Drawing

Grade Level: 10-12

Unit: VIII Sectional Views

PA Standards: 2.9.11

3.7.10

3.7.12

Topics:	Skills:
<p>Sectional Views Full sections, Half sections, Broken-outsections, Removed sections, Techniques for dimensioning sections and showing conventional breaks. Using Cad to draw sectional drawings</p>	<p>Explain the reasons for showing sectional views. Draw correctly the various sectional views discussed in the chapter using CAD. Finding section symbols and adding to drawing. Dimensioning sectional views. Reading sectional drawings.</p>
Activities:	Performance Assessments:
<p>Demonstration: page 266 cup Complete all drawings using orthographic Projection Dimension Fully (include only those dimensions that you needed to make the drawing Include the Pictorial (isometric) drawing in the upper right hand corner. This pictorial drawing will be a sectioned drawing. All assignments will be transferred to word, resized, and descriptions added. Assignments: Page 266 2. Sleeve 3. Emery wheel 4. Piston 5. Flange Page 267 2. Bevel Washer 8. Pipe Collar Page 268 1. Shifter Block Page 269 3. Saddle Block</p>	<p>Conventional Assessments: Quizzes Drawings Performance-Based Assessments: Diagrams Observation Visuals Models/drawings</p>