

Technical Drafting

Course Number: 21106

Rationale Statement: People with careers in design and pre-construction create our future.. Their plans guide manufacturing professionals as they continue the building process. Students are introduced to tools and methods used by a skilled draftsman and engineers.

Suggested Grade Level: 9-12

Topics Covered:

- Concepts of drafting
- Proper tools and safety
- Orthographic projections
- Geometric construction
- Sectional views
- Fasteners
- Simple CAD applications
- Math and Reading skills

Core Technical Standards & Examples

1. Examine basic drafting fundamentals and technical skills	
Bloom's Taxonomy Level	Standard and Examples
Knowledge	<p>TD1.1. Define basic drafting tools and techniques used on technical drawings</p> <p>Examples:</p> <ul style="list-style-type: none"> * Show proper lettering techniques on drawings * Define and use the alphabet of lines on various drawings * Identify line symbols recommended by ANSI * Show manual drafting techniques on ANSI standard paper.
Synthesis	<p>TD1.2. Integrate geometric construction for technical drafting</p> <p>Examples:</p> <ul style="list-style-type: none"> * Create the basic geometric shapes using manual drafting tools * Combine various drafting tools to define angles and directions
Knowledge	<p>TD1.3. Define dimensioning styles and techniques on metric and imperial drawings</p> <p>Examples:</p>

	<ul style="list-style-type: none"> * Label measurements, notes, and symbols to orthographic views * Show dimensions on an isometric drawing * Show a drawing using metric or imperial units * Identify ANSI standards for dimensioning and notes
Application	<p>TD1.4. Demonstrate various drawing scales used in technical drafting</p> <p>Examples:</p> <ul style="list-style-type: none"> * Reduce a drawing by scaling down to fit on assigned paper size * Calculate a metric drawing into imperial dimensions * Convert a drawing with fractions into decimal equivalents
Analysis	<p>TD1.5. Identify proper terminology and examine career possibilities</p> <p>Examples:</p> <ul style="list-style-type: none"> * Prepare a report about the area of study * Design a questionnaire for an interview. * Write a biography about a historic person in the field.
2. Apply drawing techniques to produce various technical plans	
Bloom's Taxonomy Level	Standard and Examples
Synthesis	<p>TD2.1. Create multi-view and orthographic projections</p> <p>Examples:</p> <ul style="list-style-type: none"> * Design top, front, and right side views of an object * Integrate proper dimensioning techniques on a 2D drawing * Formulate the number of views needed to fully describe an object
Application	<p>TD2.2. Illustrate isometric and pictorial drawings</p> <p>Examples:</p> <ul style="list-style-type: none"> * Complete one and two point perspectives of a house * Show renderings on a pictorial drawing * Complete an isometric from a multi-view drawing
Synthesis	<p>TD2.3. Create sectional views and conventions</p> <p>Examples:</p> <ul style="list-style-type: none"> * Create ribs, webs, and fasteners with a through cutting plane. * Design the various views of a section using assigned cutting planes * Combine conventional breaks and symbols on a drawing

Application	<p>TD2.4. Demonstrate various threads and fasteners used in design.</p> <p>Examples:</p> <ul style="list-style-type: none"> * Apply the standard and metric thread classifications to various plans * Show detailed, schematic, and simplified thread representations * Classify common thread terms on a technical drawing.
Synthesis	<p>TD2.5. Integrate various drawings to create a detailed assembly.</p> <p>Examples:</p> <ul style="list-style-type: none"> * Create an assembly drawing and apply various ANSI standards * Compose a title block for drawings incorporating standard information * Formulate a standard bill of materials of a simple project.
3. Analyze and implement computer aided software in technical design	
Bloom's Taxonomy Level	Standard and Examples
Analysis	<p>TD3.1. Compare computer aided software used in technical design</p> <p>Examples:</p> <ul style="list-style-type: none"> * Analyze various types of CAD software * Explain benefits of design using CAD * Select a software to best fit the needs of design
Application	<p>TD3.2. Apply Cad software in technical design</p> <p>Examples:</p> <ul style="list-style-type: none"> * Show basic orthographic projections using CAD * Illustrate 3-D modeling of an object * Complete assembly drawings of multi-part projects