

INDUSTRIAL DRAFTING COURSE OUTLINE

Course Length: 180 Hours, 2 Semesters

Grade Level: 9-12

Prerequisite: None

Method of Instruction: Textbook, demonstration, overheads, and discussions.

Method of Grading: Accumulation of points from assignments and activities, teacher made rubrics for activities.

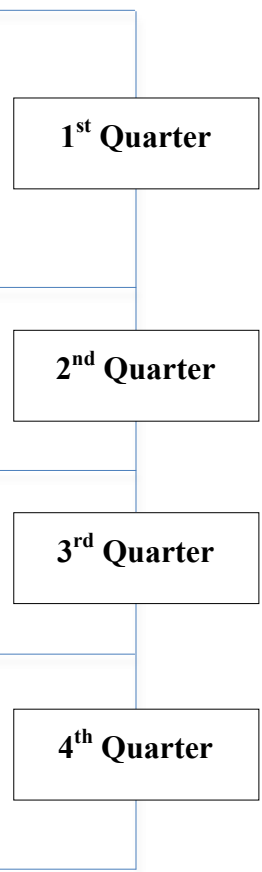
Course Description: Industrial Drafting is designed to provide basic drafting skills along with the knowledge necessary for understanding the principal ideas behind drafting communication. It presents basic instruction for preparing industrial working drawings using both traditional and computer-based methods. This class helps in developing the necessary technical skills needed to communicate ideas in an understandable, efficient, and accurate manner. Learning activities include experimentation with designing, constructing, and testing industrial ideas.

Course Outcomes:

1. Describe in graphic form, the shape and size of an object.
2. Create drawings utilizing both conventional hand drawn and computer-aided drafting.
3. Correctly use the tools and equipment used in the drafting industry.
4. Complete assigned tasks within established time schedules.

Course Content:

- I. Careers in drafting**
- The engineering design team
- II. Sketching and Lettering**
- Reasons for sketching
- Gothic lettering
- Making a proportional sketch
- III. Drafting Equipment**
- Proper use of basic drafting tools
- Identify and use of lines and line symbols
- IV. Geometry for technical drawings**
- Constructions used by drafters
- V. Multiview Drawings**
- Third angle projection
- Deciding which views to draw
- Placing views
- VI. Dimensioning**
- Applying measurements, notes, and symbols
- Appropriate sizes for dimension lines, arrowheads, and extension lines
- General rules for dimensioning
- VII. Sectional Views**
- Types of sectional views
- VIII. Pictorial Drawings**
- Isometric types
- Perspective drawing constructions
- IX. Modeling**
- Techniques for constructions
- Material variety
- X. Drawing with AutoCAD**
- Commands and their applications



Resources and Textbooks:

French, Svensen, Helsel, and Urbanick. **Mechanical Drawing**. Twelfth Edition: Glencoe McGraw-Hill 1997

John Walker. **Exploring Drafting**: Fundamentals of Technology. Goodheart-Willcox 1991

AutoCad 2004 Computerized Drafting Software

Girard High School

Name _____ SS# / /

School _____ Instructor _____

- RATING SCALE:**
- 3 Skilled-Works independently**
 - 2 Limited Skill-Requires assistance to perform task**
 - 1 Skill Underdeveloped-Received instruction but has not developed skill**
 - 0 No Exposure-No instruction or training in this area**

DIRECTIONS: Evaluate the student by checking the appropriate Number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

A. CAREER DEVELOPMENT SKILLS

(Time Management)

- 3 2 1 0 _____ 1. Estimate time required to complete a task.
- 3 2 1 0 _____ 2. Develop habits that save time.
- 3 2 1 0 _____ 3. Determine the order of activities for a step-by-step process by which a specific task can be completed.

(Materials Management)

- 3 2 1 0 _____ 1. Identify and explain the use of common supplies.
- 3 2 1 0 _____ 2. Perform routine tasks related to equipment operation and maintenance.

(Facility Management)

- 3 2 1 0 _____ 1. Make decisions and select alternatives for solving problems
- 3 2 1 0 _____ 2. Exhibit the safe use of tools and equipment.

(Communication Skills)

- 3 2 1 0 _____ 1. Ask questions to clarify oral instructions.
- 3 2 1 0 _____ 2. Exhibits appropriate listening skills.
- 3 2 1 0 _____ 3. Provides and accepts constructive criticism.

(Teamwork Skills)

- 3 2 1 0 _____ 1. Identify skills needed to maintain effective work relations with colleagues.

Industrial Drafting

ENROLLMENT DATE ___/___/___	COMPLETION DATE ___/___/___	HOURS COMPLETED _____
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I certify that the student received training in the areas indicated.

Student Signature _____ Date ___/___/___

Instructor Signature _____ Date ___/___/___

Administrator Signature _____ Date ___/___/___

(Work Ethics)

Describe desirable worker characteristics:

- 3 2 1 0 _____ 1. Cooperation
- 3 2 1 0 _____ 2. Follows Rules
- 3 2 1 0 _____ 3. Positive attitude
- 3 2 1 0 _____ 4. Demonstrates accuracy
- 3 2 1 0 _____ 5. Setting and meeting deadlines

(Mathematics)

- 3 2 1 0 _____ 1. Estimate, apply, and solve problems involving fractions, decimals, and real numbers.

(Writing)

- 3 2 1 0 _____ 1. Use language, organization, and format appropriate to the subject matter.

(Computer Literacy)

- 3 2 1 0 _____ 1. Define, understand, and use common computer technology terminology.

(Human Relation Skills)

Perform a self-assessment:

- 3 2 1 0 _____ 1. Personal goals
- 3 2 1 0 _____ 2. Needs and wants
- 3 2 1 0 _____ 3. Strengths and weaknesses
- 3 2 1 0 _____ 4. Interests and Talents

B. CLASS SPECIFIC SKILLS

(Careers in Drafting)

- 3 2 1 0 _____ 1. Identify careers available with the drafting industry.
- 3 2 1 0 _____ 2. Access and use information to develop educational and career options.

(Sketching and Lettering)

- 3 2 1 0 _____ 1. Demonstrates proficiency in lettering and line work.
- 3 2 1 0 _____ 2. Demonstrates the ability to make a proportional sketch.
- 3 2 1 0 _____ 3. Identify and construct line styles commonly used in the drafting industry.

(Drafting Equipment)

- 3 2 1 0 _____ 1. Properly and efficiently use basic drafting tools and equipment to produce technical drawings.
- 3 2 1 0 _____ 2. Identify and use of lines and line symbols.
- 3 2 1 0 _____ 3. Describe the components of a CAD system.

(Geometry for Technical Drawings)

- 3 2 1 0 _____ 1. Identify and describe various geometric shapes and construction used by drafters.
- 3 2 1 0 _____ 2. Construct various geometric shapes using points, lines, and planes from technical specifications using drafting instruments.
- 3 2 1 0 _____ 3. Apply geometric construction as a problem-solving tool.
- 3 2 1 0 _____ 4. Use geometry to reduce or enlarge a drawing or to change the proportions of a drawing.

(Multiview Drawings)

- 3 2 1 0 _____ 1. Identify and select the various views of an object.
- 3 2 1 0 _____ 2. Identify which views are necessary to draw an object
- 3 2 1 0 _____ 3. Determine the number of views needed to describe fully the shape and size of an object.
- 3 2 1 0 _____ 4. Demonstrate proficiency with third-angle projection.

(Dimensioning)

- 3 2 1 0 _____ 1. Determine location dimensions for a geometric shape.
- 3 2 1 0 _____ 2. Applies general rules for dimensioning.
- 3 2 1 0 _____ 3. Determine appropriate sizes for precision fits between matching parts.
- 3 2 1 0 _____ 4. Dimension a technical drawing using both SI (metric) units or U.S. Customary units.

(Sectional Views)

- 3 2 1 0 _____ 1. Describe the purpose of a sectional view.
- 3 2 1 0 _____ 2. Select the appropriate type of sectional view to show the hidden feature.
- 3 2 1 0 _____ 3. Rotate certain features into the cutting plane.

(Pictorial Drawing)

- 3 2 1 0 _____ 1. Demonstrates the ability to construct an isometric drawing.
- 3 2 1 0 _____ 2. Identify and demonstrates use of perspective drawing constructions.
- 3 2 1 0 _____ 3. Develop one-point and two-point perspective drawings.
- 3 2 1 0 _____ 4. Draw isometric circles (ellipses) using various methods.

(Modeling)

- 3 2 1 0 _____ 1. Identify materials commonly used in modeling.
- 3 2 1 0 _____ 2. Demonstrates techniques for modeling construction.

(Drawing with AutoCAD)

Identify and use of basic AutoCAD commands:

- 3 2 1 0 _____ 1. Line, circle, ellipse commands.
- 3 2 1 0 _____ 2. Erase, trim, extend commands.
- 3 2 1 0 _____ 3. Offset, mirror, chamfer, and fillet commands.

Identify and use of button commands

- 3 2 1 0 _____ 4. Grid, Snap, Polar, OSnap, LWT buttons.
- 3 2 1 0 _____ 5. Identify and use of command bar and menu commands.
- 3 2 1 0 _____ 6. Demonstrates ability to use layers, linetypes, and coloring options.
- 3 2 1 0 _____ 7. Demonstrates ability to use of 3D modeling.
- 3 2 1 0 _____ 8. Performs solid surfacing capabilities using 3dface and rulesurf commands.