INTRODUCTION TO DRAFTING DESIGN - PACING GUIDE – 2017-2018

COURSE OUTLINE AND COURSE GOALS

Unit 1 - Orientation

1. Relate the importance of drafting design technology in today's technological work force.
Essential Question: Why is it important to communicate in a language that transcends spoken words and barriers?

- Identify careers related to drafting
- Recognize advantages and disadvantages of entrepreneurship
- Explain how to prepare for a drafting career
- Demonstrate skills & techniques for applying for a job
- Demonstrate workplace skills
- Describe appropriate techniques for finding a job
- Explain typical uses of board and CAD techniques

Unit 2 - Safety

2. Demonstrate the safe handling of drafting design tools according to classroom and environmental practices, procedures, and regulations.
Essential Question: What is the importance of complying with safety rules, regulations and procedures?

- Follow general safety procedures.
- Adjust equipment for maximum comfort and usability.
- Describe ergonomic considerations.

Unit 3 - Applied Mathematics for Drafting

3. Demonstrate mathematic skills related to drafting design, including basic fractions, scale reading, and conversion of customary to metric and metric to customary measurements.
Essential Question: What is the importance of demonstrating an understanding of mathematical concepts when working in a Global environment?

- Basic fractions
- Reading fractional scales and measuring tools
- Conversion of fractional/decimal measurements
- Conversion of English/metric measurements
- Additional higher-level math concepts as applicable
  Example: calculating thread depth and pitch
- Architectural computations
  Examples: area, rise and run calculations
- Apply reference materials and relevant mathematical formulas to assigned problems

Unit 4 - Drafting Instruments and Techniques

4. Demonstrate proper usage of drafting instruments.
Essential Question: What is the significance of utilizing proper drafting instruments and techniques?

- Identify basic drafting tools, use and care for various drafting tools.
- Distinguish among the types of drafting media and leads.
- Use drafting equipment in a safe and efficient manner.
- Demonstrate basic drafting skills in the proper use of drafting tools, equipment, supplies, and materials
- Illustrate technical techniques for drawing lines.

Unit 5 - Lettering and Drawing Techniques

5. Demonstrate drafting techniques for freehand sketching, lettering, geometric figures, and the alphabet of lines to create a drawing.

Essential Question: Why is it imperative that the student understand and demonstrate proper lettering and drawing techniques?

- Apply sketching knowledge and techniques to solve the problem identified by the technical committee according to ANSI standards.
- Explain the importance of lettering, the purpose of guidelines, basic stroke techniques, and correct proportioning and spacing techniques.
- Letter clear, neat freehand notes and dimensions on a technical drawing or sketch
- Illustrate techniques for technical lettering.
- Produce lettering using various drafting instruments.
- Identify different styles of lettering.
- Demonstrate how the various linetypes and line weights are used on drawings.
- Make freehand drawings to solve problems and convey ideas.
- Illustrate Technical Techniques to Construct Basic Geometric Forms.
- Identify the types of sketches.
- Make freehand drawings to solve problems and convey ideas.
- Sketch a diagram to correct proportional sizes.
- Select the appropriate scale for the given drawing problem according to ANSI standards.
- Derive proper scaling and dimensions acceptable to industrial requirements on each assigned drawing.
- Explain the different types of scales utilized in technical drafting and how they are used for measurements.

Unit 6 - Multi-View Drawings

6. Construct basic multi-view two-dimensional drawings, including visualizing principle views, creating third-angle projection, selecting proper drawing scale, and organizing layout of primary views.
Essential Question: How do multi-view drawings contribute to the interpretation of the drawing?

- Explain what a multi-view drawing is.
- Define orthographic projection.
- Explain the relationship of orthographic projection to multi-view drawing.
- Identify the views necessary to make a multi-view drawing.
- Construct basic multi-view two-dimensional drawings.
    - Visualization of views
    - Third-angle projection
    - Layout and balance of views
- Describe the difference between first-angle and third-angle projection.
- Determine the number of views needed to describe fully the shape and size of an object.
- Locate multiple views on a drawing according to accepted principles of drafting.
- Create the various views of an object.
- Develop a multi-view drawing from the initial idea to a finished drawing using board drafting.

Unit 7 – Basic Dimensioning

7. Apply dimensions and notes to multi-view drawings, utilizing American National Standards Institute (ANSI) dimensioning standards and decimal, metric, or dual dimensioning.
Essential Question: Why is it so important for the student to understand and apply proper dimensioning techniques?

- Implement techniques in dimensioning and tolerance including geometric dimensioning and tolerances to solve technical drafting problems according to ANSI standards.
- Define basic tolerance terminology.
- Demonstrate correct dimensioning techniques and symbol applications.
- Explain the theory of dimensioning.
- Identify dimensioning styles and methods.

Unit 8 - Fundamentals of Computer-Aided Drafting

8. Utilize CAD software to generate a multi-view drawing using appropriate file management techniques, basic drawing commands, and basic dimensioning techniques.
Examples: file management techniques – create, set up, and save files, basic drawing commands – line, ellipse, circle, scale, basic dimensioning techniques – linear, angular, utilizing CAD software and computer to print a multi-view drawing
Essential Question: How has Computer-Aided Drafting enhanced the Manufacturing and Construction fields?

- Utilize various CAD commands to generate drawings.
- Create basic 2D drawings.
- Create geometric construction drawings.
- Create multi-view drawings.
- Apply basic dimensioning.

CULMINATING PRODUCT:

The previous lessons and activities will result in a final project consisting of a detailed technical drawing. The drawing will involve layers and dimensions current with classroom standards.