

## Course discipline/number/title: CAD 1226: CAD Drafting Practices for Industry

### A. CATALOG DESCRIPTION

1. **Credits:** 4
2. **Hours/Week:** 1 lecture, 6 lab
3. **Prerequisites (Course discipline/number):** CAD 1039
4. **Other requirements:** Students must receive a grade of C or better in all CAD courses.
5. **MnTC Goals (if any):** NA

- B. COURSE DESCRIPTION:** This course is the foundation for engineering and technical drafting basics which is designed to provide working knowledge of the industry's graphic language and detailed drawings using SolidWorks. Topics that will be introduced are geometric construction by freehand and electronic sketching, projection drawing theory, the multiview system, auxiliary and section views, and projections will be covered. Students will use SolidWorks to create parts, prints and revisions. Students will reverse engineer parts which includes learning the proper use of calipers and documentation for reverse engineering projects. This course will be taught using the latest release of SolidWorks. Students must receive a grade of C or better in all CAD courses.

### C. DATE LAST REVISED (Month, year): May, 2022

### D. OUTLINE OF MAJOR CONTENT AREAS:

1. History and Equipment of Engineering Drafting
2. Introduction to Graphic Language
3. Create Technical Sketches and Detailed Drawings
  - a) Freehand and other forms of sketching
4. Geometric construction Shape Description and Technical Sketches
5. Orthographic Projection and Multiview System
6. Cutting Planes and Sectional Views
7. Reproduction and Control of Drawings
8. Screw Threads, springs, and Common Fasteners
9. Orthographic Projection and Multiview Drawing
  - a) Orthographic views
  - b) Visualization techniques
  - c) Drafting rules
10. Basic Working Theory of Detailed Technical Drawings
11. Auxiliary views
12. Drafting standards
13. Drawing revisions
14. Reverse engineering
15. Using a standard caliper
16. Using SolidWorks for team projects

### E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Demonstrate how to read and measure drawings and scales.
2. Determine the proper paper size.
3. Understand basic shapes and their construction.
4. Understand the concepts projection, multiview systems, orthographic projections, and sectional views.
5. Produce complete section views in CAD.
6. Demonstrate freehand sketching and visualization techniques.
7. Understand basic drawing reproduction and the importance of controlling the drawing.
8. Define and identify drafting terms and rules.
9. Demonstrate efficient use of a CAD system to create detailed and technical drawings.
10. Utilize a standard caliper.
11. Demonstrate reverse engineering techniques and documentation.
12. Understand and utilize Drafting Standards.
13. Understand drawing and part revisions and its documentation.
14. Demonstrate a basic understanding of screw threads and common fasteners.

- E. LEARNING OUTCOMES (GENERAL):** The student will be able to: **Continued.** . .
15. Identify and draw various fasteners and springs.
  16. Engage in group assignments using a CAD system.
- F. LEARNING OUTCOMES (MNTC):** NA
- G. METHODS FOR EVALUATION OF STUDENT LEARNING:** Methods may include but are not limited to:
1. Projects
  2. Examinations
  3. Assignments
  4. Evaluation of electric files
  5. Skill proficiency exercises
  6. Quizzes
- H. RCTC CORE OUTCOME(S).** This course contributes to meeting the following RCTC Core Outcome(s):  
**Personal and Professional Accountability.** Students will take responsibility as active learners for achieving their educational and personal goals.
- I. SPECIAL INFORMATION (if any):** Tuition Differential