



*Sophomore Level - Engineering Design and Presentation (EDP)*  
**Synopsis**

**Goals:**

Introduction to the principles of drafting to include terminology and fundamentals, including size and shape descriptions, projection methods, geometric construction, sections, and auxiliary views. This class serves as the introductory computer-aided-design (CAD) course.

**Objectives:**

At the completion of this course, the student will have demonstrated the ability to:

- Create technical sketches, geometric constructions, orthographic projections, pictorial/sectional views, dimension drawings, and apply lettering techniques (source WECM manual end-of-course outcome).
- Prepare free-hand multiview sketches of objects assigned by the instructor.
- Prepare technical drawings utilizing traditional drafting tools and techniques.
- Prepare orthographic/multiview drawings using miter line construction techniques employing line conventions and line weights that comply with the ASME Y14.3-2003 standard.
- Prepare technical drawings with AutoCAD requiring students to set units, limits, layers, and utilize the tools of AutoCAD's Draw, Modify, and Dimension toolbars.
- Print CAD drawings to the scale and sheet sizes specified by their instructor.
- Create AutoCAD dimension styles that comply with the ASME Y14.5-2009 standard and fully dimension multiview drawings.
- Add dimensions that comply with accepted industry standards to architectural drawings.
- Draw section views of machine parts using AutoCAD techniques complying with the ASME Y14.3-2003 standard.
- Prepare isometric, pictorial drawings of machine parts utilizing AutoCAD.
- Prepare auxiliary views of machine parts with AutoCAD that comply with the ASME Y14.3-2003 standard.
- Create, insert and edit blocks with AutoCAD.
- Utilize AutoCAD to prepare multi-sheet working drawings for machine assemblies that comply with the ASME Y14.34-2008 standard.
- Utilize AutoCAD to prepare multi-sheet working drawings (floor plan and elevations) for a small residential project.
- Create a block library of architectural symbols in one drawing and insert the blocks into a different drawing using AutoCAD's Design Center.
- Create 3D models of machine parts utilizing AutoCAD software utilizing the tools located on AutoCAD's Modeling, View, Orbit, and Visual Styles toolbars.



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***Scope and Sequence***

**1<sup>st</sup> Six Weeks** –

- Wk 1 – Introduction of Course Syllabus
- Wk 2 – Multiview Drawings
- Wk 3 – Multiview Drawings
- Wk 4 – Multiview Drawings
- Wk 5 – Traditional Drafting
- Wk 6 – Traditional Drafting / Evaluation

**2<sup>nd</sup> Six Weeks** –

- Wk 1 – CAD Basics
- Wk 2 – Draw and Edit Tools
- Wk 3 – Modify Commands
- Wk 4 – Bracket, Shaft Guide, Tool Holder and Tool Slide
- Wk 5 – Dimensioning Machine Parts
- Wk 6 – Dimensioning Machine Parts / Evaluation

**3<sup>rd</sup> Six Weeks** –

- Wk 1 – Dimensioning Architecture
- Wk 2 – Isometric Drawing
- Wk 3 – Isometric Drawing
- Wk 4 – Sections
- Wk 5 – Flange Bearing
- Wk 6 – Blocks / Semester Evaluation

**4<sup>th</sup> Six Weeks** –

- Wk 1 – Mechanical Working Drawings
- Wk 2 – Mechanical Working Drawings
- Wk 3 – Mechanical Working Drawings
- Wk 4 – Mechanical Working Drawings
- Wk 5 – Mechanical Working Drawings
- Wk 6 – Mechanical Working Drawings / Evaluation

**5<sup>th</sup> Six Weeks** –

- Wk 1 – CAD Project
- Wk 2 – CAD Project
- Wk 3 – CAD Project
- Wk 4 – CAD Project
- Wk 5 – CAD Project
- Wk 6 – CAD Project / Evaluation

**6<sup>th</sup> Six Weeks** –

- Wk 1 – 3D Modeling
- Wk 2 – 3D Modeling
- Wk 3 – 3D Modeling
- Wk 4 – 3D Modeling
- Wk 5 – 3D Modeling
- Wk 6 – 3D Modeling / Semester Evaluation