

Virginia Western Community College

CAD 298

Seminar and Project in Computer Aided Drafting and Design

Prerequisites

CAD 111- Introduces technical drafting from the fundamentals through advanced drafting practices. Teaches lettering, metric construction, technical sketching, orthographic projection, sections, intersections, development, fasteners, theory and applications of dimensioning and tolerances. Includes pictorial drawing, and preparation of working and detailed drawings.

Corequisites

CAD 241- Focuses on teaching students the design of parts by parametric solid modeling. Topics covered include, but are not limited to, sketch profiles; geometric and dimensional constraints; 3-D features; model generation by extrusion, revolution and sweep; and the creation of 2-D drawing views that include sections, details and auxiliary.

CAD 242- Focuses on teaching students the design of parts by parametric solid modeling. Topics covered will include, but not limited to, sketch profiles; geometric and dimensional constraints; 3-D features; model generation by extrusion, revolution and sweep; and the creation of 2-D drawing views that include sections, details and auxiliary. The course utilizes Autodesk software and certification materials, and SOLIDWORKS software

Course Description

Requires completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. Focuses on Certifications for Autodesk software and industry related design projects or research reports developed independently and in consultation with the Instructor. Project or research opportunities include, but not limited to, parametric modeling; civil; architectural; structural; electro-mechanical; 3-D Solids; exploration of application software; or the integration of CAD/CAM. Additional course material will be presented on the importance and utilization of ASME Y14.5 Geometric Dimensioning and Tolerancing protocols.

Semester Credits: 3 Lecture Hours: 2 Lab Hours: 2

Required Materials

Textbook:

Software:

Autodesk provides each student with access to a downloadable full version of the AutoCAD programs. The student can download the Autodesk programs onto their personal computer from the storage site provided.

SolidWorks software can be accessed online and downloaded as a trial version and separate download instructions will be posted in Modules on Canvas. This software must be installed and functional prior to first class.

Other Required Materials:

SolidProfessor , One-year license for Geometric Dimensioning and Tolerancing coursework

Course Outcomes

At the completion of this course, successful students will

- 2D and 3D Technique review
- Design Intent Theory Review
- Reverse Engineering Theory Review
- ASME dimensions and tolerance theory and application — Concentration based on Industry
- AutoCAD Applications Review
- Inventor Applications Review
- SolidWorks Applications Review
- Usage of labs on campus

Topical Description

- Project Planning
- Project Presentation
- Ideation
- Design Process
- Drawing standards
- Dimensions, tolerances, and notes
- Coordinate tolerancing and GD&T
- General dimensioning symbols
- Key GD&T terms
- Symbols and modifiers
- GD&T rules
- GD&T concepts
- Datum System
- Flatness tolerance

- Straightness tolerance
- Circularity tolerance
- Cylindricity tolerance
- Datum system
- Datum targets
- Size datum features (RMB)
- Size datum features (MMB)
- Orientation
- Perpendicularity tolerance
- Parallelism tolerance
- Angularity tolerance
- Position tolerance introduction
- Position tolerance - RFS and MMC
- Position tolerance - special applications
- Position tolerance - calculations
- Runout, Concentricity
- Circular and total runout tolerances
- Concentricity and symmetrical tolerances
- Profile tolerance basic concepts
- Profile tolerance applications
- Coordinate Measuring Machine use

Notes to Instructors

Beginning Fall 2020, VWCC will require students to have a computer or reliable access to a computer, capable of participating in an online format. Online courses at Virginia Western require a significant amount of interaction with Canvas, the Learning Management System, and many require real-time class sessions using the Zoom web-conferencing tool. To be successful in online classes, students must have substantial access to a computer with high-speed internet connectivity. The expected requirements are listed on the college webpage.

This class is equally divided between a team capstone project and in-depth application of geometric design and tolerance usage. The class final will be the presentation of a technical poster outlining the team project.

[TITLE IX STATEMENT](#)

[ADA STATEMENT](#)