CAD 241
Computer Aided Drafting and Design II

PREREQUISITES:

CAD 111 or permission of instructor

COURSE DESCRIPTION:

Teaches production drawings and advanced operations in computer aided drafting.

Semester Credits: 3 **Lecture Hours: 2 Lab/Recitation Hours: 2**

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COURSE OUTCOMES

At the completion of this course, the student should be able to:

A. Have a working knowledge of three-dimensional drafting techniques.

B. Create solid models and determine their properties. Use additive manufacturing (3-D Printer) to create a physical model of virtual solid models.

C. Create Orthographic Production drawings with dimensions from solid models.

D. Customize the AutoCAD environment.

E. Be able to use advanced operations to increase CAD productivity.

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TEXTBOOK:

TITLE: Engineering Design Graphics with Autodesk Inventor 2015

- o AUTHOR: Bethune
- o PUBLISHER: PeachPit Press
- o ISBN:9780133963748

<u>Storage devices</u>:
Required: free cloud based storage account.
Recommended additional: USB portable

- To complete assignments outside the classroom, the student will need access to a current computer and a high-speed internet service and media player. The college provides an open lab for those students without home access to needed software.
- Students should provide their own stapler and pencil sharpener as these items are not provided in the classrooms.

The following supplementary materials are available:

- Tutoring: available free of charge in the open lab M302.
- VWCC offers an open computer lab format available throughout each semester if needed.
- AutoDesk provides each student with access to a downloadable full version of the AutoCAD program. The student can download the program onto their personal computer from the storage site provided in Blackboard.

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TOPICAL DESCRIPTION:

1. A working knowledge of the hardware that comprises a personal computer.
2. Use introductory Windows XX commands for file management.
3. Course materials covered:

COURSE OUTLINE

- Intro, Get Acquainted, 3D Modeling workspace, 2D vs. 3D, review (PS, layouts and viewports, plotting in MS and PS)

- 3D Coordinates, UCS system, working in 3D, review (polylines), drafting/view helpers (View Cube, Steering Wheel, View Toolbar), Shading and Visual styles

- Solid Modeling fundamentals

- Editing Solid models using 3D editing commands, grips and gizmos. Project Review. Additive manufacturing (3D Printer)

- Block Attributes, Border Template (Review Template setup and Wblock), usage of border in paper space vs. block insert, Design Center Review, Tool Palette

- Surfaces and Meshes, 2D Production drawings (3D model to 2D Multiview drawings),Placing annotative dims on 2D Production drawings in a layout

- Rendering command, Materials, Lights, Geographic location setup, view manager, Background

- Intro into Parametric programs Revit and Inventor.

- Final Review, Project Review, Project due on Exam date

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<u>Notes to Instructors:</u>

A. The location of the AutoCad program installment for use on the student's PC will be noted in Blackboard.

B. All students will demonstrate their abilities through the execution of precise 3D modeling and production/orthographic drawings using the AutoCad program.

C. Students will utilize the design development process including the application of AutoCad. The drafting and design development process will include: sketching and technical working drawings. The application and usage of proper orthographic drafting and usage will be reviewed.

D. Review of industry standards for dimensioning will be reviewed in class. Students will use appropriate dimensioning for all assignments.

E. Each student will be required to complete weekly in-class and out of class assignments. Each student will be required to complete a final project, which includes creation of production drawings in AutoCad, the usage of dimensioning, and all previously learned AutoCad applications.

F. Students will use ArcGIS for AutoCAD in at least one assignment.