Syllabus

TEC D 222 – AutoCAD 3D
Olympic College – Bremerton, WA
(4 credits)

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Course Description:

This course explores the three-dimensional construction and viewing capabilities of AutoCAD. Topics covered include a review of point coordinate entry and the user coordinate system (UCS). Spherical and cylindrical coordinate entry, 3D viewing and display techniques, construction of 3D solid primitives, 2D regions, solid modeling composites, and surfaces are also introduced. The use of multiple viewports for 3D constructions and creating 2D layouts are covered.

This course also explores the Visual Styles Manager tool palette, which is used to change the settings and create your own styles with which to view and display the 3D model. You are also introduced to the Render command. Materials that are stored as an image can be stretched over the 3D model to make it look like wood, steel, glass, or other materials. You will learn how to add different types of lights to make the scene look realistic. Advanced features enable you to create and save views and even animations of walkthroughs and flybys.

Course Objective:

Upon completion of this course, you will be able to: Define and use 3D coordinates and user-defined coordinate systems to create 3D objects. Create and use model space viewports, Extract two-dimensional views from a three-dimensional model for detail drafting. Create and edit 3D solid primitives, 2D regions, and composite 3D solid models. Create complex 3D solids using extrusions, revolutions, sweeps and lofts. Generate 3D text and dimensions, Add sunlight to a scene and adjust the properties. Render the scene to a file. Attach a material from the library to an object. Create a background and add it to the scene. Add cameras to the scene and create & save animations of walkthroughs and flybys.
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Prerequisite:

TEC-D 217 or by Instructor's permission.

Recommended Text:

AutoCAD 2013 Tutor for Engineering Graphics,
 Alan J. Kalameja, Autodesk Press.

Course Requirements:

Final course grade will be based on:
Attendance and Participation	100	pts.	(-5pts. for ea. day absent)
Graphic Assignments	200	pts.	(10pts. ea. if completed)
Mid-Term Project	100	pts.	(see requirements below)
Final Project	200	pts.	(see requirements below)
Total	600	pts.	

Grading procedure
The final grade is calculated by dividing your total points by the total possible points. The percentage result is then multiplied by 4.00 to determine your decimal grade.

> *Example:* **600** *total points* **possible**   **420** *points* **earned by student**

> *420 / 600 = .7*   *.7 x 4.00 =* **2.8**

Attendance and Participation
Because of the extensive amount of information required to complete the drawing assignments in this class, regular attendance in class will be expected.

Participation will play an essential role in getting through this class. Participation is interpreted by the student's undivided attention during the lecture, understanding of course material when called upon, interest, and enthusiasm.

Graphic Assignments
Assignments will be completed as required in the course outline. All drawings will be saved to the student's folder on the classroom server. Students will print out each assignment and turn it in to instructor for grading/comments. Use scoring sheet provided.

Extra Credit: All completed **Tutorial Exercises** at the end of each chapter are worth **10 points** each.

Mid-Term Project
Students will research and 3D-Model an "Adjustable Wrench" of their choosing. This is an ongoing project that begins on Week 1 and is to be completed and turned in by Day 2 of Week 5. A total of 5 points will be deducted for each day the project is late.

Requirements:
*(1-5) 8.5x11 Multi-View drawings of the Wrench, using viewports. (top, front, side, isometric, etc.)
*(1) 3D-Print of the Wrench, using the 3D-Printer.

Note: Please note that the 3D-Printer takes hours to print each plate and the materials inventory is very costly. Therefore, we can only allow **(1) test print of the critical areas and **(1) final print of the entire object** for each student. I would prefer that each student do their research properly and

verify all tolerances before printing, in order to have a completed project on the first print. Also, don't wait until the last minute to begin printing, as I mentioned earlier, it takes hours to print.

Final Project
Students must complete a 3D-Model of their choosing. However, it must be a type of project that must have more than (2) moving parts. This is also an ongoing project that begins immediately. Therefore, I recommend that students start thinking about their project during week 1 and not wait until the last minute. I need to know by week 2; what project you are planning on doing.

Requirements:
*(1-5) **8.5x11 Multi-View drawings** of the Final, using viewports. (top, front, side, isometric, etc.)
*(1) **3D-Print of the Final**, using the 3D-Printer.
*(1-5) **8.5x11 Rendered Views of the Final**, using appropriate materials, lighting, & camera angles.
*(1) **20-45 second movie:** a flyby around or through your object.

Note: Please note that the 3D-Printer takes hours to print each plate and materials inventory is very costly. Therefore, we can only allow **(1) test print and **(1) final print** for each student. I would prefer that each student do their research properly and verify all tolerances before printing, in order to have a completed project on the first print. Also, don't wait until the last minute to begin printing, as I mentioned earlier, it takes hours to print.

Classroom Policies:

Cell Phones:
Classroom use is prohibited. Either turn off completely or set mode to vibrate. Do not use cell phone during active lecture or demonstration time. Break times will be provided and phones can be used during that time period.

Additional Lab Hours:
Completion of graphic assignments may require an investment of additional student time. Therefore, the Computer lab at the Olympic College campus is available when no other class is in session. It is located in Shop 114 and is available for use after hours and on weekends, however, Lab is closed between midnight and 6am.
Note: Students must call security at (360) 475-7800 to open building/lab room and must notify security when they are leaving so they can lock up.

Resources:

American Disabilities Act Statement:
Any student who feels he/she may need an accommodations based on the impact of a disability should contact the office of Access Services or call (360) 475-7540 for information or an appointment.