MEC202- Engineering Drawing and Computer Aided Design 1

SYLLABUS

Course Description:
This course introduces methods used to communicate design ideas through the technique of 2D & 3D computer-aided design software using current versions of AutoCAD and Autodesk INVENTOR software. The application of some mathematical principles to solving engineering problems is included.

Goals:
1. To provide the engineering student with an understanding of the graphic language used to make engineering drawings.

2. To have each student achieve a measurable level of proficiency in creating and interpreting freehand technical sketches to record design ideas and to develop strategies to convert these sketches into engineering drawings.

3. To have each student achieve a measurable level of proficiency in using current versions of AutoCAD and INVENTOR drafting software to produce industry standard CAD drawings.

TOPICS:
1. Introduction to the role of the computer in engineering design; hardware and software tools for computer-aided design.

2. Basic computer graphics: constructing 2D shapes, coordinate entry methods, editing tools, dimensioning, object properties.

3. Freehand sketching and visualization techniques.

4. Advanced graphic techniques: Orthographic, auxiliary and section views, plotting.

5. Feature based Parametric Solid modeling.


Computer Usage:

Homework assignments:
Freehand sketching and drawing assignments using the installed software.

Prerequisites:
Mechanical Engineering Student or permission of MEC Department Chairman.
Attendance:
You are expected to attend each session. The beginning part of each class will be used for the introduction of new material. The remainder of the class will be for the completion of assigned work. Additional lab hours with a TA will be posted in the lab.

Grading:
Each homework assignment has a point value associated with it based on the instructor’s assessment of the degree of difficulty and time required for its completion. Achieving the maximum point value for each homework requires that the student follows the procedures outlined in the assignment introduction, that the student adheres to all relevant conventions associated with the style of drawing being done and that it be submitted on time.

The homework assignments and mid-term exam are all weighted (the weight value reflects the assignment’s importance compared to the other assignments.) The student’s final course grade is the percentage of the maximum point total achieved converted to a letter grade using the University’s standard formula.

Suggested Textbooks:
"Parametric Modeling with Autodesk INVENTOR" by Randy Shih.

Supplies:
A thumb drive for personal backup of drawing files.

List of Course Specific Outcomes:

O7. The ability to communicate effectively (10)

Engineering graphics is an essential tool for every engineer. Being able to draw gives a person’s thoughts visible form. Drawings can communicate these ideas effectively. The specialized nature of this course allows the student to produce these drawings using concepts and standards that permit the drawing to be read accurately.

ALL of the homework assignments are designed to meet this outcome.

O11. The ability to use modern engineering techniques, skills, and computing tools
necessary for engineering practice (10)

CAD programs, AutoCAD and Autodesk INVENTOR, are used for homework and projects as well as using the Windows operating system, Network logon procedures, file storage and retrieval, and other common computer user tasks.

Each new homework assignment introduces a new set of drawing skills. These new skills in combination with skills from previous assignments are used to produce more complex drawings. Completion of all of the homework assignments gives students a fundamental understanding of modern Computer Aided Drafting and Design software.

Method of Outcomes Assessment

Outcome 7: graded homework and quiz.

Outcome 11: graded homework and projects.

Note:
If you have a physical, psychological, medical or learning disability that may impact on your ability to carry out assigned course work, I would urge that you inform me of this condition and that you contact the staff in the Disabled Student Services office (DSS), Room 133, Humanities, 632-6748 v/TDD. DSS will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation of disability are confidential.