Syllabus for MECH-113 (2-2)3 Computer Aided Engineering Drawing I  
2019-2020 Academic Year Summer School

Instructor:  
Assoc. Prof. Dr. Murat SÖNMEZ  
Office: R-217  
Office Phone No: 2934  
E-mail Address: sonmez@metu.edu.tr  
Web Site Address: http://users.metu.edu.tr/sonmez/

Course Schedule:

Reference Books and other Supplementary Materials:
* Lecture Notes at the web page of MECH114 http://users.metu.edu.tr/sonmez/MECH%20114/MECH%20114home.htm and also in METU Class https://odtuclass.metu.edu.tr/

Grading:
Mid-Term Exam : 40%  
Quizzes& Pop Quizzes’, Class Works : 20%  
Final : 40%

Important Note for Attendance: 80% attendance is mandatory. If your attendance is below 80%, you will not be allowed to take the midterm and the final exams. (Attendance is optional for the ones who repeat the course for increasing the grade from BB if they accept that PQ grade will be substituted by the previous PQ grade)
Catalog Description

Course Learning Outcomes
Having successfully completed this course, the student will be able to:

1. Draw two-dimensional sketches, views in CAD environment (particularly in AutoCAD and Autodesk Inventor)
2. Can import AutoCAD file into Inventor environment and create the solid model, Create solid models of objects; objects in basic shapes, composite bodies, custom built machine parts, building modules etc., can import/export the files from/to other common solid model environments (Such as CATIA, Solid Works, SAT, Pro Engineer, Parasolid, etc.)
3. Draw the orthographic views of an object in CAD environment (particularly in Autodesk AutoCAD environment).
4. Create principle orthographic views of an object from the solid model (particularly in Autodesk Inventor environment).
5. Dimension the views, show some annotations, provide the size tolerance of functional features, and general tolerances for non-functional features
6. Explain and interpret the dimensions and the associated tolerances, and some annotations
7. Create auxiliary views, sectional views.
8. Read orthographic views; i.e. visualize the 3-Dimensional model of the object shown to its orthographic views and create its CAD model.

In short, having successfully completed this course, the student will be able to write and read the language of industry, “Engineering Drawing” and to create solid model of single parts and engineering drawings

Teaching Format
Nine 50-minute/Week for synchronous / asynchronous lectures and CAD applications,

Weekly Class and Tutorial Schedule

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<tr>
<td>Week 1</td>
<td>Drawing Tools and Instruments, Corresponding CAD facilities , Structures of AutoCAD Mechanical and Autodesk Inventor Professional, Drawing Paper/Drawing Template Scaling, Types of Lines, Precedence of Lines, Lettering,</td>
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<td>Week 2</td>
<td>Layer creation in AutoCAD, Geometrical Constructions, View drawing in AutoCAD and sketching in Inventor, Drawing/Sketching and Editing Commands, , Solid Model creation; Importing an AutoCAD file into Inventor environment, 2-D Sketching in Inventor, Creation of right prisms, extrusion process, Rounds and fillets</td>
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<td>Week 3</td>
<td>Orthographic Projection; Principle Picture Planes, Principal views, 1st.Quadrant, 3rd.Quadrant projections, Object Orientation, Selection of Views,</td>
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<td>Week 4</td>
<td>Projections of a point, Views of lines, flat planes and objects, Order of Drawing, Creating views in Autodesk Inventor Professional Environment</td>
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<td>Week 4</td>
<td>Revolve process; creating revolved parts and features, Decal, Importing Excel files into Inventor, Loft, 3D Sketching, Sweep, Rib, Split and Shell Process’</td>
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<td>Week 5</td>
<td>Exercises on Solid Model creation, Inspection tools of AutoCAD and Inventor Environments</td>
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<td>Week 5</td>
<td>Dimensioning format/ Rules, Non-functional and Functional Dimensions, Size Tolerances, IT-Grading System, General Tolerances, Dimensioning tools of AutoCAD Mechanical and Inventor Professional Environments, Dimensioning exercises</td>
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<td>Week 6</td>
<td>Auxiliary Views, Sectional Views, Schematic Drawing in AutoCAD</td>
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<td>Week 6</td>
<td>Method of View Reading, Reading Details, Exercises</td>
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**Relationship to Program Performance Indicators**

This course contributes to fulfillment of the following performance indicators:

- **c4.** Construct a functional prototype based on design documentation

- **g1.** Communicate using visual tools such as engineering drawings, graphics, diagrams, charts, plots, schematics, sketches, free body diagrams

- **k1.** Use tools for 3D CAD modeling and fabrication/manufacturing

- **k2.** Use tools to prepare technical report, presentations, and graphics