

**ME 114 - COMPUTER AIDED ENGINEERING DRAWING I (2 2 3)**  
**2012 - 2013 Spring**  
**Course Syllabus**

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Lecture Hours: Section 1  
Tuesday 15:40 – 17:30 @ H-335  
Thursday 11:40 – 13:30 @ H-337  
Section 2  
Monday 15:40 – 17:30 @ H-337  
Friday 11:40 – 13:30 @ H-335

Office Hours : Thursday 09:40 – 11:30.  
Appointments are accepted.

Web site : <http://me114.cankaya.edu.tr>

Course Description: The mechanical engineers often need to provide assembly drawings and give detailed information related with surface quality and tolerances. In addition, details of special machine elements such as threaded fasteners and gears need to be provided in some engineering drawing materials. Therefore this course aims to equip the mechanical engineering students with basic knowledge on assembly drawings and representation of special machine elements. In addition, solid models of engineered parts are crucial for mechanical engineers especially for analysis purposes. Therefore, the course also aims to equip the students with the basics of solid modeling.

**Course Objectives:**

- 1) To give an ability to create drawing of threaded/nonthreaded fasteners and gears
- 2) To give an ability to understand tolerances and surface quality marks
- 3) To give an ability to create solid model of a part
- 4) To give an ability to design and align given parts in an assembly drawing.

Course Material: Text Book is "Fundamentals of Graphics Communication, Bertoline & Wiebe, 6<sup>th</sup> Edition, McGraw-Hill International Edition."

Lecture notes are to be provided via the web site of the course (possibly before the lecture hour) as pdf files. These files will include PowerPoint slides presented in the class. Study sets will be posted on course's web site at the end of each chapter. It is strictly recommended that the students review the topics by working on these study sets given for student's benefit.

Examinations: There will be 2 mid-term examinations and 1 final examination. The examinations will be computer based and students are asked to prepare a given drawing using AutoCAD. These exams basically

aim to evaluate the engineering drawing knowledge of the student, not only the AutoCAD usage. Homework will be scheduled before each midterm examination. Thus, the homework can be perceived as exercises covering the topics so far.

Practice hours: Last two hours of the class are appointed to recitation of the subjects covered during the first two hours. The students will work on examples during the recitations in order to be equipped for preparing engineering drawings by computer means. The students are expected to complete the exercises during the recitation period. Completion of the exercises is to be checked and this will add points to the overall grade of the student.

Term project: There will be a term project covering the fundamental issues of engineering drawing. In this project the students are expected to prepare engineering drawings of either a real engineering product (assembly) or a product (assembly) whose isometric view is presented as a printed material.

Attendance: According to the university regulations, students must attend at least 70 % of the lecture hours and 80 % of the recitation/laboratory hours. Otherwise, the student gets NA (Not attended) from the course. Valid excuses are exempt from computation of these percentages.

Apart from the university regulations, it is of student's benefit to attend all of the lecture and recitation/laboratory hours. In fact, the students are expected to attend all of the sessions throughout the semester, since the sessions follow a series of applications.

Grading: Overall final grade will be over 1000 points. Weight of each grading item will be as below.

MT-1 exam grade over 200

MT-2 exam grade over 200

Final exam grade over 250

Homework grade over 100 (= 2x50)

Practice hour performance over 150

+ Term project grade over 100

Final grade over 1000

All the announcements, including the examination dates will be posted on the course web site.

**Reference Books:**

1. Technical Drawing with Engineering Graphics-Fourteenth Edition, F. E. Giesecke, A. Mitchell, H. C. Spencer, I.L. Hill, J.T. Dygdon, J.E., Novak, Pearson., 2012, ISBN 0-13-272971-7
2. Introduction to AutoCAD 2011 – 2D and 3D Design, A.Yarmwood, Newnes Elsevier Inc., ISBN: 978-0-08-096575-8
3. Engineering Drawing and Graphic Technology-International Edition, Thomas E. French, Charles J. Vierck, Robert J. Foster, McGraw-Hill, Inc.1993 ISBN 0-07-022347-5
4. Engineering Drawing and Design-Sixth Edition, C. Jensen, J.D. Helsel, D.R. Short, McGraw-Hill, 2002, ISBN 0-07-821343-6 (T 353 J47 2002)
5. Mechanical Engineering Drawing-Self Taught, Jashua Rose, <http://www.gutenberg.org/files/23319/23319-h/23319-h.htm>

Tentative weekly course schedule:

Chapter		Week	Subject
3	Constraining Profile Geometry for 3-D Modeling, 3-D Modeling Elements	1	Introduction to Solid Modeling
4	Modeling Fundamentals	2	Construction of Solid Features
9	Tolerancing, Surface Quality Marks	3,4	Tolerances, Surface Quality Marks
10	Geometric Dimensioning and Tolerancing	5	
11	Working Drawings and Assemblies (Assembly Modeling, Basic Concepts, Working Drawings, Standard Parts, Using CAD to Create Detailed Working Drawing from 3-D Model)	6	Introduction to Working Drawing and Assemblies
			Creating Working Drawings
			Transferring Solid Parts to Drafting Details
	Threaded Fasteners, Standard Bolts, Studs and Fasteners	7	Threaded Fasteners
	Non-threaded Fasteners, Springs	8	Pins, Rivets, Keys, Springs
	Mechanisms	9	Gears, Cams
	Welding	10	Welding Representation
	Working Drawing and Assemblies - Sample Applications	11,12,13	Assembly Modeling
6	Descriptive Geometry	14	Descriptive Geometry