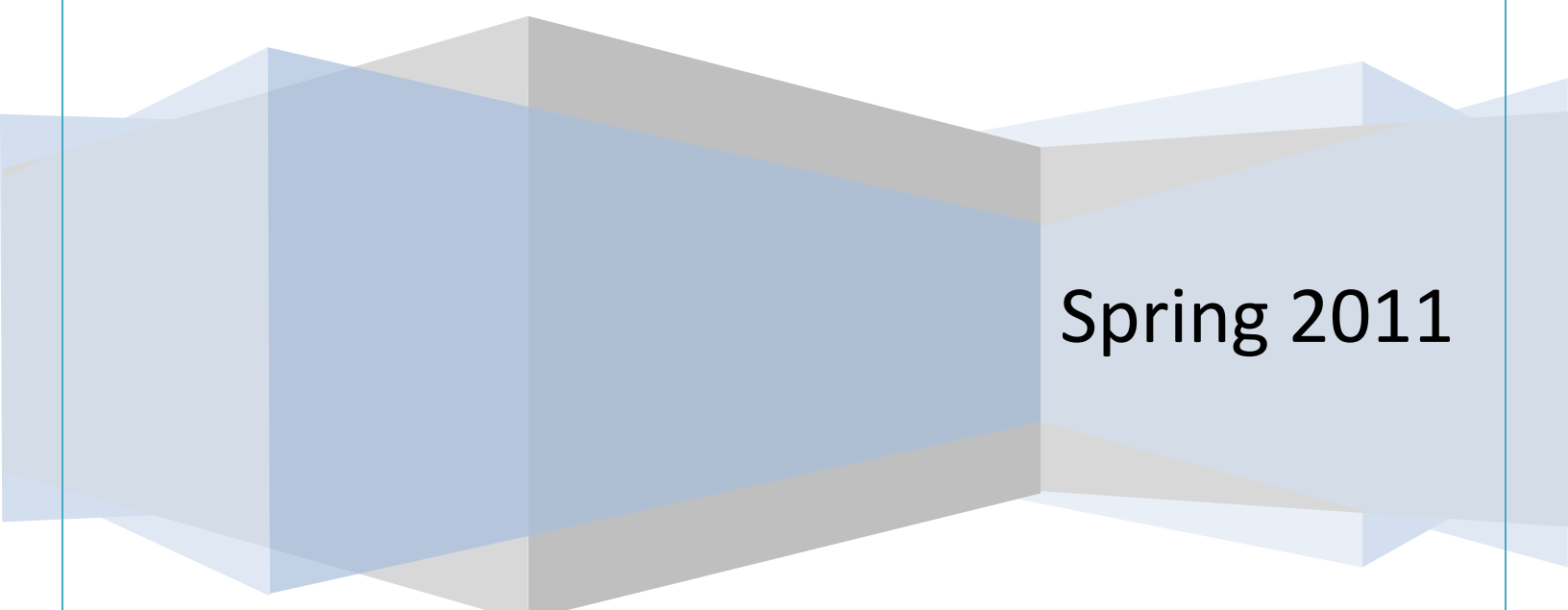


ITEC 342

Computer-aided Engineering Drawing

Hosein Atharifar, PhD, CMfgE



Spring 2011

ITEC 342 Computer-aided Engineering Drawing – CAED (Spring 2011)

Date	Day	Session	Subject		
Jan 19	Wed	1	Review-technical drafting (layouts, lines, annotations, surface texture)	AutoCAD	
Jan 24	Mon	2	Multiview drawing and sectional views using AutoCAD		
Jan 26	Wed	3	Auxiliary views using AutoCAD		
Jan 31	Mon	4	Tolerances and Fit – print reading		
Feb 2	Wed	5	Geometric Dimensioning and Tolerancing – print reading		
Feb 7	Mon	6	Isometric and oblique projections using AutoCAD		
Feb 9	Wed	7	Threads – internal and external – drawing bolts and nuts from scratch		
Feb 14	Mon	8	Gears and Springs – drawing them from scratch		
Feb 16	Wed	9	Detail drawings in AutoCAD Mechanical – an introduction to ACAD ME	AutoCAD Mechanical	
Feb 21	Mon	10	Assembly drawings – balloons, bill of materials (BOM), std TB and border		
Feb 23	Wed	11	Fasteners in assemblies: bolts, nuts, pins, washers, etc		
Feb. 28	Mon	12	Mechanical parts in assemblies: gears, springs, chains, etc		
March 2	Wed	13	Working on the project		ACAD ME Project
March 7	Mon	Spring Recess			
March 9	Wed	Spring Recess			
March 14	Mon	14	Working on the project		
March 16	Wed	15	Welding drawings		
March 21	Mon	16	Piping drawings		
March 23	Wed	17	Electrical drawings		
March 28	Mon	18	Design calculations and finite element analysis (FEA)		
March 30	Wed	19	Working on the project – submit by 12 pm on Friday, April 1, 2011		
April 4	Mon	20	Exam #1		
April 6	Wed	21	Drawing views in SolidWorks	SolidWorks Project	
April 11	Mon	22	Annotation and preparation of detail and assembly drawings		
April 13	Wed	23	Sketching		
April 18	Mon	24	Part modeling I		
April 20	Wed	25	Assembly modeling		
April 25	Mon	26	Part modeling II		
April 27	Wed	27	Part modeling III and Rendering		
May 2	Mon	28	Working on the project – submit by 4 pm on Monday, May 2		
May 5	Thursday	Exam #2 - 12:30 pm -2:30 pm (check any changes at www.millersville.edu/registrar/)			

- Notes: 1. Class exercises and HW will be assigned in the class.
2. Instructor preserves the rights to change the course calendar.

Time: Monday-Wednesday 12:45 pm-2:50 pm

Location: Osburn hall, rooms #300 and #301

Instructor: Hosein Atharifar, office #320 at Osburn hall

Office hours: MW 10-11:30 (am) and TuTh 3:30-4:30 (pm)

Contact: (717) 872-3328; hatharifar@millersville.edu; web site: <http://www.millersville.edu/~hatharifar/>

Millersville University

Department of Industry and Technology

Computer-aided Engineering Drawing (ITEC 342), 3 credit hours

PREREQUISITES: ITEC 241

INSTRUCTOR: Hosein Atharifar

CONTACT: office #320 at Osburn hall; hatharifar@millersville.edu; (717) 872-3328

TEXT BOOKS:

- a. (Required) **Engineering Graphics** (by Frederick E. Giesecke and et al.), publisher: Prentice Hall, ISBN-10: 0131415212 or ISBN-13: 978-0131415218; you may have this book from ITEC 241 class.
1. **OR**
 - b. (Required) **Modern Graphics Communications** (by Frederick E. Giesecke and et al.), publisher: Prentice Hall, 4th Ed., 2009, ISBN: 0135151037; you may have this book from ITEC 241 class.
2. (Required) **Blueprint Reading for the Machine Trades** (by Russ Schultz and Larry Smith), publisher: Prentice Hall, ISBN-10: 0135038782 or ISBN-13: 978-0135038789
3. (Optional) **Shop Reference for Students and Apprentices** (by Christopher J McCauley and Edward G Hoffman), Publisher: Industrial Press, Inc.; 2nd edition (2001), ISBN-10: 0831130792
4. (Optional) **Autodesk Official Training Courseware: AutoCAD Mechanical 2009**, Includes 30 days trial CD, publisher: Autodesk press (2008)
5. (Required) **SolidWorks 2009 for Designers** (by Sham Tickoo), publisher: CAD/CIM Technologies, ISBN-13: 978-1-932709-65-0; *you may purchase this book from MU's Bookstore located at Student Memorial Center or from http://www.cadcimtech.com/order_form_solidworks.htm*

RECOMMENDED REFERENCES

- "Engineering Drawing and Design", by Cecil Jensen, Jay Helsel, and Dennis Short, 7th ed., 2007, publisher: McGraw-Hill, ISBN-10: 0073521515 or ISBN-13: 978-0073521510
- "Drawing Workbook for Engineering Drawing and Design", by Cecil Jensen and Jay Helsel, 6th ed.

CATALOG DESCRIPTION

Advanced engineering drawing utilizing computer-aided drafting (CAD) for the study of mechanical drawings, threads, gears, and standard fasteners; geometric dimensioning and tolerancing (GD&T); schematic, production, and assembly drawings; and introduction to solid modeling. Student should possess a basic knowledge of engineering graphics with an understanding of view orientation, projection systems, and CAD. 2 hours of lecture and 3 hours of lab.

OBJECTIVES

As a result of this course student will:

1. Demonstrate working knowledge of CAD terminology
2. Identify CAD software features, including all menus and library capabilities.
3. Understand the geometric dimensioning and tolerancing (GD&T) principles
4. Obtain working knowledge of ANSI-INCH or ANSI-Metric engineering drawing standards
5. Develop production drawings of complex mechanical systems
6. Complete detail-assembly drawings using CAD software
7. Develop basic welding, electrical, and piping drawings
8. Carry basic 3D CAD solid modeling skills

GRADING POLICY

- Homework (20%)
- Class activities/exercises (5%)
- Class participation (5%)
- AutoCAD ME project (10%)
- SolidWorks project (10%)
- Exam #1 (30%)
- Exam #2 (20%)

GRADING SCALE

<u>Grade</u>	<u>Percent</u>	<u>Grade</u>	<u>Percent</u>
A	≥ 94	C	73 – 76.9
A-	90 – 93.9	C-	70 – 72.9
B+	87 – 89.9	D+	67 – 69.9
B	83 – 86.9	D	63 – 66.9
B-	80 – 82.9	D-	60 – 62.9
C+	77 – 79.9	F	< 60

CLASS ATTENDANCE POLICY

Students are expected to attend all classes. It is the student's responsibility to complete all course requirements even if a class is missed. If a student misses class for an officially excused reason, then he/she is entitled to make up the missed work but only at the convenience of the faculty member. Responsibility for materials presented in, assignments made for, and tests/quizzes given in regularly scheduled classes lies solely with the student. **Note: each absence beyond three sessions will reduce two points from your cumulative final grade.**

ACADEMIC DISHONESTY

Academic dishonesty is not tolerated and may result in failure in the course. University's description of academic dishonesty is available at <http://www.millersville.edu/~govern/sect3/acaddis.html>.

CLEAN-UP AND LABORATORY MAINTENANCE

All students are required to clean all areas in which they have worked at the end of the period—discard all scrap paper. It is each student's responsibility to participate in the general clean up and maintenance at the conclusion of the semester to restore the CAD labs and drafting facility.

MISCELLANEOUS

- Students must check Desire2Learn (<https://millersville.desire2learn.com/>), their marauder e-mail, and <http://www.millersville.edu/~hatharifar/> for announcements, and other course material.
- Failure to take all tests and submit all assignments by the required deadlines invalidates the grading system.
- *There is one week allowance to return the homework.* Put your name, student number, and course section (e.g. ITEC 342.01). Submit your homework in the class. If there was an emergency, you can put your homework in my mail box.
- CAD project is printed preferably on ANSI-A size sheet and submitted to me on or before the announced due date.
- There are no make-up exams. Exceptions may be made at my discretion for reasons of illness or university excused absences.
- Students with special needs should contact "Office of Learning Service" at (717) 872-3178, or <http://www.millersville.edu/~ols/reslib.php>.

My expectations

- Take notes in the class
- Pay attention to the instructions.
- Read the lecture material prior to and after the class; textbooks are full of information!
- Come to class prepared.
- Do not leave your seat unless you want to go out or participate in the class activities.
- Group working is a great habit, NOT during our sessions.
- For homework, group working is encouraged, but do not copy from one another.
- **Do not communicate** with others while drafting. You are simply distracting other students.
- **During lecture**, you can stop me and ask questions.
- **During drafting**, if you need assistance, raise your hand. I will come and assist you.
- Cell-phones should be off or be set on vibrate.
- Cell phones should be put away; there should not be any messaging in the class.
- No MP3 players and head sets in the class.
- No drinks and eating in the drafting room and CADD lab.
- Always hand-in homework at the **beginning of the class** (since at the end of the class, homework may be solved and discussed)
- Clean your work-station before leaving

Working at home

You can download Autodesk products for free including AutoCAD, AutoCAD Mechanical, AutoCAD MEP, and Autodesk Inventor. To do so, you have to build a profile using your student e-mail address in this address: students.autodesk.com. For SolidWorks, you can purchase the student version of the software online (from e.g. www.studica.com).