

MCG-1100–Winter 2017 Computer-aided Drafting

The objectives of this course are to introduce you to freehand sketching as well as, to give you basic skills in Computer-aided Drafting (CAD). **CAD work will be done using the departmental version of ‘SolidWorks’ software.** Drafting and sketching are essential means of communication in the world of engineering.

MCG1100 also includes “mechanical dissection” labs. This document is the course outline for the CAD/drafting part of MCG1100; there is a separate outline for the mechanical dissection labs.

Instructors:

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Teaching Assistants:

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Course Reference Books: (available at the library)

- Technical Drawing, F. E. Giesecke *et al*, 15th Edition, Prentice Hall.←← (Recommended)
- Fundamentals of Engineering Drawings,W.J.Luzadder *et al*, 10th Edition, Prentice Hall.
- Graphics for Engineers, J. H. Earle, Fifth Edition, Prentice Hall.
- Marks’ Standard Handbook for Mechanical Engineers.
- Learning Solid Works, R. M. Lueptow, M. Minbiole, 2nd Edition, Prentice Hall.
- Mastering Solid Works, Ibrahim Zeid, Prentice Hall.

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COURSE OUTLINE

- 1 Introduction to engineering drawing and Solid works
- 2 Projections (including orthographic projection, oblique projection and perspective)
- 3 Free hand sketching (including isometric and oblique sketching)
- 4 Multiple views
- 5 Missing views
- 6 Fasteners
- 7 Assembly drawings
- 8 Section Views
- 9 Dimensioning and tolerances
- 10 Previous years CAD/sketching exams

In addition, this course will introduce students to some of the commonly used features of ‘SolidWorks’ mechanical design automation system, and enable them to create a set of 2D and 3D drawings , and change their dimensions and geometric relationships while preserving the design intent. Also, if time permitted, some advanced features of Solid Works will be introduced.

DATES to REMEMBER

<i>Mcg 1100</i>	<i>Sec. A</i>	<i>Sec B</i>	<i>Sec. C</i>	<i>Sec. D</i>
Proj. Approval	Feb. 3	Feb 1	Feb 2	jan 30
Mid-term Exam	Saturday 4th of Mar.			
Personal Project	24 March @ 17:30			
Final Exam.	Mon.. 10 th of April OR ????? of April 2017			

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Details of assignments

Solid Works assignments

- Create a directory named ‘CAD’ to save all your Solid Work assignments.
- Due dates are firm unless stated otherwise. Dates mentioned below **refer to the 3 hrs lab of your section.**
- **Isometric 1&2** In-class practice **(Wk. 1 and 2)**
 - Selected objects (2,5,10,11,15,19,21,22,23,24) shown on page 1
 - Save all your work under ‘CAD\iso1-xx.sldprt’, where ‘xx’ is the object number.
 - Selected objects (2,5,6,8,14,15,18,19,22,23) shown on page 2.
 - Save all your work under ‘CAD\iso2-xx.sldprt’, where ‘xx’ is the object number.
 - OPTIONAL for your own practice, create the remaining objects.
- **Caster** (Page 3) **Due date: feb 6,8, 9 or 10 (WK #5)**
 - Assembly drawing of the Caster’.
 - Save all your work under the label ‘CAD\caster-xx’, where ‘xx’ is the part number
 - Free hand sketch the oblique view of the ‘caster’ assembly.
- **Circular Pattern** (Page 4) In-class practice **(Wk. # 3)**
- **Vice** (Page 5) **Due date: March 6, 8, 9 or 10 . (Wk # 9)**
 - Assembly drawing of the ‘Vice’ shown on page 5.
 - A fully dimensioned set of drawing (3 views) of its components using ‘Solid Works’.
 - Save your work under ‘CAD\vice-xx.’, where ‘xx’ is the part number.
- **Sheet metal** (Page 6) In-class practice **(Wk. # 10)**
- **Personal project** **Due date: Mar 24 th, 2017 @ 17:30 (Wk. # 11)**

Create the ‘Parts and Assembly’ drawings of an object or an instrument of your choice composed of at least 5 parts and *APPROVED BY YOUR PROFESSOR*. Also,

 - a fully dimensioned set of ‘3 views’ of its components using Solid Works.
- **Previous years exams** In-class practice . **(Wk. 11, 12 and 13)**

Free Hand Sketching (Dates mentioned below **refer to the 1 1/2 hrs lab** of your section.)

MAINTAIN PROPORTIONALITY DURING SKETCHING

- **Orthographic Sketching** In-class practice **(Wk. #1 and 2)**

Sketch on square paper the selected parts from pages 10 and 11

- Sketch the ISOMETRIC views for part # 9, 12, 15, 30, 35, 36
- Sketch the OBLIQUE views for part # 5, 7, 14, 16, 20, 28, 29, 31, 33,39.
- OPTIONAL for your own practice, sketch the isometric views of the remaining objects

- **Missing lines** In-class practice **(Wk. #3)**

A line(s) is missing from any of the given views on page 13

- Add the missing line on the sheet provided .

- **Multiple views** **Due date: Jan 30, Feb 1 or 2 (Wk #4)**

- Sketch the 3-views for part # 4, 7, 10, 12, 14, 25, 29, 31, 33, 36 (Pages10 and 11)

- **Missing views** **Due date: Feb 13, 15 or 16 (Wk #6)**

- For either the odd or the even numbers, sketch the 3-views including the missing one from (Page 12).

OPTIONAL for your own practice, sketch the 3-views of the remaining objects

- **Sectioning** (Page 14) **Due date: Mar 13, 15 or 16 (Wk#10)**

- For either the odd or the even numbers, sketch the 3-views including the required section view.

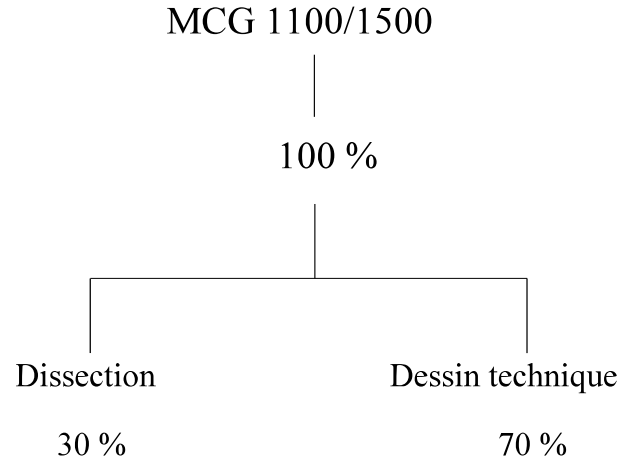
OPTIONAL for your own practice, sketch the section views of the remaining objects

- **Previous years exams** *In-class practice.* **(Wk. #11, 12 and 13)**

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Grading Scheme

- Dissection portion:- 30%
- Drafting portion:- 70 %
- Course total:- 100%

The following grading scheme is for the *drafting portion* of the course **ONLY** and does not include the *Dissection*.



ASSIGNMENTS	S.W	Sketch	
Caster	4		
Vice	4		
Multiple Views		2	
Missing Views		2	
Sections Views		3	
Personal Project	7	3	
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S/TOTAL	15	10	25
– In-Class work and Attendance			10
– MID-TERM			15
– FINAL EXAM			50

			100

IN ORDER TO PASS THIS SEGMENT OF THE COURSE, YOU MUST GET A PASSING MARK IN THE FINAL EXAM. A PASSING MARK IN THE FINAL EXAM. IS 25/50. IF YOU DO NOT GET A PASS IN THE FINAL EXAM, YOUR FINAL GRADE CANNOT BE HIGHER THAN ‘E’ REGARDLESS OF WHAT YOUR TOTAL MARKS ADD UP TO.