

**Professor H. L. Wong**

## Computer Aided Design

**How well did you learn?**

Not at all → Very Well

1 2 3 4 5

**ENTER YOUR RATINGS**

↓ **BELOW** ↓

COURSE OBJECTIVES AND OUTCOMES		1	2	3	4	5
<b>Goal.</b> This course is about applications of interactive computer graphics to design problems; automated drafting; 3-D graphic algorithms. Analysis of design process from information processing viewpoint.						
<b>Objective.</b> To learn the components of CAD						
<b>Outcome.</b> The students will know and understand the following subjects						
1	Basic AutoCAD – Drawing Setup, points, lines, curves.	1	2	3	4	5
2	Basic AutoCAD – Poly shapes, scales, text operations.	1	2	3	4	5
3	Basic AutoCAD – Plotting and dimensioning	1	2	3	4	5
4	3D Solid Modeling – Union, subtract, intersect	1	2	3	4	5
5	3D Solid Modeling – Editing	1	2	3	4	5
6	3D Surface Modeling – 3D Faces	1	2	3	4	5
7	3D Surface Modeling – Curved surfaces	1	2	3	4	5
8	Introduction to FEA (Finite Element Analysis)	1	2	3	4	5
<b>Objective.</b> To learn to use AutoCAD to create 2-D drawings						
<b>Outcome.</b> The student should be able to:						
9	Know all of the basic 2-D AutoCAD commands required for most civil engineering applications.	1	2	3	4	5
10	To generate quality 2-D line drawings to meet future employer requirements.	1	2	3	4	5
<b>Objective.</b> To learn the basics of 3-D Solid modeling using AutoCAD						
<b>Outcome.</b> The student should be able to:						
11	Have a rudimentary knowledge of the AutoCAD command line interface.	1	2	3	4	5
12	To create presentation quality 3-D solid models.	1	2	3	4	5
13	Use the AutoCAD 3-D modeling proficiently	1	2	3	4	5
14	To be able to produce 2-D drawings from the solid model	1	2	3	4	5
<b>Objective.</b> Learn the basic of finite element modeling using SAP 2000						
<b>Outcome.</b> The student should be able to:						
15	Use SAP 2000 from a practical point of view	1	2	3	4	5
16	Understand the basic underlining engineering principles used in an FEM program.	1	2	3	4	5
17	Understand the different type of elements available to engineer for modeling.	1	2	3	4	5
18	Transfer basic geometric information between the CAD program to the FEM program when possible – dxf file transfer	1	2	3	4	5
19	Perform static analysis, modal analysis, and response spectrum analysis	1	2	3	4	5

**Professor H. L. Wong**

**Computer Aided Design**

		How well did you learn?				
		Not at all → Very Well				
COURSE OBJECTIVES AND OUTCOMES		1	2	3	4	5
<b>Objective.</b> Perform several design projects using the tools learned in the class						
<b>Outcome.</b> The student should be able to:						
20	Complete at least eight minor projects using 2-D line drawings using AutoCAD, 3-D solid modeling using AutoCAD, hand calculations, and written reports	1	2	3	4	5
21	Complete three final projects using 2-D line drawings, 3-D solid modeling using AutoCAD, justification of results, written report, and finite element analysis	1	2	3	4	5
Relationship of Civil Engineering Program Course Objectives to Outcomes						
<p><b>Objective:</b> The Civil (Environmental) Engineering program is designed to teach beyond the technical content of the curriculum and prepare the students to utilize what they learn in a professional setting. Engineering projects and research activities enlist skills and demonstrate ability to understand the subject matter and communicate in a proficient manner. This course contributes to the overall program goals in the following ways.</p>						
<b>Outcome.</b> Engineering programs must demonstrate that their students attain						
a	An ability to apply knowledge of mathematics, science, and engineering	1	2	3	4	5
c	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	1	2	3	4	5
e	An ability to identify, formulate, and solve simple engineering problems	1	2	3	4	5
f	An understanding of professional and ethical responsibility	1	2	3	4	5
g	An ability to communicate effectively	1	2	3	4	5
i	A recognition of the need for, and an ability to engage in life-long learning	1	2	3	4	5
j	A knowledge of contemporary issues	1	2	3	4	5
k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	1	2	3	4	5