CEE 498A - AutoCAD Design

Spring 2004
Instructor: Amlan Mukherjee
Course Outline

March 26, 2004

Introduction

Goals and Objectives

The goal of this course is to provide students with AutoCAD skills and the knowledge of graphics communication for CEE projects so that they are able to efficiently create drawings that convey with a high level of clarity and sufficient detail, CEE designs to their colleagues. Specifically, the objective of the course is to provide students with skills to use modern computing tools like Autodesk Land Desktop 3, Autodesk Civil Design 3 and Autodesk Survey.

Prerequisite

This course has no prerequisites. All we need is an open mind.

Course Organization

The class meets thrice every week.
Lectures: *MW 8:30-9:20a.m. More 221*

Lab sessions: *Sec AA: Th 1:30-3:20p.m. More 001*
Sec AB: Th.9:30-11:20a.m. More 001

Course Website:

`http://courses.washington.edu/cee498/`

Lectures

A lecture is the process of transferring notes from the teacher's notebook to the students' without passing through the brains of either – Dr. Bill Winn (Professor, College of Education, UW)

In the Monday lectures we will discuss theoretical aspects of graphically communicating engineering design information using tools like AutoCAD. In the Wednesday lectures we will go through workbook exercises which will prepare you to do the necessary lab work during the lab session on Thursday. Specific tasks will be assigned during each lab. session which you will be required to complete and submit before the next lab. session.

Homework

There will be 6 homeworks . Five of them will involve creating AutoCAD drawings and one of them will be a writing assignment (1 page, 11 font size, single spacing, 1" left and right margins). Homeworks will be assigned at the end of each Thursday lab. and you will have 2 weeks to complete each homework. The homeworks will be very similar to the drawing assignments that you will be doing during the lab sessions. You will be required to turn in hard copies of all your drawings as well as upload your final *dwg* files to the class ftp site. **Late submissions will not be accepted**.

Project

Each group project will finalize a project in the 5th week of the quarter and will be required to turn in the completed project by **June 7, 2004**. The class will be divided up into groups for lab work, and the same groups will work on the projects. Each group can choose a project topic, however, the groups will need to discuss it in detail with either Brent or Amlan before making a final decision. Project topics can be choosen from a different areas like construction, transportation, environmental, structural, geotechnical and any other related Civil Engineering field. It is necessary that the project work demonstrate the following:

- Ability of the group to make detailed engineering drawings using AutoCAD
- Ability of the group to address and visualize design criteria in engineering drawings
- Ability of the group to creatively visualize the design problem at hand and make/visualize valid design suggestions
- Ability to program and customize the AutoCAD drawing environment

You are strongly encouraged to start working on the project as early as possible in the quarter.

Examinations and Grading

There will be two examinations, one midterm and one final. The midterm examination is going to be an in-class exam and is scheduled for **May 17th, 2004**. The final exam will be a practical exam scheduled for **8:30a.m.-10:20a.m. on June 8th, 2004 at More 001**. The tentative grading breakup is as follows:

Lab. work	80 points	8 x 10 points	20%
Homeworks	120 points	6 x 20 points	30%
Project	100 points	1 x 100 points	25%
Midterm	40 points	1 x 50 points	10%
Final	60 points	1 x 50 points	15%
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Total	400 points		100%

Your final grade will be equal to: (Total points you have earned)/100

Schedule

Class Schedule

The tentative schedule for the course is as follows:

Date	**Mondays**	**Wednesdays**
3/29 - 3/31	Introductory Class	Introduction to AutoCAD: Basic drawing skills

Date	Mondays	Wednesdays
4/5 - 4/7	Planning & Organizing the drawing: What goes into a CEE drawing?	Drawing Elements: Using more advanced elements. Editing and construction
4/12 - 4/14	2D drawings of 3D structures	Dimensioning, annotating and using Blocks
4/19 - 4/21	Introduction to Land Desktop & presentation of 3D surfaces	Viewports, Scaling and Templates: Using multiple views and scales
4/26 - 4/28	Introduction to Civil Design	Drawing 3D Surfaces
5/3 - 5/5	3D Visualization	Placing a path/footprint on a 3D Surface
5/10 - 5/12	Customizing AutoCAD: Introducing AutoLISP	Sections & Rendering
5/17 - 5/19	**Midterm**	AutoLISP Programming
5/24 - 5/26	AutoLISP	Guest Lecture
5/31 - 6/2	Memorial Day: No Class	Review
6/7	Review	-

The tentative schedule for the lab sessions is as follows: (Note: we shall be using a lab Workbook that will available online shortly). *Lab. Schedule*

Date	Thursdays	Homeworks
4/1	Setting up a new drawing. Defining layers, set snap & grid Drawing basic shapes. Model space, paper space and scaling.	*HW1 assigned*
4/8	Object generation, object editing and construction techniques.	*HW2 assigned*
4/15	Blocks and dimensioning block, wblock, dim*	**HW1 due today** *HW3 assigned*
4/22	Drawing typical CEE details & sections.Adding multiple views & scales	**HW2 due today** *HW4 assigned*

Date	Thursdays	Homeworks
4/29	Creating & presenting 3D surfaces Discuss project ideas.	**HW3 due today**
5/6	Placing a path/footprint on a 3D surface	**HW4 due today** **Project abstracts due today**
5/13	Generate 3D drawings	**HW5:Writing assignment due**
5/20	Customizing AutoCAD	*HW6 assigned*
5/27	Project work	**HW6 due**
6/3	Project work	

Resources

We will be using the following software: *Software*

- AutoCAD 2004
- Autodesk Land Desktop 3
- Autodesk Civil Design 3
- Autodesk Survey

You can find each of the above software installed on the machines at More 001. They are also available for purchase at the bookstore.

The textbook for the course will be: **A Tutorial Guide to AutoCAD 2002**, *Shawna Lockhart, Prentice Hall, 2003.* *Textbook*

The following books have also been put on reserve at the Engineering Library for reference: *Reserve*

- **Using AutoCAD 2004 : basics** *Ralph Grabowski Author Grabowski, Ralph [S.l.] : Autodesk Press ; Clifton Park, NY : Thomson/Delmar Learning, c2004 T385 .U8453 2004 disc T385 .U8453 2004 text*
- **Harnessing AutoCAD 2002** *Thomas A. Stellman, G.V. Krishnan Pub info: Albany : Autodesk Press, c2002 T385 .S7518 2002 disc T385 .S7518 2002 text*
- **Inside AutoCAD 2002** *David Harrington, Bill Burchard, David Pitzer Pub info: Indianapolis, Ind. : New Riders, c2002 T385 .H32 2002 disc T385 .H32 2002 text*

Disability Accomodation

To request academic accommodations due to disability, please contact Disabled Student Services, 448 Schmitz, (206) 543-8924 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability that requires academic accommodations, please present the letter to me so that we can discuss the accommodations you might need in class.