



ARE-221 COMPUTER APPLICATION IN BUILDING DESIGN

Course : **Computer Application in Building Design, ARE 221**
Semester : 2008-072
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Course Timings: Sunday 01.10 to 02.00 PM and Tuesday 01.10 to 05.00
Location : 19-452-3 (ARE Computer Lab)

1. Course Description

The course focuses on the development of an understanding of how information technology is used in the process of presenting design information. The course allows students to develop skills and operate computer aided design tools. CAD applications are taught for the purpose of creating project information documents that include simulations, reports and design drawings. The course will focus on developing student skills to create 2D and 3D models of simple buildings and use rendering and animation applications to present them. Software's related to architectural engineering simulations are also introduced in this course. In addition students will work in a computer network environment which enables them to create, manage, and exchange project information in a network environment.

Instructions and demonstrations will introduce students to additional uses of the computer as a design tool and supplement lectures will relate the lab work to other type of computer graphics, computer aided design, the role of computer aided drafting and design in architectural offices along with the influence of CAD on design of buildings.

2. Course Objective

Program Objective	Objective
2	• Introduce method of personal computing and understanding of Windows environment and computing.
2	• Develop student skills in using personal computing in office application and CAD systems to generate building drawings.
2	• Enhance skills in using architectural engineering simulation programs along with enhancing presentation capabilities.
3	• Encourage students for continuous self learning and professional development in the IT & computing area.



3. Course Outcomes

Outcome Number	Description
2.4	<ul style="list-style-type: none">Be able to use information technology and computer application programs to analyze data and interpret results of building related experiments and design problems.
2.5	<ul style="list-style-type: none">Be able to utilize contemporary modeling and simulation tools to graphically represent the design of a building.
2.5	<ul style="list-style-type: none">Be able to interpret and develop architectural drawings and construction documents utilizing appropriate software package.
2.6	<ul style="list-style-type: none">Be able utilize computing essentials, information technology and contemporary resources in representing and solving building related problems.
3.4	<ul style="list-style-type: none">Be able to update themselves with the emerging software technology and engage in life-long learning in the area of computer and IT utilization.

4. Course Content and Sequence

The course is divided into four inter-related parts, each containing a series of lectures and exercises, including a final project.

a. Introduction to Personal Computers and Windows environment

Initial lectures and exercises will focus on developing student understanding of the personal computer Windows environment that includes file management, networking, word processing, spreadsheet, communications, and connectivity.

b. Introduction to computer graphics and the use of AutoCAD 2006

The first part of this portion will introduce students to computer graphic applications to generate basic drawings in 2-D environments. Lectures and demonstrations will include drawing and editing commands, text writing, hatching, dimensioning, blocks and x-ref. creation and insertion, layer management, and plotting.

The second part will introduce the students to 3D environment in AutoCAD that include; Solid and surface modeling, extrusion, coordinate systems, 3D viewing and other related command. Exercises will parallel and demonstrate the mastery of these basic skills.

c. Development of skills on using 3D MAX as a rendering and animation application.

The third portion of the course will emphasize the attainment of a high level of proficiency at operating rendering and animation software. Students will be introduced to 3D MAX software and be expected to transfer basic knowledge



about working on computer graphics software in order to be able to render and animate 3D models. Discussion will include lights and cameras controls, textured material creation and mapping and key framing.

4. Course Organization

WEEK #	DESCRIPTION
1	Introduction ,Windows Environment &
2	MS Office Applications
3	ACAD Basics & Drafting
4	
5	Advanced Drafting
6	Major Exam/ Advanced Drafting
7	Advanced Drafting (continued)
8	Surface & Solid Modeling: Basics
9	Solid Modeling: Editing
10	Adobe Suite: Introduction
11	Rendering
12	Material Assignment (3D Max)
13	Animation (3D Max)
14	Image Processing
15	Project Submission

4. Course Requirements:

ATTENDANCE: Students are required to be in attendance at all times in the lab during the scheduled periods, without exceptions. Labs will begin promptly. Two unexcused absences will cause a warning letter to the offending student requiring him to confer with the department chairman. Additional unexcused absences, in accordance with University Policy, may be cause for the student to be administratively withdrawn from the course with DN grade. Students will be expected to work until the end of the lab sessions and to start the week's assignments in class.

LAB WORK: All work should be done in the lab. Within regular lab hours there will be no visitors, radios, food, drink, or smoking. Prayer times should be observed. The regulations of the CED Computer Lab must be followed.

ASSIGNMENTS: Students are required to complete and hand in on time all assignments, both large and small. Points will be deducted for late submissions. When allowed, work on the workstations may be done during lab hours. Work in the CED Computer Lab may be done during its posted hours of operation and when not reserved for another class use. Students are required to comply with the assignments given and not undertake alternative efforts without the satisfactory completion of the original assignment. It is expected that assignments can be worked on during part of the lab period but



approximately 3 hrs per week of additional time will need to be spent on the assignments to complete them in an average manner. Extra work is always, however, encouraged.

BOOKS: In addition to the assigned textbook, handouts will be provided as required. Additional assignments and information may be extracted from the following sources, which form a recommended reference reading list:

AutoCAD 2006/7/8 User's Guide.

AutoCAD Command Reference.

Adobe Suite Manual

Autodesk 3D Max Reference Manual.

5. Grading and Examination

The final term grade will be determined by the instructor based on assignments, quizzes (which may be given during lab hours), exams, and the student's progress, attitude, participation, and attendance pattern. The term grade will be calculated on a numerical basis, which will be converted to a letter grade at the end of the semester. The approximate proportion of the components of the course in determining the final grade is to be as follows:

Assignments	30%
Midterm Exam	20%
Term Project	35%
Participation & Personal Qualities	5%
Attendance	10%

Work that is copied will not be accepted for grading and will result in a failing (F) of the course. As well, the person from whom the work was copied, if he has knowingly assisted in the copying, may be subject to same penalty.

Good Luck