

COURSE OUTLINE

FRESHMAN		Sophomore		Junior		Senior I		Senior II	
U-CORE		C-CORE		MAJOR		SPECIALITY		INTER-DISCIPLE	

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| <ul style="list-style-type: none"> ▪ COURSE TITLE: Introduction to CAD Systems ▪ ROOM: ▪ CREDIT HOURS: 2 ▪ WEIGHT/MARKS: 100 ▪ FACULTY MEMBERS/ STAFF: ▪ TEACHING ASSISTANTS: ▪ PREREQUISITES: | <ul style="list-style-type: none"> ▪ YEAR: Sophomore ▪ LEC. : 1 ▪ YEAR WORK:60 ▪ ▪ ▪ MDP N001-GEN N004 | <ul style="list-style-type: none"> ▪ CODE: ARC N106 ▪ TERM: FALL 2009 ▪ EXC/STUDIO: 1 ▪ WRITTEN:40 |
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▪ **COURSE OUTLINE:**

The aim of this course is to explore current CAD technologies and develop skills in the use of specialist CAD software to produce 2D and 3D design specifications, to transform CAD drawings into photo realistic virtual products and to gain an awareness of CAD data and how such information can be transformed to engineering drawings. At the end of the course, the students will understand a variety of terms and terminology as applied to CAD technology; demonstrate the use of an industry stand operating system to create stand CAD packages for 2D and 3D design drawings. This course teaches the primary methods and principles used by engineers today to define and describe the geometry and topology of engineered components. For centuries the principal method of communication between engineers and manufacturing has been the engineering drawing. Over recent times computer aided design/drafting (CAD) has evolved from a tool to aid in the preparation of drawings (2D CAD), to a method of fully defining and specifying a component, or assembly of components, in a mathematically robust geometric fully associative database (3D CAD or solid modeling). In this course, the students learn how to create these fully defined engineering models and how to correctly present them in standard 2D blueprint form, 3D wireframe and cosmetically shaded presentations, meshed topologies for engineering analysis, and toolpath generation for component manufacture. Autocad software by autodesk is used throughout the course.

▪ **OBJECTIVES:**

- Provide the students with an understanding of the features, limitations and considerations associated with the operation of a computer-aided design/drafting (CAD) system.
- Students will gain valuable hands-on experience using the AutoCAD micro-based CAD software.

▪ **Knowledge**

- Technology - Use computer aided design software.
- Critical Thinking and Problem Solving - Analyze problems and evaluate solutions.
- Information Literacy - Use manuals to access data

▪ **Skills**

- Identify CAD hardware components and system configuration.
- Operate the CAD workstation components including the computer, input/output devices.
- Explain the features, limitations and considerations associated with the commands and characteristics of AutoCAD.
- Operate the AutoCAD release 12 software.
- Create moderately detailed drawings.

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▪ **SUMMARY/CONTENTS & SEQUENCE:**

Week	Lecture/Studio Topic	Assignment	Lecturer
1	Introduction to Computer Aided Design	<u>Research:</u> CAD- CAM-CAAD	H. Khairy, M. Ali
2	Basic computer: hardware and software	<u>Research:</u> PARAMETRIC ARCHITECTURE	H. Khairy, M. Ali
3	Starting AutoCAD - drawing set-up	PROJECT	H. Khairy, M. Ali
4	Cartesian coordinate system	PROJECT	H. Khairy, M. Ali
5	Drawing basic shapes	PROJECT	H. Khairy, M. Ali
6	Geometric constructions and Object Snap	PROJECT	H. Khairy, M. Ali
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8	Drawing display options	PROJECT	H. Khairy, M. Ali
9	Editing command	PROJECT	H. Khairy, M. Ali
10	Placing text on a drawing	PROJECT	H. Khairy, M. Ali
11	Basic dimensioning	PROJECT	H. Khairy, M. Ali
12	Introduction To 3D	PROJECT	H. Khairy, M. Ali
13	Viewing 3D Drawings	PROJECT	H. Khairy, M. Ali
14	User Coordinate Systems In 3D	PROJECT	H. Khairy, M. Ali
15	Creating Solid Models - Introduction To Rendering	PROJECT	H. Khairy, M. Ali

▪ **EVALUATION, ASSESSMENT & EXPECTED PRODUCTS/ ASSIGNMENTS:**

- Class work 60%:
 - Attendance: 10%
 - Year Work: 10%
 - Mid Term: 20%
 - Final Project: 20%
- Final: 40%

▪ **TEXT BOOK:**

- George Omura, Mastering AutoCAD 2008 and AutoCAD LT2008, , Wiley, 2007

▪ **REFERENCES & READING MATERIAL:**

- <http://www.cadtutor.net/>
- <http://www.cadlearning.com/>
- Harvard University CAD standard

▪ **TEACHING METHODS - SUPPORTS/TOOLS:**

- Power Point lectures
- Real Time Tutorials
- Discovery Chanel, Extreme Engineering documentaries