University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Architectural Engineering and Environmental Design

Form no. (12): **Course Specification**

1- Course Data

Course Code: **AR 283**	Course Title: **Computer Aided Drafting**			Academic Year/Level: **2nd** year / **3rd** semester
Specialization: **Architecture**	No. of Instructional Units			Prerequisite
	Credit **3**	Lecture **2**	Tutorial **2**	**ME151**

2- Course Aim

This course focuses on basic computer aided drafting skills using the latest release of AutoCAD software. The course includes file management, the Cartesian Coordinate System, drawing set-ups, drawing aids, layer usage, drawing geometric shapes, editing objects, text applications, basic dimensioning and help access. Students learn how to develop the necessary Knowledge and skills for using the computer in drafting.

The course aims to:

- Provide the student with knowledge to improve their skills of computer presentation in the design phase.
- Enhance the student's practical skills in the field of computer aided design applications.

3- Intended Learning Outcomes

a- Knowledge and Understanding	**Through knowledge and understanding, students will be able to:** • Explain the main principles of digital CAD design systems. • Demonstrate understanding of using AutoCAD.
b- Intellectual Skills	**Through intellectual skills, students will be able to:** • Apply AutoCAD digital applications. • Create a full project using AutoCAD. • Create designs, ideas and concepts through professional architectural drawings.
c- Professional Skills	**Through professional and practical skills, students will be able to:** • Prepare and present architectural projects. • Use IT skills and different techniques which are essential for the architectural profession.
d- General Skills	**Through general and transferable skills, students will be able to:** • Present drawings in seminars, discuss problems and communicate effectively verbally and through drawings. • Independently seek knowledge, set aims, targets and objectives. • Listen and critically respond to the views of others. • Transfer techniques and solutions from one field of architecture to another.

4- Course Content

Week No.1	Introduction to CAD: What is CAD?, advantages and disadvantages of CAD. Getting familiar with AutoCAD: The AutoCAD window, screen menus, command line status bar, toolbars and data input devices.
Week No.2	Working with AutoCAD: Looking at a pre-existing sample drawing. Commands: OPEN, NEW, SAVE, SAVE AS, QUIT, ERASE, OOPS, UNDO, REDO, ZOOM and PAN. Coordinate Systems: Different types of specifying distance (absolute, relative and polar coordinates).
Week No.3	Starting the first drawing: Basic drawing tools. Commands: LIMITS, UNITS, COORDINATES, SNAP. GRID, and ORTHO. Basic drawing objects: Commands: LINE, ARC, CIRCLE and POINT.
Week No.4	Commands: POLYGON, ELLIPSE, RECTANGLE, and PLINE.
Week No.5	Modifying drawings 1: Basic editing operations, drawing aids, using grips and auto selection, interpreting cursor modes. Commands: OSNAP, TRIM, EXTEND BREAK, OFFSET, FILLET, CHAMFER, COPY, MOVE and ERASE.
Week No.6	Modifying Drawings 2: Advanced editing operations. Commands: ARRAY, MIRROR, STRETCH, EXTEND, SCALE, ALIGN, ROTATE, and PEDIT.
Week No.7	Continuation of the previous lecture and evaluation.
Week No.8	Drawings management: Working with layers, line types & changing element properties Commands: DDLMODES, LINETYPES, PURGE, DDMODIFY, and CHANGE.
Week No.9	Drawings management 2: Getting information from the drawing. Commands: LIST, ID, AREA, MEASURE, DIVIDE and SELECTION FILTER.
Week No.10	Developing the drawing 1: Creating, inserting, and updating blocks. Commands: BLOCK, INSERT, WBLOCK, EXPLODE and XREFERENCE.
Week No.11	Developing the drawing 2: Preparing the final drawing for output. Commands: HATCH, TEXT, STYLE and DIMENSIONS.
Week No.12	Continuation of the previous lecture and evaluation.
Week No.13	Enhancing the Drawing Skills: Tips, advises and managing large projects. Starting final project using AutoCAD skills.
Week No.14	Data Output / Input: Completing project drawings and preparing the final project drawings for output. Commands: PLOT, PAPER SPACE, MODEL SPACE, IMPORTING and EXPORTING.
Week No.15	Evaluating project / Revision: Final project evaluation for all required drawings.

5- Teaching and Learning Methods

The course comprises a combination of:
Lectures, class activities, discussion sessions, and tutorials.

6-Teaching and Learning Methods for Students with Special Needs

- Consulting with lecturer during office hours.
- Consulting with teaching assistant during office hours.
- Private sessions for redelivering the lecture contents.
- For handicapped accessibility, please refer to program specification.

7- Student Assessment

Asses No.	Procedures used		Start Week No.	Subm. Week No.	Weighting of Asses.
	Type	To assess			
1	Project	Knowledge and understanding	5	6	5%
2	Project	Knowledge and practical skills	6	7	5%
3	Practical exam.	Intellectual and practical skills		7	20%
4	Project	Knowledge and understanding	8	9	5%
5	Project	Knowledge and practical skills	9	10	5%
6	Project	All skills.	10	11	5%
7	Project	All skills	11	12	5%
8	Practical exam.	Knowledge and understanding Practical skills		12	5%
9	Project	All skills	13	15	5%
10	Practical exam.	Knowledge and understanding Practical skills		16	40%
Total					100%

8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	• KALAMEJA, Alan, The AutoCAD Tutor for Engineering Graphics, Autodesk Press, 2006.
c- Recommended Books	• ETHIER, Stephen J., Instant Autocad: Architectural Desktop 3.3, N.J., 2005.
d- Periodicals, Web Sites, etc.	www.autodesk.com