Department of Architecture

College of Engineering

Salahaddin University - Erbil

Subject: Computer Applications (AutoCAD)

Course Book –Year 1 (Spring semester)

Lecturer's name:

Polla Dilshad Ibrahim (MSc Architecture)

Shna Asaad (MSc Architecture)

Ahmed Nawzad (MSc Architecture)

Academic Year: 2023/2024

Course Book

1. Course name	Computer Applications (AutoCAD)
2. Lecturer in charge	Polla Dilshad Ibrahim
3. Department/ College	Architecture
4. Contact	e-mail: polla.ibrahim@su.edu.krd Tel: 07507436029
5. Time (in hours) per week	Theory: 1 Practical: 3
6. Office hours	Sunday to Thursday 8:30 to 3:30
7. Course code	
8. Teacher's academic profile	I got my BSc in architecture at university of Salahaddin in 2011. Then I got my MSc in Sustainable architecture at University of Sheffield, United kingdom in 2014. My research interests are in Sustainable Architecture Design , Building Simulation, Low Impact Materials, Design Processes and Methodologies. Considering architectural design within a broad social, environmental and economic context. Through my academic career I contributed to several modules. Like Architectural design 3rd stage and 2nd stage. Building Construction 2nd stage, Working Drawing 3rd stage and computer applications 1st stage.
9. Keywords	CAD, Architectural programs, Drawings, 2D drawing, AutoCAD

10. Course overview:

AutoCAD is a 2-D and 3-D computer-aided drafting software application used in architecture, construction and manufacturing to assist in the preparation of blueprints and other engineering plans. Professionals who use AutoCAD are often referred to as drafters. The AutoCAD course (2D) was designed for students to be involved with the architectural and engineering design fields.

The purpose of this course is to provide students with an understanding of the importance of modern graphic communication to the design process. Students will experience CAD technical drawings by creating drawings that are neat and correctly dimensioned.

11. Course objective:

This course helps students to be familiarized with current approaches of Computer Aided Design CAD and Computer Aided Modelling CAM. The students will be prepared to utilize AutoCAD software in an efficient and effective way for both university level of studying and professional practice in private sector.

AIMS:

To introduce students to using computers and architectural software such as AutoCAD.

To upgrade students' abilities to distinguish between design and CAD.

To introduce students to present their projects using computer skills.

12. Student's obligation

Students have to attend the lectures to fully understand the program components and capabilities in the theoretical part, later on they will be asked to practise what have been explained in the practical

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part. In the most lectures, students' class works are assessed and marked.

<u>Attendance Policy</u>
Attendance is required in this class and students should be in class on time. No leave permission is given by the lecturer because students are evaluated daily.

13. Forms of teaching
Teaching methods of this course include Lecturing, Group works and practical activities through the use of computer, data show, white board, etc. Usually, in the theoretical part there will be a lecture presented by the lecturer using Microsoft PowerPoint, computer and data show. Autodesk AutoCAD software is used to show the students what are the tabs and icons of the program and how they can be used in their drawings.

14. Assessment scheme

(25%)   Midterm exam

(25%)   Class evaluation (ClassWorks) 15%
             + HomeWorks 7%   TOTAL = **% 50**
             + Class activity + Quizzes   3%

 20% Theoretical + 30% Practical(final) = **(50%)**   Final Exam

 100%   Total marks

15. Student learning outcome:
By the end of this course, students are expected to be able to:

Learn and use all components of AutoCAD program in a proper way. They can draw 2D floor plans of any particular project also draw elevations and section or any other drawings.

16. Course Reading List and References:
- Key references:
AutoCAD for Dummies (Book)
Mastering AutoCAD and AutoCAD LT (Book)
- Useful references:
AutoCAD and AutoCAD LT Essentials (Book)

- Magazines and review (internet):
Online tutorials
https://www.autodesk.com/shortcuts/autocad
http://www.cadtutor.net/
www.youtube.com
https://thesourcecad.com/autocad-tutorials/

Ministry of Higher Education and Scientific research

17. The Topics:	Lecturer's name
	Polla Dilshad Ibrahim ex: (4 hrs) Theoretical and practical

Weeks	Lecture subject
Week 1	Introduction to AutoCAD , Course out line , Installing AutoCAD on students laptops
Week 2-3	**Getting Started** • Exploring the AutoCAD for Windows User Interface • Setting Drawing Unit **Starting Basic Drawing Skills:** • Navigating 2D Drawings • Drawing Lines and Rectangles • Canceling, Erasing, and Undoing • Using Coordinate Systems • Drawing Circles, Arcs, and Polygons • Filleting and Chamfering Lines • Working with Layers
Week 4-5	**Editing Entities:** • Creating Selection Sets • Move and Copy • Rotate and Scale • Working with Arrays • Trim and Extend • Lengthen and Stretch • Offset and Mirror • Grip Editing
Week 6	**Using Drawing Aids:** • Grid and Snap • Ortho and Polar Tracking • Running Object Snaps
Week 7	**Shaping Curves:** • Drawing and Editing Curved Polylines • Drawing Ellipses • Drawing and Editing Splines • Blending Between Objects with Spline
Week 8	**Controlling Object Visibility and Appearance:** • Changing Object Properties • Setting the Current Layer • Altering the Layer Assignments of Objects • Controlling Layer Visibility • Applying Line type • Assigning Properties by Object or by Layer

	• Managing Layer Properties
Week 9-10	**Working with Blocks and Xref:** • Defining Blocks • Inserting Blocks • Editing Blocks • Redefining Blocks • Working with Groups • Working with Global Blocks • Accessing Content Globally • Storing Content on Tool Palettes • Referencing External Drawings and Image
Week 11	**Hatching and Gradients:** • Specifying Hatch Areas • Associating Hatches with Boundaries • Hatching with Patterns • Hatching with Gradient
Week 12	**Creating and Editing Text:** • Creating Text Styles • Writing Lines of Text • Writing and Formatting Paragraphs of Text Using MTEXT • Editing Text
Week 13	**Creating and Editing Dimensions:** • Dimension Style • Adding Dimensions • Editing Dimensions
Week 14	**Working with Layouts and Annotative Objects** • Creating Annotative Styles and Objects • Creating Layouts • Adjusting Floating Viewports • Overriding Layer Properties in Layout Viewports • Drawing on Layout
Week 15	**Printing and Plotting** • Configuring Output Devices • Creating Plot Style Tables • Using Plot Style Tables • Plotting in Model space • Plotting Layouts in Paper space • Exporting to an Electronic Format

19. Examinations:

1. Compositional:

Q: What are the reasons of using CAD drawings rather than manual drafting? Explain the advantages.

Answer:

- **Easy to Modify:** Modifying the CAD geometry is easy; you will always have "**copy**", "**cut**", "**paste**, "**delete**", "**move**"
- **Easy to Reproduce:** Draftsmen used to take days to complete a drawing by manual drafting, and reproducing the drawing meant recreating the drawing from the beginning. But, in case of the CAD, you can reproduce the drawing in no time and make as many copies as you want.
- **Environment Friendly:** Manual drawings are necessarily created on paper, but the CAD drawings can be stored and used electronically without using paper.
- **Three Dimensional Modeling:** Creating 3D models manually is a very difficult and tiresome job.
- **Accuracy:** Computers & AutoCAD can produce even large files with same ease and accuracy.

2. Multiple choice questions:

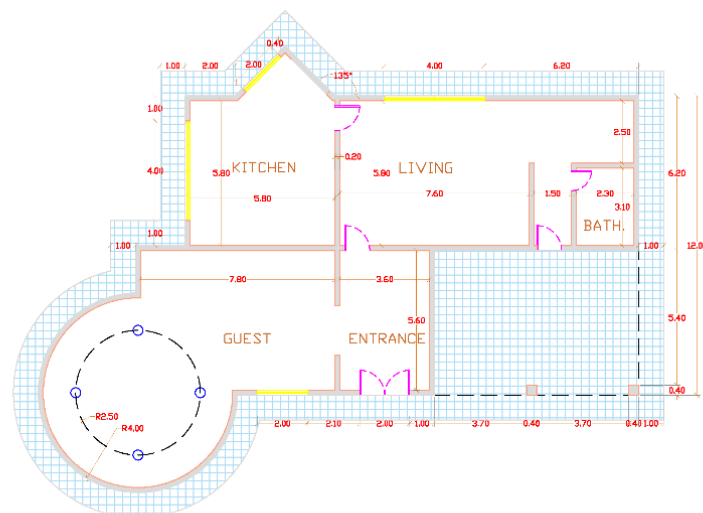Q: The extension for AutoCAD drawing file is:

a .dwg   b. .dwt   c. .xlsx   d. .3ds

Q: How can you access PAN tool of AutoCAD?

a. Right click and select PAN from contextual menu
b. PAN command
c. Press and hold middle mouse button
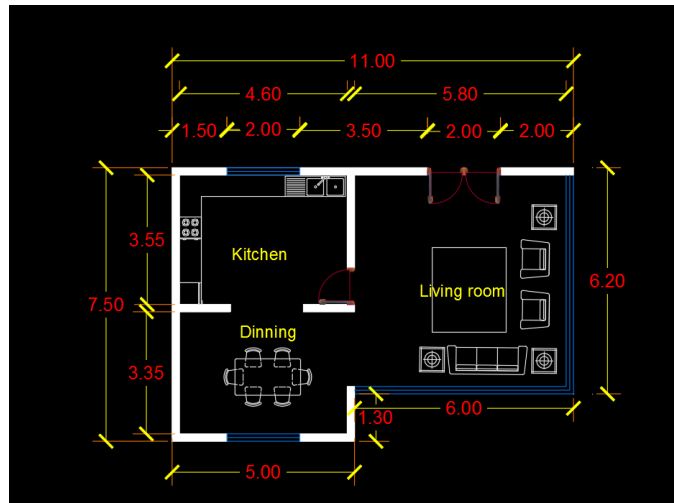**d. All of the above**

3.Practical Questions:

Q: Draw the following plan as shown below using Autodesk AutoCAD programme .

Q: Draw the following plan as shown below using Autodesk AutoCAD programme .
Note: Save the AutoCAD file with your full name & Write your name below the drawn plans.
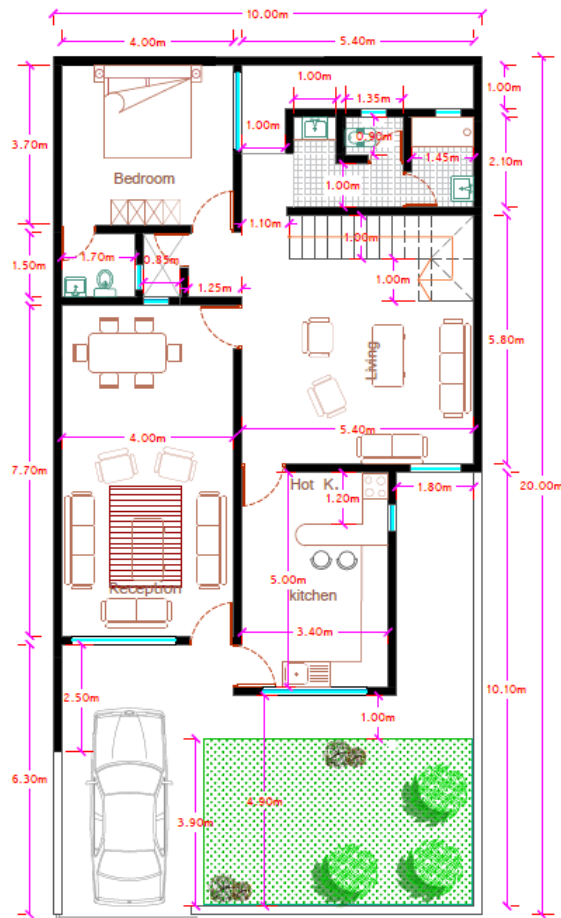
Use hatches ,texts, colors, and dimension styles. you should use similar/same furniture too

Q: Draw the following plan as shown below using Autodesk AutoCAD programme .

Use hatches ,texts, colors, and dimension styles. you should use similar furniture too

Note: Save the AutoCAD file with your full name & Write your name below the drawn plans.

Type A
NAME:

Notes:
* All dimensions in meters.
* wall thickness = 0.2 m
* normal door=1m, bath &WC doors=0.8 m

20. Extra notes:
بەرێوەبەرایەتی دڵنیایی جۆری و متمانەبەخشین

This course has a strong relation with students' future career. Excellent AutoCAD skill is required by all professional Architecture and Engineering firms. Thus, it is recommended to do a lot of practise while you are in the lecture as well as at home. Good users of such kind of applications can better visualize their design while they are students and after they graduate as Architect.

20. Peer review

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).

Date:	Examination No.:	Version:21/1/2024	Start: 21/1/2024
Module Name - Code	**Computer Applications (AutoCAD)** -4107		
Module Language:	English		
Responsible:	M. Polla Dilshad Ibrahim		
Lecture (s):	M. Polla Dilshad Ibrahim, M. Shna Asaad, M. Ahmed Nozad		
College:	College of Engineering – Salahaddin University		
Duration:	15 week – 2nd semester		
Course outcomes:	This course helps students to be familiarized with current approaches of Computer Aided Design CAD and Computer Aided Modelling CAM. The students will be prepared to utilize AutoCAD software in an efficient and effective way for both university level of studying and professional practice in private sector. **AIMS:** To introduce students to using computers and architectural software such as AutoCAD. To upgrade students' abilities to distinguish between design and CAD. To introduce students to present their projects using computer skills.		
Course Content:	Introduction to AutoCAD , Course out line , Installing AutoCAD on students laptops, Starting Basic Drawing Skills, Navigating 2D Drawings, Drawing Lines and Rectangles, Canceling, Erasing, and Undoing, Using Coordinate Systems, Drawing Circles, Arcs, and Polygons,Filleting and Chamfering Lines, Working with Layers, Editing Entities, Using Drawing Aids, Shaping Curves:, Working with Blocks and Xref:, Hatching and Gradients:, Creating and Editing Dimensions.		

Literature:	▪ Key references: AutoCAD for Dummies (Book)
	
	      Mastering AutoCAD and AutoCAD LT (Book)
	
	▪ Useful references:
	
	      AutoCAD and AutoCAD LT Essentials (Book)
	
	▪ Magazines and reviews (internet): Online tutorials
	
	http://www.cadtutor.net/
	
	www.youtube.com		

	https://thesourcecad.com/autocad-tutorials/
	https://www.autodesk.com/shortcuts/autocad
Type of Teaching:	1 hr theory 3 hrs practical in laboratory
Pre-requisites:	N/A
Frequency:	Yearly in spring semester
Requirements for credit points:	For the award of credit points it is necessary to pass the module exam. Students have to attend the lectures to fully understand the program components and capabilities in the theoretical part, later on they will be asked to practice what have been explained in the practical part. In the most lectures, students' classworks are assessed and marked. HomeWorks MidTerm Exam Student's attendance is required in all classes.
Credit point:	5
Grade Distribution:	The Grade is generated from the examination result(s) with the following: 25% Midterm practical exam 25% class evaluation +(home works)+ Class activity+ quizzes) **50%** Final Exam (30% Practical + 20% Theoretical)
Work load:	The workload is 150h. It is the result of 60h attendance and 90h self studies.