Macao Polytechnic Institute

School of Applied Sciences

Bachelor of Science in Computing

Module Outline

Learning Module	Computer Aided Design			**Class Code**	COMP401
Pre-requisite(s)	NIL				
Medium of Instruction	English			**Credit**	3
Lecture Hours	30 hrs	**Lab/Practice Hours**	15 hrs	**Total Hours**	45 hrs

Description

This module provides some basic definitions of computer-aided design and drafting software、hardware and systems. The two-dimensional basic AutoCAD programme allows a hands-on approach and guides students through the commands necessary to use AutoCAD and make an interior style drawing.

Learning Outcomes

After completing the learning module, students will be able to:

1. practice Basic Two-Dimensional Drawings.(EP3p)
2. understand and draw Interior Floor Plan Drawings.(EP3p)

Content

1. Lines (4 hours)
   - 1.1 Beginning a New Drawing
   - 1.2 Exploring the Drawing Window
   - 1.3 Interacting with the Drawing Window
   - 1.4 Exploring Command Entry Methods
   - 1.5 Drawing, Undoing, and Erasing Lines
   - 1.6 Saving and Opening Your Drawings
   - 1.7 Review Material

2. Circles and Drawing Aids (4 hours)
   - 2.1 Changing the Grid Setting
   - 2.2 Changing the Snap Setting
   - 2.3 Changing Units
   - 2.4 Drawing Circles Giving Center Point and Radius
   - 2.5 Drawing Circles Giving Center Point and Diameter
   - 2.6 Accessing AutoCAD Help Features
   - 2.7 Using the ERASE Command
   - 2.8 Using the RECTANGLE Command

2.9 Using the DIST Command
2.10 Plotting or Printing a Drawing
2.11 Review Material

3. Layers, Colors, and Linetypes (4 hours)
3.1 Creating New Layers
3.2 Assigning Colors to Layers
3.3 Assigning Linetypes
3.4 Assigning Lineweight
3.5 Changing the Current Layer
3.6 Editing Corners Using FILLET
3.7 Editing Corners Using CHAMFER
3.8 Using the ZOOM Command
3.9 Zooming and Panning with the Scroll Wheel
3.10 Using Realtime ZOOM and PAN
3.11 Using Plot Preview
3.12 Review Material

4. Template Drawings (4 hours)
4.1 Setting Limits
4.2 Creating a Template
4.3 Saving a Template Drawing
4.4 Using the MOVE Command
4.5 Using the COPY Command
4.6 Using the ARRAY Command—Rectangular Arrays
4.7 Changing Plot Settings
4.8 Review Material

5. Arcs and Polar Array (4 hours)
5.1 Creating Polar Arrays
5.2 Drawing Arcs
5.3 Using the ROTATE Command
5.4 Using Polar Tracking at Any Angle
5.5 Creating Mirror Images of Objects on the Screen
5.6 Creating Page Setups
5.7 Review Material

6. Object Snap (5 hours)
6.1 Selecting Points with Object Snap (Single-Point Override)
6.2 Selecting Points with OSNAP (Running Mode)
6.3 Object Snap Tracking
6.4 Using the OFFSET Command (Creating Parallel Objects with OFFSET)
6.5 BREAKing Previously Drawn Objects
6.6 Shortening Objects with the TRIM Command
6.7 Extending Objects with the EXTEND Command
6.8 Using STRETCH to Alter Objects Connected to Other Objects
6.9 Changing Lengths with the LENGTHEN Command
6.10 Creating Plot Layouts
6.11 Review Material

7. Text (5 hours)
7.1 Entering Left-Justified Text Using DTEXT

7.2 Using Other Text Justification Options
7.3 Entering Text on an Angle and Text Using Character Codes
7.4 Entering Multiline Text Using MTEXT
7.5 Editing Text in Place with DDEDIT and MTEDIT
7.6 Modifying Text with PROPERTIES
7.7 Using the SPELL Command
7.8 Changing Fonts and Styles
7.9 Changing Properties with MATCHPROP
7.10 Scaling Previously Drawn Entities
7.11 Creating Tables and Fields
7.12 Using AutoCAD Templates, Borders, and Title Blocks
7.13 Review Material

8. Dimensions (5 hours)
8.1 Creating and Saving a Dimension Style
8.2 Drawing Linear Dimensions
8.3 Drawing Multiple Linear Dimensions: QDIM
8.4 Drawing Ordinate Dimensions
8.5 Drawing Angular Dimensions
8.6 Dimensioning Arcs and Circles
8.7 Dimensioning with Leaders
8.8 Changing and Overriding Dimension Variables
8.9 Changing Dimension Text
8.10 Using Associative Dimensions
8.11 Using the HATCH Command
8.12 Scaling Dimensions between Paper Space and Model Space
8.13 Review Material

9. Polylines (5 hours)
9.1 Drawing POLYGONs
9.2 Drawing DONUTs
9.3 Using the FILL Command
9.4 Drawing Straight Polyline Segments
9.5 Drawing Polyline Arc Segments
9.6 Editing Polylines with PEDIT
9.7 Drawing 2-D SOLIDs
9.8 Drawing and Editing Multilines
9.9 Drawing SPLINEs
9.10 Drawing Revision Clouds
9.11 Drawing Points
9.12 Review Material

10. Blocks, Attributes, and External References (5 hours)
10.1 Creating Groups
10.2 Creating Blocks
10.3 Inserting Blocks into the Current Drawing
10.4 Adding Parameters and Actions in the Block Editor
10.5 Using the Windows Clipboard
10.6 Inserting Blocks and External References into Other Drawings
10.7 Using the AutoCAD Design Center
10.8 Defining Attributes
10.9 Working with Parameters in Block References

10.10 Working with External References
10.11 Extracting Attribute Information from Drawings
10.12 Creating Tool Palettes
10.13 Exploding Blocks
10.14 Review Material

Teaching Method

Lectures, demonstrations, practice and tutorials

Attendance

Attendance requirements are governed by the "Academic Regulations Governing Bachelor's Degree Programmes of Macao Polytechnic Institute". Students who do not meet the attendance requirements for the module will not be permitted to sit the final or re-sit examination and shall be awarded an 'F' grade.

Assessment

This learning module is graded on a 100 point scale, with 100 being the highest possible score and 50 being the passing score.

	Item	Description	Percentage
1.	Quiz/Exercise	Home/class exercises (10% each)	10%
2.	Assignments	Homework	40%
4.	Examination	3-hour written examination	50%
		Total Percentage:	100%

Students with an overall score of less than 35 in the coursework must take the re-sit examination even if the overall score for the module is 50 or above.

Students with a score of less than 35 in the final examination must take the re-sit examination even if the overall score for the module is 50 or above.

Students with an overall final grade of less than 35 are NOT allowed to take the re-sit examination.

Teaching Material

Textbook(s)

There is no official text for this module. Lecture notes are distributed in the class.

Reference

Reference book(s)

1. Dix, M. and Riley, P. (2020). *Discovering AutoCAD 2020*. Macromedia Press.