Course Title: Award in AutoCAD

Course Code: CMA.O4.002

Course Type: Award

MQF Level: Level 4

ECTS Credits: 12 ECTS

Programme Duration: 60 hours

Any placement hours: N/A

Mode of Attendance: Part-Time

Mode of Delivery: Face to Face

Target Audience: Professionals in construction and engineering

Entry Requirements:

The entry requirement for joining the programme may include the following qualifications and competencies:

- Completed Compulsory Education: Students should have completed their compulsory education, which typically includes secondary education up to a certain level.
- Students should have passed (Grade 5 or better) the SEC examinations in relevant subjects, especially English, Mathematics, and Physics. These subjects are essential for understanding technical concepts and communication skills necessary for the program
- Language Competence: Proficiency in the English language is likely to be required since these languages are commonly used for instruction and communication in Malta's education system
- Digital Competence: Basic digital competencies and familiarity with computer usage are essential for effectively navigation the AutoCad software and participating in the course

Total Tuition Fees: 1050 Euros

Study Programme Description:

This AutoCAD course is tailored for students aiming to work in the civil industry, as well as project managers, draughtsmen, etc. It provides advanced training in 2D drafting and includes an introduction to 3D modeling. Participants will gain essential AutoCAD knowledge in civil engineering covering key topics such as plan superimposition and coordinate systems. The final project or assignment is designed to reflect real-world construction applications. The course will be taught by an experienced instructor with a solid background in drafting and land surveying.

Study Programme Learning Outcomes:

The learner will be able to:

a) Define the fundamental concepts and terminology related to Computer-Aided Design (CAD) and AutoCAD Software.
b) Identify and distinguish between various tools, commands, and features in AutoCAD, understanding their specific funcations and applications.
c) Recall essential procedural steps for setting up and managing drawing environments, file organisation, and project collaboration in AutoCAD.
d) Describe 2D and 3D drafting techniques, including object creation, editing, and annotation methods in AutoCAD.
e) Recall essential procedural steps for setting up and managing drawing environments, file organization, and project collaboration in AutoCAD.
f) List and explain the key principles of precision and accuracy in technical drawings, emphasizing the importance of proper dimensioning and layer management.

Study Programme Assessment Method: Independent Study, project and presentation.

Study Programme Structure:

Week 1: Introduction & AutoCAD Basics

- AutoCAD interface overview
    - Title Bar, Menu Bar, Ribbon, Toolbars
    - Command Line
    - Properties Bar
    - List
    - Dynamic Input
- Bottom Right Ribbon
    - Ribbon – Ribbon Full, 2D Drawings & Annotative, Ribbon Beginner, Autocad Classic
    - Quick Properties
    - Selection Cycling.
- Opening/saving drawings
    - Save as different autoCAD Versions.
- Navigating the workspace
- Mouse controls

Week 2: Drawing Setup & Navigation

- Units, Limits
- Grid lines
- Quick Select
- Coordinate entry methods (absolute, relative, polar)
- Snap, grid, ortho, and object tracking
- Selection techniques (window, crossing, filters)
- Assignment: Grid-based geometric drawing

Week 3: Layers and Object Properties

- Layer creation and management
- New layer, Line type, Light weight, Freeze, Layon, Layoff, Print, Lock, Transparency
- Match properties
- Input of Images and PDF underlays
- Assignment: Apply proper layer standards to a floor plan

Week 4/5 Basic Drawing Tools

- Lines, Circles, Ellipse, Arcs, Rectangle, polygon
- Circle - Centre Radius, Centre Diameter, 3 point.
- Lines, Polylines, Splines.
- Quick Select.
- Object snaps – Midpoint, Endpoint, Center, Intersection, and Perpendicular.
- Ellipse – Centre, Axis End.
- Arc – 3point arc
- Hatch – Pattern, Angle, Scale, Pick internal points, Select Entities, Create Separate Hatches,
- Revision of drawing tools.
- Bring to Front, Send to Back.
- Assignment: Drawing a complex shape using multiple tools.

Week 6 & 7: Modifying Geometry

- Move, copy, rotate, scale, mirror, trim, extend, Fillet, Chamfer.
- Fillet / Chamfer - Radius
- Offset and array (rectangular/polar)
- Selection techniques (window, crossing, filters)
- Assignment: Redraw and modify mechanical part
- Assignment: Room layout editing

Week 8: Annotation – Text and Dimensions

- Single-line vs multiline text (DTEXT, MTEXT)
- Linear, radial, angular dimensions
- Dimension styles and editing (Dimstyle)
- Assignment: Annotate and dimension an architectural drawing

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Week 9: Blocks, Viewport, Drawing Management.

- Creating, inserting blocks, Exploding blocks, Editing blocks.
- Using WBLOCK, tool palettes
- Model space vs paper space
- Viewports and layout tabs
    - Border
    - Page Setup Manager
    - 1,2,3 or 4 Viewports
- Purge unused elements
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- Assignment: Title block and floor plan layout with blocks

Week 10: Plotting and Final 2D Project

- Plotting setup (PDF, printer)
- Plot styles (CTB/STB)
- Preparing sheet sets
- Final 2D project (architectural drawing)

Week 11: Introduction to 3D Concepts

- Switching to 3D modeling workspace
- Cartesian coordinates in 3D
- View controls (isometric, orbit, view cube)
- UCS (User Coordinate System)
- Assignment: Practice using different 3D views and UCS

Week 12: 3D Drawing & Solid Primitives

- Extrude, revolve, loft, sweep
- Creating primitives: box, cylinder, sphere, cone, wedge
- Assignment: Create a 3D object from a 2D profile

Week 13: 3D Editing Tools

- Union, subtract, intersect (Boolean operations)
- Presspull, fillet edges, chamfer edges
- Slice and sectioning
- Assignment: Modify a 3D model with editing commands

Week 14: Materials, Rendering, and Presentation

- Applying materials
- Basic lighting
- Rendering settings
- Visual styles (2D wireframe, realistic, shaded)
- Assignment: Render a 3D model with material and lighting

Week 15: Course Wrap-Up

- Final 3D model project (furniture, mechanical object, or architectural massing)
- Class presentations
- Review of key tools and concepts (2D + 3D)
- Course feedback and assessment

Week 16: Final Project

- Class presentations