

COMPUTER AIDED CIVIL DRAWING

ENCE 204

Lecture : 2
Tutorial : 0
Practical : 3

Year : II
Part : I

Course Objectives:

The objective of this course is to train students with computer aided design and drafting of civil engineering structures. The course will teach students to extract dimensions from existing computer aided drawings, enabling them to interpret and utilize these drawings effectively. Students will be equipped to create drawings with site plans and structural details applying computer aided techniques to produce precise and professional documents for civil engineering projects.

1 Introduction (2 hours)

- 1.1 Computer aided design and drafting
- 1.2 Application of computer aided drawings in civil engineering
- 1.3 Computer aided drawing software
- 1.4 Three-dimensional drawing software

2 Autodesk AutoCAD (8 hours)

- 2.1 Overview of the two-dimensional AutoCAD interface
- 2.2 Coordinate system, units and scales
- 2.3 Drawing and editing (Commands and tools)
- 2.4 Layers and blocks
- 2.5 Annotation and dimensioning
- 2.6 Layouts and printing
- 2.7 Three dimensional drawings

3 Computer Aided Civil Engineering Drawings (16 hours)

- 3.1 Location map
- 3.2 Land measurement and area calculation
- 3.3 Building drawing (Load bearing and reinforced cement concrete)
- 3.4 Underground water tank, septic tank and soak pit
- 3.5 Road, retaining wall and side drain
- 3.6 Irrigation canal and weir/barrage
- 3.7 Slab culvert and T-beam bridge
- 3.8 Title block and legends
- 3.9 Importing, exporting and plotting

4 Building Information Modeling

(4 hours)

- 4.1 Concept, processes and utilization
- 4.2 Standards and regulations
- 4.3 Building information modeling versus computer aided design and drawing
- 4.4 Common data environment

Practical

(45 hours)

1. Preparation of a two-story residential load-bearing building on the given land
2. Preparation of a two-story RCC building on the given land
3. Preparation of a RCC slab culvert drawings of given span
4. Preparation of contour map from given survey data at suitable contour interval and scale
5. Common data environment

Final Exam

The questions will cover all the chapters in the syllabus. The evaluation scheme will be as indicated in the table below:

Chapter	Hours	Mark distribution*
1	2	5
2	8	8
3	16	13
4	4	4
Total	30	30

* There may be minor deviation in marks distribution.

References

1. Omura, G. (2006). Mastering AutoCAD 2005 and AutoCAD LT 2005. Germany: Wiley.
2. Tickoo, S. (2005). Autocad 2005: A Problem Solving Approach. United States: Delmar Learning.
3. Sacks, R., Eastman, C., Lee, G., & Teicholz, P. (2018). BIM handbook: A guide to building information modeling for owners, designers, engineers, contractors, and facility managers. John Wiley & Sons.
4. Civil engineering drawings provided by subject teacher