

Computer Aided Civil Engineering Design and Graphics

Course Code CE-388	Credit Hours 1-2
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Course Description

This is a computer aided drawing course in which students will explore the fundamentals of civil engineering drawing using AutoCAD. As they deepen their understanding, students will be challenged with class work assignments related to architectural and structural drawings. The course will introduce principles of Civil Engineering drawing techniques, symbols and nomenclature needed for architectural drawings, structural drawings, plumbing and electrification plan. Students will be expected to complete Lab work inside the scheduled time.

Text Book:

Reference Book:

1. Engineering Drawing, by Zahid Ahmed Siddiqui.
2. A First year Engineering Drawing (Latest Edition), by Parkinson, A.C.
3. *Civil Engineering Drawing* by J.S. Loyal

Prerequisites :

Nil.

ASSESSMENT SYSTEM FOR THEORY

	Without Project (%)	With Project/Complex Engineering Problems (%)
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

ASSESSMENT SYSTEM FOR LAB

Lab Work/ Psychomotor Assessment/ Lab Reports	70%
Lab Project/ Open Ended Lab Report/ Assignment/ Quiz	10%
Final Assesment/ Viva	20%

Teaching Plan

Week No	Topics/Learning Outcomes
1	Basic Concept of AutoCAD Drawing Setup procedure, Basic Commands including texts, layering, and defining styles etc
2-6	Components of Buildings and architecture details

6-8	Structural Drawing of a building
9	MID Semester Exam
10-13	Structural Drawing of a building
14	Bar Bending Schedule
15	Misc. Drawings of a Building, drainage structures, highway and motorway drawings.
16	Introduction to Signals Processing for Artificial Intelligence Module in Structural Health Monitoring of Structures
17-18	End Semester Exam
17-18	End Semester Exam

Practical:

Experiment No	Description
1	<p>Basic Concept of AutoCAD</p> <p>a. Drawing Setup procedure</p> <p>b. Basic Commands including texts, layering and defining styles</p>
2	<p>Components of Buildings and architecture details</p> <p>a. Introduction</p> <p>b. Components of Building</p> <p>c. Technical terms</p> <p>d. Selection of Building</p> <p>e. Principles of Planning</p> <p>f. Design of a House</p> <p>g. Plan of a building</p> <p>h. Elevations</p> <p>i. Cross section and detailing</p> <p>j. Brick Masonry, types of bonds and Damp Proof Course and Floors</p>
3	<p>Structural Drawing of a building</p> <p>a. Reinforced Cement Concrete General Notes</p> <p>b. Anchorage and splicing in bars</p> <p>c. Cover for reinforcement</p> <p>d. Spacing of bars</p> <p>e. Stirrups</p> <p>f. R.C.C Beams (simply supported, cantilever and continuous)</p> <p>g. R.C.C. Slab (One way, Two way and Continuous Slab)</p> <p>h. R.C.C Columns</p>

	<ul style="list-style-type: none"> i. R.C.C Foundation j. R.C.C Staircase k. R.C.C Water tank l. Details of steel roof truss, connection details and fabrication drawings.
4	<p>Misc. Drawings of a Building</p> <ul style="list-style-type: none"> a. Introduction to symbols for plumbing water supply, sewerage and electrification. b. Plumbing water supply c. Water Distribution system in a building d. Sewerage plan e. Electrification plan f. Bathroom layouts g. Kitchen layouts h. Joinery drawing
5	<p>Civil Engineering drawings (AutoCAD)</p> <p>General description of drawing related to civil engineering projects, e.g. hydraulic structures, drainage structures, highway and motorway drawings.</p>
	Semester Project,