

**ELEMENTS OF CIVIL ENGINEERING (CC109-N)**  
**BE 1<sup>st</sup> SEMESTER (EC/CE/ IT) / BE 2<sup>nd</sup> SEMESTER (ME/CIVIL/EE/ AE)**

Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
L	T	P	Total		Theory		IE	CIA	Pract./Viva	
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
4	0	2	6	5	3	70	30	20	30	150

**LEARNING OBJECTIVES:**

The educational objectives of this course are

- ☐ Every civil engineering activity takes place on the surface of earth and starts with availing and measuring the land, with the subject engineering students will pursue the engineering approach about surveying and Civil engineering is that field of engineering concerned with planning, design and construction for environmental control, development of natural resources, buildings, transportation facilities and other structures .
- ☐ The subject involves surveying activities of taking various measurements on ground that promote habit of working in groups, neatness and care in documentation and also involves introduction of engineering materials and elements of building materials.

**OUTLINE OF THE COURSE**

Sr. No.	Unit No.	Minimum No. of Hrs.
1	Unit:1	01
2	Unit:2	03
3	Unit:3	08
4	Unit:4	11
5	Unit:5	10
6	Unit:6	02
7	Unit:7	05
8	Unit:8	10
9	Unit:9	05
10	Unit:10	05

**Total Hours (Theory) : 60, Total Hours (Lab) : 30, Total Hours : 90**

**DETAILED SYLLABUS :**

Unit No	Topics	Lectures (Hours)	Weight age (%)
1.	<b>Introduction and Scope of Civil Engineering:</b> Branches & Function of Civil Engineering, Impact of Infrastructural Development on the Economy of a Country	1	2
2.	<b>Surveying:</b> Introduction, Basic Definitions ( Surveying, leveling, Plans, Maps, Scales), Introduction to divisions of surveying, Classification of surveying, Fundamental principles of surveying, Measurement in Surveying	3	3
3.	<b>Linear measurements:</b> Instruments used in chaining, Ranging: a). Direct – i. By Eye ii. By Line Ranger b). Indirect; chaining: a). Chaining on Plane Ground b). Chaining on Sloping Ground – i. Direct (Stepping Method), ii. Indirect ,Offsetting & Instrument used for it; Error in Chaining & tape corrections, Symbols used in Surveying.	8	11
4.	<b>Angular Measurements</b> Introduction to Angular Measurement, Instruments used for angular measurement: Compass, types of Compass, Meridians & Types of Meridians ,Bearings & Types of Bearing, Method of Bearing Or System Or Designation (Whole Circle Bearings and Reduced Bearings), Fore bearing & Back bearing), Plotting of Traverse & Computation of angles from Bearings, Introduction to local Attraction,	11	20
5.	<b>Elevation measurements:</b> Basic Definitions, Measurements of Elevation by Height of Instrument Line Of Collimation method and Rise & fall method, Methods of Leveling: Simple, Differential ,Fly ,Reciprocal Contouring: Definitions, Characteristics of Contours, Applications	10	20
6.	<b>Modern Tools of Surveying and Mapping:</b> Introduction to Global Positioning System, Remote Sensing and Geographic Information System	2	5
7.	<b>Construction Materials:</b>	5	8

	Requirement, types, uses, properties and importance of Civil Engineering materials like, Bricks, Cement, Timber, Sand, Concrete, steel		
8.	<b>Elements of Building Construction:</b> <b>Planning:</b> General Requirement of Building, Elementary principles and basic requirements of a building Planning, Importance of Planning, Layout of residential & industrial buildings, Introduction to Plan, Elevation & Section of Residential Building <b>Construction:</b> Classification of buildings based upon occupancy, Types of Structures, Introduction to building byelaws,	10	15
9.	<b>Water Resources Development:</b> Sources of water, Water requirements and Conservation of water (Necessity, objective, benefits & measures), Basic Introduction of Hydraulic Structures of Storage (Gravity Dam)	5	8
10.	<b>Transportation Engineering:</b> Role of Transportation in National development, Transportation Ways, Surface-Transportation and Aviation, Elements of Traffic Engineering and Traffic Control Devices	5	8
	<b>Total</b>	<b>60</b>	<b>100</b>

- ☐ At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- ☐ Lecture may be conducted with the aid of multi-media projector, black board, OHP etc.
- ☐ Attendance is compulsory in lectures, practicals and Tutorial which carries 05 Marks.
- ☐ At regular intervals assignments is given. In all, a student should submit all assignments of 05 marks each.
- ☐ Classroom participation and involvement in solving the problems in Tutorial rooms carries 05 Marks.
- ☐ Viva Voce will be conducted at the end of the semester of 05 Marks.
- ☐ One internal exam of 30 marks is conducted as a part of Mid semester evaluation.
- ☐ Experiments shall be performed in the laboratory related to course contents.
- ☐ The course includes a laboratory, where students have an opportunity to build an appreciation for the concept being taught in lectures.

#### STUDENTS LEARNING OUTCOME:

- ☐ The course helps student to understand the basics of civil engineering works that they come across in their professional and also in personal life for example planning and Construction of their own residence and industries in future.
- ☐ With an overview of surveying, building planning, water resources and transportation
- ☐ Engineering students learn to prepare the layouts of buildings and other infrastructures, obtain understanding of the basic elements of the transportation system, techniques for water conservation.

#### TEXT & REFERENCE BOOKS:

- ☐ Civil Engg. Drawing by S. C. Rangwala Publication Charotar Pub. House Anand
- ☐ Surveying Vol .I & II by Dr. B. C. Punamia Publication Laxmi Publication Delhi
- ☐ Title :Surveying Vol. I and II, Author : S. K. Duggal, Publisher : Tata Macgraw hill Publication New Delhi
- ☐ Title : Building Construction, Author : Dr. B. C. Punamia, Publisher: Laxmi Pub. Delhi
- ☐ Title : Engineering Material, Author : Dr. S.C. Rangwala, Publisher: Charotar Pub. House
- ☐ Title : Highway Engineering, Author: Khanna S. K. and Justo C. E.G., Publisher :Nemchand and Brothers
- ☐ Title : Irrigation Engineering and Hydraulic Structures, Author :SantoshkumarGarg, Publisher :Khanna Publishers Delhi

#### Web Materials:

- ☐ <http://www.nptel.iitm.ac.in/courses.php?branch=Civil>
- ☐ <http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT>

#### LIST OF EXPERIMENTS / Assignments

Sr. No.	Name of the Experiments	List of Assignments:
1.	Introduction to instruments, Symbols and Abbreviation	Scope of Civil Engineering
2.	Chain survey	Introduction to Surveying
3.	Compass survey ( prismatic & survey compass )	Linear Measurement
4.	Chain and compass surveying	Compass Surveying
5.	Levelling	Elevation Measurement
6.	-	Modern Method of Surveying
7.	-	Construction Material
8.	-	Building Planning
9.	-	Elements of Building Construction
10.	-	Water Resources Development
11.	-	Transportation Engineering

