

Branch Name:	Mechanical Engineering / Civil Engineering / Electrical Engineering / Robotics & Automation
Program Code:	ET101 / ET106 / ET109 / ET113
Course Title:	Elements of Civil Engineering
Course Code:	2ET10000113T
Pre-requisite Course:	Basic knowledge of mathematics and physics

Course Objectives:

CO-1: The students will learn fundamental basics of Civil Engineering concepts.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
					03	03	-	-	03	24	60	16	

Course Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	Introduction: Basic definition, Branches and scope of civil Engineering, Impact of infrastructural development on economy of country.	04	10
2	Surveying: Definition, objectives and application, principles of surveying, methods of surveying, Instruments used in surveying- chain survey, compass, theodolite, total station, and drone survey. Application of Global position system (GPS), remote sensing (RS) and Geographical information system (GIS)	10	25
3	Building construction and planning: Classification of building, building components and their function, principles of planning, plan-elevation-section of a residential building Green building: Introduction, Objectives, Fundamental Principles, Benefits of Green Buildings, Example of Green Buildings Green ratings, Energy efficient building Building Information modelling: Definition and overview, Phases of BIM implementation, levels of BIM, Advantages and limitations Smart cities: Terminology, characteristics, frameworks, technologies for design of smart city, smart cities of India	14	35
4	Water Resources Engineering: Elements of hydrology, sources of water, water conservation, rain water harvesting, watershed management	05	10
5	Transportation Engineering: Modes of transportation, Mass Transportation systems-BRTS, Metro, monorail, traffic control devices	05	10
6	Advancements in Civil Engineering: Development of River fronts, Heritage structures & its conservations, Features of Earthquake resistant structures	04	10

Reference Books:

1. Elements of Civil Engineering Author: Dr. R.K. Jain and Dr. P.P. Lodha. Publisher: McGraw Hill Education, India Pvt. Ltd.
2. Surveying Vol. I Author: Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar. Publisher: Laxmi Publication Delhi.
3. Building Construction Author: Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar Jain. Publisher: Laxmi Pub. Delhi.
4. Building Information Modeling: Global & Indian Perspective Author: Dr. Adv. Harshul Savla, Dr. Chandrahauns Chavan, Ar. Pallavi Patil. Publisher: Notion Press, India.
5. Introduction to Smart Cities Author: Anil Kumar. Publisher: Pearson India.

Course Learning Outcomes (CLO):

1. Overview of Civil Engineering field.
2. Idea about surveying and different types of instruments.
3. Basic idea about building construction and green building,
4. Get acquainted with BIM and smart cities.
5. Describe various public transportation systems, water conservation methods.

Web Material Links:

<http://nptel.ac.in/courses/105107122/>

<http://nptel.ac.in/courses/105107157/>

<http://nptel.ac.in/courses/105101087/>

<http://nptel.ac.in/courses/105104100/>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to

Course Outcomes	Description	Bloom's Taxonomy Level
CLO1	Overview of Civil Engineering field	Remembering (1)
CLO2	Idea about surveying and different types of instruments.	Understanding (2)
CLO3	Basic idea about building construction and green building,	Applying (3)
CLO4	Get acquainted with BIM and smart cities.	Understanding (2)
CLO5	Describe various public transportation system, water conservation methods	Evaluate (5)

Mapping of CLOs with POs & PSOs:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	M				M	M							M		
CLO2	M	M				M	M							M		
CLO3	M	M				M	M							M		
CLO4	M	M				M	M							M		
CLO5	M	M				M	M							M		
CLO6	M	M				M	M							M		

H: High, M: Medium, L: Low