

01CI0101 Elements of Civil Engineering
Objective of the Course:

The main objective to give the course fundamentals of civil engineering is

- To familiar students with the Mother branch of Engineering and students will have a broad perspective to identify the oldest branch of engineering providing basic infrastructure for development of civilized society.
- With an understanding of principles associated with civil engineering the students will persuade different civil engineering works like buildings, transportation and water & Drainage systems which are an integral part of very engineering professional's life irrespective of the discipline.

Credits Earned: 4 Credits

Course Outcomes: After completion of this course, student will be able to

- Recognize importance of Civil engineering and its day to day applications.
- Interpret the plan/maps, locate the objects on ground from map and from site to on paper plan/map
- Describe qualitative comparison between different materials and its selection
- Understand the water cycle its importance, water resources its consumptive use
- Able to create & interpret building planning and will be able to draw plan, section and elevation
- Acquaint with the various modes of transportation

Pre-requisite of course: NA.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	IA	CSE	Viva (V)	Term work (TW)	
3	0	2	4	50	30	20	25	25	150

Syllabus for Bachelor of Technology



Mechanical Engineering

Established Under Gujarat Private Universities Act No. 9 of 2016

Detailed Syllabus:

Sr. No	Topic name	Hours
1	Introduction to civil Engineering: Scope of civil Engineering & Role of civil Engineer Unit conversion, common units used in practice of civil engineering	3
2	Elements of Surveying Introduction: applications, fundamental principles and classification of surveying, classification of plans & maps linear measurement: methods, Instruments used in chain surveying, Selection of stations, Chaining, Ranging, Offsetting. Angular Measurement: Instruments used, Types of compass, Types of meridians and bearings, Measurement of bearings, computation of angles. Compass traversing and correction of bearings for local attraction. Levelling: Aims and applications, Definition of various terms, Instruments for levelling, Methods of levelling, Recording observations in level-book, Computing reduced levels by HI and rise & fall method, Definition of contour, Characteristics of contours of different terrains and application of contour maps. Modern Surveying: Measurement by Electronic devices, Introduction to GIS, GPS & RS	17
3	Building Materials Introduction, properties & classifications of materials: Bricks/blocks, cement, lime, sand, aggregates, stone, ceramic, glass, concrete, Ferrous metals & Non ferrous metals, glass, timber and modern materials	5
4	Building planning and its components Classification of buildings, Principles of planning Conceptual planning of Residential & Public building Building components & their functions, types of load on building	6
5	Transportation Engineering Role of transportation in national development, Modes of transportation, types of roadways, intro to traffic engg, intro to Urban Transportation system	5

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7	Water resources & Management	4
	Hydrological cycle, types of water resources, water demand & water scarcity Water use and its conservation techniques, Storage structures, water conveyance	
8	Next Generation Civil Engineering	2
	Building automation, Green building, advanced materials, sky scrapers, civil 2 engineering wonders in the world	
	Total	42.0

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
30%	30%	10%	10%	10%	10%

Suggested experiment & Project Work:

- 1) Chain and Compass Survey Project.
- 2) Profile Leveling Survey Project.
- 3) Basics sign & conventional symbol drawing sheet
- 4) Building planning drawing sheet

Instructional Method and Pedagogy:

1. At the start of course, the course delivery pattern, prerequisite of the subject will be discussed.
2. Lectures will be taken in class room with the use of multi-media presentations, black board – mix of both.
3. Attendance is compulsory in lectures and laboratory which carries a 5% component of the overall evaluation.
4. Minimum two internal exams will be conducted and average of two will be considered as a part of 15% overall evaluation.

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5. Assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval. It carries a weightage of 5%.
6. Surprise tests/Quizzes will be conducted which carries 5% component of the overall evaluation.
7. The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures. Minimum 8 experiments are planned based on the course content.

Text books :

1. Introduction to civil Engineering By Bhogayata, Shah & Vora – Tata McGraw hill

Reference Books:

1. Surveying Vol. I by B.C. Punamia
2. Building construction by B.C. Punamia
3. Building Material by S.C.Rangwala
4. Hydrology & Water resource engineering by S.K.Garg
5. Highway & Transportation engineering by Khanna & Justo

Reference Links/ e-material:

- 1 <http://www.nptel.iitm.ac.in/courses.php?branch=Civil>
- 2 <http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT-RORKEE/SURVEYING/home.htm>
- 3 <http://www.nptel.iitm.ac.in/video.php?courseId=1040>
- 4 <http://www.nptel.iitm.ac.in/video.php?courseId=1059>
- 5 <https://greenbuildingsolutions.org/Main-Menu/...Materials.../New-Materials-Applications...>
- 6 <http://www.constructionworld.in/>