FACULTY OF ENGINEERING AND TECHNOLOGY

First Year Bachelor of Technology

In Effect from Academic Year 2016-17

Subject Code: 1ET1000105	Subject Title: ELEMENTS OF CIVIL ENGINEERING
Pre-requisite Subject	Basic Knowledge of mathematics and physics up to 12 science

Course Objective:

To make aware the students to learn basic of civil engineering concepts and infrastructure development, Elements of building Materials, land measurements, Planning and construction of building and allied field.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Theory
3	-	2	4	70	30	-	20	120

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1.	**Introduction:** Branches of Civil Engineering, Scope of Civil Engineering, Role of Civil Engineer in Society. Impact of infrastructural development on economy of country.	02	4
2.	**Surveying :** **Introduction** Basic definitions, objectives and applications, Fundamental principles of surveying, Classification of surveying, Plans and maps, Scales.	04	10
	Linear Measurement Methods, Instruments used in chain surveying, Selection of stations, Chaining, Ranging, Offsetting, Errors in chaining and correction, Conventional symbols.	05	12
	Angular Measurement Instruments, Types of compass, Types of meridians and bearings, Measurement of bearings, computation of angles, compass traversing and correction of bearings for local attraction.	05	12
	Elevation Measurement Aims and applications, Basic Definitions, Instruments for leveling, Methods of leveling, Recording observations in level-book, Computing reduced levels by HI and rise & fall method, Contour survey, Characteristics of contours.	05	12
	Surveying Instruments and Techniques Introduction of Total station. Application of Global positioning system (GPS), remote sensing (RS) and Geographical information system (GIS).	04	10
3	**Construction Materials :** Types, uses, properties and importance of Civil engineering materials - Bricks, Stones, Cement, Sand, Aggregates, Concrete, Timber and bitumen.	04	10
4	**Building Construction and Planning:** Classification of buildings, Types of loads acting on buildings. Building components and their function, Principles of planning, Plan – elevation –section of a simple residential building.	05	12
5	**Water Resources:** Elements of Hydrology, Sources of water, water requirement and its conservation, introduction of Hydraulic structures.	04	9
6	**Transportation Engineering:** Role of transportation in national development, Modes of transportation, Elements of traffic engineering and traffic control.	04	9

Course Outcome: Following will be the expected outreach for the student.

1. Overview of Civil Engineering field.
2. Perform simple land surveying and map preparation.
3. Basic information of modern instruments and tools used in civil engineering.
4. Elementary knowledge of different materials and their application in construction.
5. Prepare Plan, elevation and section of building.
6. Get acquainted with Water resources and transportation system.

List of References:

1. Surveying Vol. I Author: Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar Jain17th Edition Publisher: Laxmi Publication Delhi .
2. Surveying Theory and Practice (7th Edition) Author: James M Anderson and Edward M Mikhail Publisher: McGraw Hill Education, India Pvt. Ltd.
3. Surveying and Leveling Author: R. Subramanian Publisher: Oxford University.
4. Surveying and Leveling Author: N. N. Basak Publisher: Tata McGraw Hill Education, Pvt. Ltd. New Delhi.
5. Surveying Vol. I Author: S. K. Duggal Publisher: Tata McGraw Hill Publication New Delhi.
6. Elements of Civil Engineering Author: Dr. R.K. Jain and Dr. P.P. Lodha Publisher: McGraw Hill Education, India Pvt. Ltd.
7. Building drawing Author: M.G.Shah, C.M.Kale and S.Y.Patki Publisher: Tata McGraw Hill .
8. Civil Engg. Drawing Author: S. C. Rangwala Publisher: Charotar Pub. House Anand .
9. Building Construction Author: Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar Jain Publisher: Laxmi Pub. Delhi
10. Building Construction and Construction Material Author: G.S.Birdie and T.D. Ahuja Publisher: Dhanpat Rai Publishing Company .
11. Engineering Material Author: S.C. Rangwala Publisher: Charotar Pub. House, Anand.
12. Irrigation Engineering and Hydraulic Structures Author: Santoshkumar Garg Publisher: Khanna Publishers Delhi .
13. Highway Engineering Author: Khanna S. K. and Justo C. E.G. Publisher: Nemchand and Brothers.

List of Practical:

1. Chain survey
2. Compass survey
3. Leveling

Project:

Based on practical, students shall perform following projects.

1. Chain and compass survey 2. Contour Survey