FACULTY OF ENGINEERING AND TECHNOLOGY
First Year Bachelor of Technology
In Effect from Academic Year 2020-21

Subject Code:1ET1000106	Subject Title: ELEMENTS OF CIVIL & MECHANICAL ENGINEERING
Pre-requisite Subject	Basic Knowledge of mathematics and physics.

Course Objective:

1. The students will learn fundamental basics of Civil and Mechanical Engineering concepts.

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

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
01	**Introduction:** Basic definition, Branches of Civil Engineering.	01	2
02	**Surveying:** Basic definition, objectives and applications, Fundamental principles of surveying, geodetic survey and plane survey, Classification of surveying, Plans and maps, Scales. Introduction of Chain and Compass survey, Leveling and Contour survey, Instruments used, Conventional symbols.	09	23
03	**Building Construction and Planning:** Classification of buildings, Building components and their function, Plan – elevation –section of a simple residential building. **Water Resources:** Elements of Hydrology, Sources of water, water requirement and its conservation. Introduction of Hydraulic structures (Dam, weir, barrage). **Transportation Engineering:** Modes of transportation, Traffic control devices, Introduction to mass transportation system (BRTS, Metro and Monorail).	11	25
04	**Mechanical Elements** :Prime movers and its types, Concept of Force, Pressure, Energy, Work, Power, System, Heat, Temperature, Specific heat capacity, Change of state, Path, Process, Cycle, Internal energy, Enthalpy, Statements of Zeroth Law and First law of thermodynamics.	07	20
05	**Internal Combustion Engines**: Introduction, Classification,Engine details, four-stroke/ two-stroke cycle Petrol/Diesel engines, Indicated power, Brake Power, Efficiencies.	07	15
06	**Steam Boilers**: Introduction, Classification, Cochran, Lancashire and Babcock and Wilcox boiler, Functioning of different mountings and accessories.	07	15

Course Outcome:

1. Overview of Civil Engineering field.
2. Perform simple land surveying and map preparation.
3. Prepare Plan, elevation and section of building.
4. Get acquainted with Water resources and transportation system.
5. To understand the fundamentals of mechanical systems.
6. To understand and appreciate significance of mechanical engineering in different fields of engineering.

List of References:

1. Surveying Vol. I Author: Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar: Laxmi Publication Delhi .
2. Elements of Civil Engineering Author: Dr. R.K. Jain and Dr. P.P. Lodha Publisher: McGraw Hill Education, India Pvt. Ltd.
3. Building drawing Author: M.G.Shah, C.M.Kale and S.Y.Patki Publisher: Tata McGraw Hill .
4. Building Construction Author: Dr. B. C. Punmia, Ashokkumar Jain, Arunkumar Jain Publisher: Laxmi Pub. Delhi
5. Irrigation Engineering and Hydraulic Structures Author: SantoshkumarGarg Publisher: Khanna Publishers Delhi .
6. Highway Engineering Author: Khanna S. K. and Justo C. E.G. Publisher: Nemchand and Brothers.
7. Basic Mechanical Engineering by Pravin Kumar, Pearson
8. Elements of Mechanical Engineering by: P. S Desai and S.B.soni
9. Elements of Mechanical Engineering by Sadhu Singh S. Chand Publication
10. Elements of Mechanical Engineering by S.M.Bhatt

List of Practicals:

1. Chain survey and Compass survey
2. Leveling
3. To understand construction and working of various types of boiler.
4. To understand construction and working of different boiler mountings and accessories.
5. To determine brake thermal efficiency of an I. C. Engine.

Project:
Based on practical, students shall perform following projects.

1. Chain and compass survey.
2. Make the model of boiler and understand it’s working.