23ES12T1 BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to All branches of Engineering)

Course Category	Engineering Science	**Credits**	3
Course Type	Theory	**Lecture – Tutorial –Practical**	3-0-0
Prerequisite	-	**Sessional Evaluation**	30
		Semester End Exam. Evaluation	70
		Total Marks	100

Course Objectives	Get familiarized with the scope and importance of Civil and Mechanical Engineering in different sectors and industries.	
	Introduce the preliminary concepts of Building Planning, Building Construction, Materials and the related tests.	
	Acquire preliminary knowledge of surveying and understand the importance of the quality of the drinking water.	
Course Outcomes	CO1	Understand various sub-divisions of Civil Engineering and to appreciate their role in ensuring better society.
	CO2	Know the concepts of surveying and to understand the measurement of distances, angles and levels through surveying.
	CO3	Realize the importance of Transportation in nation's economy and the engineering measures related to highways in terms of geometrics.
Course Content	**PART A: BASIC CIVIL ENGINEERING** **UNIT- I** Basics of Civil Engineering: Role of Civil Engineers in Society- Various Disciplines of Civil Engineering- Structural Engineering- Geo-technical Engineering- Transportation Engineering - Hydraulics and Water Resources Engineering - Environmental Engineering-Scope of each discipline - Building Construction and Planning- Construction Materials-Cement - Aggregate - Bricks- Cement concrete- Steel. Introduction to Prefabricated construction Techniques. **UNIT-II** Surveying: Objectives of Surveying- Horizontal Measurements- Angular Measurements - Introduction to Bearings Levelling instruments used for levelling -Simple problems on levelling and bearings-Contour mapping. **UNIT-III** **Transportation Engineering:** Importance of Transportation in Nation's economic development- Types of Highway Pavements- Flexible Pavements	

	and Rigid Pavements - Simple Differences. Basics of Harbour, Tunnel, Airport, and Railway Engineering. **Water Resources and Environmental Engineering:** Introduction, Sources of water- Quality of water- Specifications- Introduction to Hydrology– Rainwater Harvesting-Water Storage and Conveyance Structures (Simple introduction to Dams and Reservoirs)
Textbooks and Reference books	**TEXTBOOKS:** 1. G. Shanmugam and M. S. Palanisamy, *Basic Civil and the Mechanical Engineering,* Tata Mcgraw Hill publications, India Pvt. Ltd.,2018. 2. S.S. Bhavikatti, *Basic Civil Engineering*, New Age International Publishers1st edition, 2018. 3. Dr. S.C. Rangwala, *Engineering Materials*, Charotor Publishing House. 43rd edition 2019. 4. S.K.Khanna, C.E.G. Justo and Veeraraghavan *Highway Engineering*, Nemchand and Brothers Publications, 10th edition. 5. Santosh Kumar Garg, *Irrigation Engineering and Hydraulic Structures* - Khanna Publishers, Delhi, 38th revised edition 2023. 6. Dr. B. C. Punmia, *Building Construction*, Lakshmi Publications, Delhi, 12th edition, 2023. **REFERENCE BOOKS**: 1. S.K. Duggal, *Surveying, Vol- I and Vol-II*, Tata McGraw Hill Publishers, 5th edition, 2019. 2. Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi, 27th edition.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	2	1	-	-	-	1	2	1	1	1	-	-	1	1	-
CO2	2	2	-	-	1	1	1	-	1	1	-	1	1	1	-
CO3	1	2	1	-	1	-	1	1	-	1	-	-	2	2	1