Basic Civil and Mechanical Engineering

(For EEE, ECE and CSE branches)

Course Code	23ES1101	Year	I	Semester	I
Course Category	Engineering Sciences	Branch	ECE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Nil
Continuous Internal Evaluation:	30	Semester End Evaluation	70	Total Marks:	100

Part A: Basic Civil Engineering													
Course Outcomes:													
On completion of the course, the student should be able to:													
Understand various sub-divisions of Civil Engineering and to appreciate their role in													
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Rea	lize th	e imp	ortan	ce of	Transp	ortatio	on in n	ation's	s econo	my and	d the en	gineer	ring
mea	sures	relate	ed to T	ransp	ortatio	n. L2							
Und	lerstar	nd the	impo	rtance	of W	ater St	orage	and C	onveya	nce St	ructures	s so tha	it the
soci	al res	ponsi	bilitie	es of w	ater c	onserv	ation	will be	e apprec	ciated.	L2		
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kno	wledg	e on	prefal	bricate	ed tech	nolog	y.L2						
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L2 Understand the importance of Water State social responsibilities of water conserved Understand the basic characteristics of knowledge on prefabricated technology on tribution of course outcomes toward polymers and the surveying L2 Market State St	Understand various sub-divisions of Civil Enensuring better society L2 Know the concepts of surveying and to understand levels through surveying L2 Realize the importance of Transportation in measures related to Transportation. L2 Understand the importance of Water Storage social responsibilities of water conservations. Understand the basic characteristics of Civil Industriand the basic characteristics of Civil Industriand the basic characteristics of Civil Industriand Industrian Industr	mpletion of the course, the student should be able to Understand various sub-divisions of Civil Engineer ensuring better society L2 Know the concepts of surveying and to understand angles and levels through surveying L2 Realize the importance of Transportation in nation's measures related to Transportation. L2 Understand the importance of Water Storage and Cosocial responsibilities of water conservation will be understand the basic characteristics of Civil Engine knowledge on prefabricated technology.L2 Ontribution of course outcomes towards Achiever POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 3 1 1 2 2 2 2 2 2 2 2 3 3 2 2 2 2 2 2 3 3 2 2 2 2 2 2 2 2 3 3 2 2 2 2 2 2 2 2 2 3 3 2	mpletion of the course, the student should be able to: Understand various sub-divisions of Civil Engineering an ensuring better society L2 Know the concepts of surveying and to understand the mangles and levels through surveying L2 Realize the importance of Transportation in nation's economeasures related to Transportation. L2 Understand the importance of Water Storage and Conveya social responsibilities of water conservation will be appreduderstand the basic characteristics of Civil Engineering Nanowledge on prefabricated technology.L2 Ontribution of course outcomes towards Achievement of POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 3 1 1 2 2 2 2 2 2 2 2 2 2 2 3 3 2 3 2 2 2 2	mpletion of the course, the student should be able to: Understand various sub-divisions of Civil Engineering and to apensuring better society L2 Know the concepts of surveying and to understand the measure angles and levels through surveying L2 Realize the importance of Transportation in nation's economy and measures related to Transportation. L2 Understand the importance of Water Storage and Conveyance Strisocial responsibilities of water conservation will be appreciated. Understand the basic characteristics of Civil Engineering Materiak knowledge on prefabricated technology.L2 Intribution of course outcomes towards Achievement of Program POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 3 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	mpletion of the course, the student should be able to: Understand various sub-divisions of Civil Engineering and to appreciate ensuring better society L2 Know the concepts of surveying and to understand the measurement of angles and levels through surveying L2 Realize the importance of Transportation in nation's economy and the ensures related to Transportation. L2 Understand the importance of Water Storage and Conveyance Structures social responsibilities of water conservation will be appreciated. L2 Understand the basic characteristics of Civil Engineering Materials and knowledge on prefabricated technology.L2 Intribution of course outcomes towards Achievement of Program Outleton of Course Outleton of Course Outleton of Civil Engineering Supplies of Civil Engineering - Supplies of Civil Engineering - Structura Engineering - Hydraulics and Water Resources Engineering Environmental Engineering-Scope of each discipline - Buildin Construction and Planning- Construction Materials-Cement	mpletion of the course, the student should be able to: Understand various sub-divisions of Civil Engineering and to appreciate their ensuring better society L2 Know the concepts of surveying and to understand the measurement of distate angles and levels through surveying L2 Realize the importance of Transportation in nation's economy and the engineer measures related to Transportation. L2 Understand the importance of Water Storage and Conveyance Structures so the social responsibilities of water conservation will be appreciated. L2 Understand the basic characteristics of Civil Engineering Materials and attain knowledge on prefabricated technology.L2 Contribution of course outcomes towards Achievement of Program Outcome POI PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PSO1 3 1 2 2 2 2 2 2 2 2 2 2 3 3 3 2 3 2 2 2 2

	Prefabricated construction Techniques					
	Surveying: Objectives of Surveying- Horizontal Measurements-					
II	Angular Measurements Introduction to Bearings Levelling	CO2				
11	instruments used for levelling -Simple problems on levelling and	CO2				
	bearings-Contour mapping.					
	Transportation Engineering Importance of Transportation in					
	Nation's economic development- Types of Highway Pavements-					
	Flexible Pavements and Rigid Pavements - Simple Differences.					
111	Basics of Harbour, Tunnel, Airport, and Railway Engineering					
III	Water Resources and Environmental Engineering: Introduction,					
	Sources ofwater- Quality of water- Specifications- Introduction to					
	Hydrology– Rainwater Harvesting-Water Storage and Conveyance					
	Structures (Simple introduction to Dams and Reservoirs).					
	Learning Resources					

Textbooks

- 1. M.S.Palanisamy, Tata Mcgraw Hill publications, Basic Civil Engineering, (India) Pvt. Ltd. 4th Ed.
- 2. S.S. Bhavikatti, New Age International Publishers. 2022, Introduction to Civil Engineering, 1st Ed.
- 3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, 1st Ed.

Reference Books

- 1. S.K. Duggal, Surveying, Vol- I and Vol-II, Tata McGraw Hill Publishers 2019, 5th Ed.
- 2. Santosh Kumar Garg, Khanna Publishers, Hydrology and Water Resources Engineering, Delhi. 2016.
- 3. Santosh Kumar Garg, Khanna Publishers, Delhi 2023, Irrigation Engineering and Hydraulic Structures -. 38th Ed.
- 4. S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchandand Brothers Publications 2019, Highway Engineering, 10th Ed.
- 5. Indian Standard Drinking Water Specification IS 10500-2012.

Part B-Basic Mechanical Engineering (For EEE, ECE and CSE branches)									
Course Code	23ES1101	Year	I	Semester	I				
Course Category	Engineering science	Branch	ECE	Course Type	Theory				
Credits	3	L-T-P	3-0-0	Prerequisites	Nil				
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100				

Course O	Course Outcomes: Upon successful completion of the course, the student will be able to									
	Understand regarding various engineering material, different modules of									
CO1	Mechanical engineering and importance of Mechanical Engineering in different									
	sectors and industries L2									
CO2	Explain different manufacturing and thermal engineering processes. L2									
CO2	Describe the concepts of a power plant, mechanical power transmission elements									
CO3	and robotics. L2									

Contr	Contribution of Course Outcomes towards achievement of Program Outcomes &													
	Strength of correlations (H: High (3), M: Medium (2), L: Low (1))													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2				3							3	
CO ₂	2	2				3							3	
CO ₃	2	2				3							3	

Syllabus					
Unit No	Content	Mapped CO			
Ι	Introduction to Mechanical Engineering: Role of Mechanical Engineering in Industries and Society- Technologies in different sectors such as Energy, Manufacturing, Automotive, Aerospace, and Marine sectors. Engineering Materials - Metals-Ferrous and Non-ferrous, Ceramics, Composites, Smart materials	CO1			
II	Manufacturing Processes: Principles of Casting, Forming, joining processes, Machining, Introduction to CNC machines, 3D printing, andSmart manufacturing. Thermal Engineering – Working principle of Boilers, Otto cycle, Diesel cycle, Refrigeration and air-conditioning cycles, IC engines, 2- Stroke and 4-Stroke engines, SI/CI Engines, Components of Electric and Hybrid Vehicles.	CO1,2			

III	Power plants – Working principle of Steam, Diesel, Hydro, Nuclearpower plants. Mechanical Power Transmission - Belt Drives, Chain, Rope drives, Gear Drives and their applications. Introduction to Robotics - Joints & links, configurations, and applications of robotics.	CO1,3
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Learning Resources

Text Books

- 1. V.Ganesan, By Tata McGraw Hill publications (India) Pvt. Ltd., Internal Combustion Engineers
- 2. S.S. Rattan, A text book of Theory of Machines by Tata McGraw Hill Publications, (India)Pvt. Ltd.
- 3. Jonathan Wicker and Kemper Lewis, An introduction to Mechanical Engg by Cengage learning India Pvt. Ltd.

Reference books

- 1. G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, TataMcGraw Hill publications (India) Pvt. Ltd.
- 2. Mahesh M Rathore, Thermal Engineering by Tata McGraw Hill publications (India) Pvt.Ltd.
- 3. L. Jyothish Kumar, Pulak M Pandey, 3D printing & Additive Manufacturing Technology- Springer publications.