LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Samaikya

Course Name & Code : Communicative English & 23FE01

L-T-P Structure : 3-0-0 **Credits:** 02

Program/Sem/Sec : B. Tech, I Sem (ECE-A)

A.Y. : 2025-26

PREREQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objective of introducing this course, *Communicative English,* is to facilitate effective Listening, Reading, Speaking and Writing skills among the students. It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary. This course helps the students to make them effective in speaking and writing skills and to make them industry ready.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the context, topic, and pieces of specific information from social or Transactional dialogues	L2
CO2	Apply grammatical structures to formulate sentences and correct word forms.	L3
CO3	Use discourse markers to speak clearly on a specific topic in informal discussions.	L3
CO4	Read / Listen the texts and write summaries based on global comprehension of these texts	L2
CO5	Prepare a coherent paragraph, essay, and resume.	L3

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

Course Outcomes PO's →	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	-	-	-	1	-	-	-	-	3	3	-	2
CO2.	-	-	-	1	-	-	-	-	3	3	-	2
CO3.	-	-	-	1	-	-	-	-	3	3	-	2

CO4.	-	-	-	1	-	-	-	-	3	3	-	2
CO5.	-	-	-	1	-	-	-	-	3	3	-	2
1 = Slight (Low)			2= Moderate (Medium)			3 = Substantial (High)						

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	2 Weeks	04-08-2025 TO 16-08-2025		TLM1	CO1		
2.	Introduction to the course				TLM1	CO1		
3.	Course Outcomes, Program Outcomes				TLM2	CO1		

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	18-08-2025 19-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	02	22-08-2025 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	02	26-08-2025 29-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	02	01-09-2025 02-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	08-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms, Affixes, Root Words	02	09-09-2025 12-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 11						No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Nature: The Brook by Alfred Tennyson	02	15-09-2025 16-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	Identifying Sequence of ideas, Linking ideas into a Paragraph	02	19-09-2025 22-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	Structure of Paragraph - Paragraph Writing	02	23-09-2025 26-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	Cohesive Devices- linkers	02	06-10-2025 07-10-2025		TLM2 TLM6	CO2	T1,T2	
5.	Use of Articles and zero article, Prepositions	01	10-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	Homophones, Homographs, Homonyms	01	13-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 10						No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Biography: Elon Musk	02	27-10-2025 28-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	Reading and making basic inferences - recognizing and interpreting the text clues for comprehension	02	31-10-2025 03-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	Summarizing, Note-making, Paraphrasing	02	04-11-2025 07-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	Verbs- Tenses, Subject-verb agreement	02	10-11-2025 11-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	Compound words, Collocations	01	14-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Inspiration: The Toys of Peace- by Saki	02	17-11-2025 18-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	Study of graphic elements in text to display complicated data	02	21-11-2025 24-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	Letter Writing : Official Letters, Resumes	02	25-11-2025 28-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	01-12-2025 02-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	Words often confused, Jargons	01	05-12-2025		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 09						No. of classes taken:		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Motivation: The Power of Interpersonal Communication	02	08-12-2025 09-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	Reading Comprehension	02	12-12-2025 15-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	Structured Essays on specific topics	02	16-12-2025 19-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	Editing Texts – Correcting Common errors	01	22-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	Technical Jargon	01	23-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 08						No. of classes taken:		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Word Analogy	01	14-10-2025		TLM2 &5	
2.	One-word substitutes	01	17-10-2025		TLM2 &5	
3.	Technical vocabulary	01	26-12-2025		TLM2 &5	
No. of classes required to complete : 03				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one' s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs. K. Samaikya	Dr. R. Padma Venkat	Dr. R. Padma Venkat	Dr. T. Satyanarayana
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : B. Tech., I-Sem., **ECE-A**

ACADEMIC YEAR : 2025-2026

COURSE NAME & CODE : Engineering Physics-23FE04

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Dr. S. YUSUB**

COURSE COORDINATOR : **Dr. S. YUSUB**

To bridge the gap between the physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc, enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

Course Outcomes:

CO1: Analyze the intensity variation of light due to interference, diffraction and Polarization (Apply-L3).
CO2: Understand the basics of crystals and their structures (Understand-L2).
CO3: Summarize various types of polarization of dielectrics and classify the magnetic materials (Understand-L2)
CO4: Explain fundamentals of quantum mechanics and free electron theory of metals (Understand-L2).
CO5: Identify the type of semiconductor using Hall Effect (Apply-L3).

COURSE ARTICULATION MATRIX (Correlation between COs& POs, PSOs):

ENGINEERING PHYSICS												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes	**Programme Outcomes**											
PO's →	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO2.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO3.	**3**	**3**	**2**	**1**	**1**	**1**						**1**
CO4.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO5.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
1 = slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BoS APPROVED TEXT BOOKS:

TEXT BOOKS

1. A Text book of "Engineering Physics" M.N. Avadhanulu, P.G. Kshirsagar, TVS Arun Murthy, S. Chand & Co., 11th Edition, 2019.
2. Engineering Physics – *D.K. Bhattacharya & Poonam Tandon, Oxford press (2015)*

REFERENCES

1. Engineering Physics - B.K.Pandey & S. Chaturvedi, Cengage Learning 2021.
2. Engineering Physics - Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics - Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press 2010.
4. Engineering Physics - M.R. Srinivasan, New Age international publishers (2009).

Web Resource: //www.loc.gov/rr/scitech/selected-internet/physics.html

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE-A

UNIT-I : Interference and diffraction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Course Outcomes INTERFERENCE: Introduction	1	19-08-2025		TLM1	CO1	T1	
2.	Principle of superposition	1	20-08-2025		TLM1	CO1	T1	
3.	Interference of light, Interference in thin films by reflection reflection & applications	1	21-08-2025		TLM2	CO1	T1	
4.	colors in thin films	1	23-08-2025		TLM1	CO1	T1	
5.	Newton's rings	1	26-08-2025		TLM1	CO1	T1	
6.	ination of wavelength active index.	1	28-08-2025		TLM1	CO1	T1	
7.	DIFFRACTION: Introduction,	1	30-08-2025		TLM1	CO1	T1	
8.	Fresnel and Fraunhoffer diffractions	1	02-09-2025		TLM2	CO1	T1	
No. of classes required to complete UNIT-I		8			No. of classes taken:			

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
9.	Fraunhoffer diffraction due to single slit,	1	03-09-2025		TLM1	CO1	T1	
10.	double slit & N slits (Qualitative)	1	04-09-2025		TLM1	CO1	T1	
11.	Diffraction Grating, Dispersive power	1	06-09-2025		TLM2	CO1	T1	
12.	Resolving power of Grating(Qualitative)	1	09-09-2025		TLM1	CO1	T1	
13.	Polarization : Introduction	1	10-09-2025		TLM1	CO1	T1	
14.	Types of polarization	1	11-09-2025		TLM1	CO1	T1	
15.	Polarization by reflection	1	13-09-2025		TLM1	CO1	T1	
16.	refraction & double refraction	1	16-09-2025		TLM2	CO1	T1	
17.	Nicol's prism	1	17-09-2025		TLM1	CO1	T1	
18.	half wave and quarter wave plates	1	18-09-2025		TLM1	CO1	T1	
No. of classes required to complete UNIT-II		10			No. of classes taken:			

UNIT – II: Crystallography & X– ray Diffraction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19	Crystallography, Space lattice; Basis, Unit cell	1	20-09-2025		TLM1	CO2	T1	
20	Lattice parameters, Bravais Lattices	1	23-09-2025		TLM2	CO2	T1	
21	Crystal Systems (3D)- Coordination number, Packing fraction of -SC	1	24-09-2025		TLM1	CO2	T1	
22	BCC, FCC	1	25-09-2025		TLM1	CO2	T1	
23	ndices, separation between ve (hkl) planes.	1	27-09-2025		TLM2	CO2	T1	
24	X–ray diffraction: Bragg's law; X–ray Diffractometer,	1	07-10-2025		TLM1	CO2	T1	
25	Structure determination by vder methods.	1	08-10-2025		TLM1	CO2	T1	

26	Revision	1	09-10-2025		TLM2	CO1, CO2		
27	Revision	1	11-10-2025		TLM2	CO1, CO2,		
28	Revision	1	14-10-2025		TLM2	CO1, CO2,		
29	Revision	1	15-10-2025		TLM2	CO1, CO2		
30	Revision	1	16-10-2025		TLM2	CO1, CO2,		
31	Revision	1	18-10-2025		TLM2	CO1, CO2,		
32	I MID	1.5	20-10-2025			CO1, CO2,		
33	I MID	1.5	22-10-2025			CO1, CO2,		
34	I MID	1.5	23-10-2025			CO1, CO2,		
35	I MID	1.5	24-10-2025			CO1, CO2,		
36	I MID	1.5	25-10-2025			CO1, CO2,		
No. of classes required to complete UNIT-II		16			No. of classes taken:			

UNIT – III : DIELECTRIC & MAGNETIC MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
37.	DIELECTRIC MATERIALS: Introduction	1	28-10-2025		TLM1	CO3	T1	
38.	Dielectric polarization- Dielectric polarizability, Susceptibility, Dielectric constant & Displacement Vector	1	29-10-2025		TLM2	CO3	T1	

39.	Relation between the electric vectors	1	30-10-2025		TLM1	CO3	T1	
40.	Types of polarizations-Electronic (Quantitative), ionic (Quantitative) & orientation polarizations (Qualitative)	1	04-11-2025		TLM2	CO3	T1	
41.	Lorentz internal field	1	05-11-2025		TLM1	CO3	T1	
42.	Claussius-Mosotti equation	1	06-11-2025		TLM2	CO3	T1	
43.	ex dielectric constant – cy dependence of polariz tric loss.	1	08-11-2025		TLM1	CO3	T1	
44.	MAGNETIC MATERIALS : Introduction:	1	11-11-2025		TLM2	CO3	T1	
45.	Magnetic dipole moment – Magnetization-Magnetic susceptibility & permeability	1	12-11-2025		TLM2	CO3	T1	
46.	Atomic origin of magnetism	1	13-11-2025		TLM2	CO3	T1	
47.	Classification of magnetic materials-Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	15-11-2025		TLM1	CO3	T1	
48.	Domain concept for Ferromagnetism & Domain walls	1	18-11-2025		TLM2	CO3	T1	
49.	Hysteresis – soft and hard magnetic materials	1	19-11-2025		TLM2	CO3	T1	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT – IV: QUANTUM MECHANICS & FREE ELECTRON THEORY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
50.	QUANTUM MECHANICS: Dual nature of matter-Heisenberg's	1	20-11-2025		TLM1	CO4	T1	

	Uncertainty Principle							
51.	significance & properties of wave function	1	22-11-2025		TLM2	CO4	T1	
52.	Schrodinger's time independent and dependent wave equations	1	25-11-2025		TLM2	CO4	T1	
53.	in a one –dimensional i l well.	1	26-11-2025		TLM1	CO4	T1	
54.	FREE ELECTRON THEORY: Classical free electron theory (Qualitative with discussion of merits and demerits)	1	27-11-2025		TLM2	CO4	T1	
55.	Quantum free electron theory	1	29-11-2025		TLM1	CO4	T1	
56.	electrical conductivity based on quantum free electron theory	1	02-12-2025		TLM2	CO4	T1	
57.	Fermi -Dirac distribution	1	03-12-2025		TLM2	CO4	T1	
58.	Density of states – Fermi energy	1	04-12-2025		TLM1	CO4	T1	
	V: SEMI CONDUCTORS							
59.	SEMI CONDUCTORS: Formation of energy bands	1	06-12-2025		TLM2	CO5	T1	
60.	classification of crystalline solids- Intrinsic semiconductors	1	09-12-2025		TLM1	CO5	T1	
61.	Density of charge carriers- Electrical conductivity- Fermi level -Extrinsic semiconductors	1	10-12-2025		TLM1	CO5	T1	
62.	Density of charge carriers	1	11-12-2025		TLM1	CO5	T1	

63.	dependence of Fermi energy on carrier concentration and temperature	1	13-12-2025		TLM1	CO5	T1	
64.	Drift and Diffusion Currents	1	16-12-2025		TLM1	CO5	T1	
65.	Einstein's equation	1	17-12-2025		TLM2	CO5	T1	
66.	fect & its applications.	1	18-12-2025		TLM1	CO5	T1	
67.	Revision	1	19-12-2025		TLM1		T1	
68.	Revision	1	20-12-2025		TLM1		T1	
69.	Revision	1	23-12-2025		TLM1		T1	
70.	Revision	1	24-12-2025		TLM1		T1	
71.	Revision	1	27-12-2025		TLM1		T1	
No. of classes required to complete UNIT-V		12			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
72.	SEM	1	19-12-2025		TLM1		R1	
73.	Conventional energy sources	1	20-12-2025		TLM1		R1	
75	Mid II	1	29-12-2025			CO3, CO4, CO5		
76	Mid II	1	30-12-2025			CO3, CO4, CO5		
77	Mid II	1	31-12-2025			CO3, CO4, CO5		
78	Mid II	1	02-01-2026			CO3, CO4, CO5		
79	Mid II	1	03-01-2026			CO3, CO4, CO5		
81	Preparation and Practicals	05-01-2026 to 10-01-2026						
	Sankranthi holidays	12-01-2026 to 17-01-2026						

82	Semester end examinations	19-01-2026 to 31-01-2026

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Graduates of ECE program will be:

PEO 1. To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.

PEO 2. To Function professionally in the rapidly changing world with advances in technology.

PEO 3. To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.

PEO 4. To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solution sin societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the Electronics and Communication Engineering will have the ability to

(a) Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

(b) Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools

(c) Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. S. YUSUB	Dr. S. YUSUB	Dr. S. YUSUB	Dr. T. SATYANARAYANA

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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., ECE-A
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Dr. T.Radha Rani
COURSE COORDINATOR : Dr. K.Bhanu Lakshmi
PRE-REQUISITES : Basics of Matrices, Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs): To equip the students with standard concepts and tools at an intermediate to advanced level Mathematics, to develop the confidence and ability among the students to handle various real-world problems and their applications.

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

CO1: Apply matrix algebra techniques to solve engineering problems – **L3**
CO2: Use Eigen values and Eigen vectors concept to find nature of quadratic form, inverse and powers of matrix – **L3**
CO3: Expand various functions using Mean value theorems – **L2**
CO4: Understand the concepts of functions of several variables which are useful in optimization – **L2**
CO5: Evaluate areas and volumes by using double and triple integrals – **L3**

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	1
CO2	3	2	-	-	-	-	-	-	-	-	-	1
CO3	3	1	-	-	-	-	-	-	-	-	-	1
CO4	3	2	-	-	-	-	-	-	-	-	-	1
CO5	3	2	-	-	-	-	-	-	-	-	-	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 44nd Edition, Khanna Publishers, New Delhi, 2017.
T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

R1 George B. Thomas, Maurice D. Weir and Joel Hass, "*Thomas Calculus*", 14th Edition, Pearson Publishers, 2018.
R2 R.K. Jain and S.R.K. Iyengar, "*Advanced Engineering Mathematics*", 5th Edition (9th reprint), Alpha Science International Ltd., 2021.
R3 Glyn James, "*Advanced Modern Engineering Mathematics*", 5th Edition, Pearson Publishers, 2018.
R4 Michael D.Greenberg, "*Advanced Engineering Mathematics*", 9th Edition, Pearson Publishers.
R5 H.K. Das, Er. Rajnish Verma, "*Higher Engineering Mathematics*", 3rd Edition (Reprint 2021), S. Chand Publications, 2014.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	04-08-2025 To 16-08-2025	04-08-2025 To 16-08-2025	TLM1			
2.	Introduction to the course	1	18-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	19-08-2025		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	21-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	25-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	26-08-2025		TLM3	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	28-08-2025		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	29-08-2025		TLM1	CO1	T1,T2	
11.	**TUTORIAL I**	1	30-08-2025		TLM3	CO1	T1,T2	
12.	Homogeneous System of Equations	1	01-09-2025		TLM1	CO1	T1,T2	
13.	Homogeneous System of Equations	1	02-09-2025		TLM1	CO1	T1,T2	
14.	Non-Homogeneous System of Equations	1	04-09-2025		TLM1	CO1	T1,T2	
15.	Gauss Elimination Method	1	05-09-2025		TLM1	CO1	T1,T2	
16.	**TUTORIAL II**	1	06-09-2025		TLM3	CO1	T1,T2	
17.	Jacobi Iteration Method	1	08-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	09-09-2025		TLM1	CO1	T1,T2	
19.	Gauss-Seidel Method	1	11-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
21.	**TUTORIAL III**	1	13-09-2025		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		21			No. of classes taken:			

UNIT-II: Eigen Values, Eigen Vectors and Orthogonal Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	15-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	16-09-2025		TLM1	CO2	T1,T2	
24.	Eigen values, Eigen vectors	1	18-09-2025		TLM1	CO2	T1,T2	
25.	Properties	1	19-09-2025		TLM1	CO2	T1,T2	
26.	**TUTORIAL IV**	1	20-09-2025		TLM3	CO2	T1,T2	
27.	Properties	1	22-09-2025		TLM1	CO2	T1,T2	

28.	Cayley-Hamilton Theorem	1	23-09-2025		TLM1	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	25-09-2025		TLM1	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	26-09-2025		TLM1	CO2	T1,T2	
31.	**TUTORIAL V**	1	27-09-2025		TLM3	CO2	T1,T2	
32.	Diagonalization of a matrix	1	06-10-2025		TLM1	CO2	T1,T2	
33.	Diagonalization of a matrix	1	07-10-2025		TLM1	CO2	T1,T2	
34.	Quadratic Forms, Nature of Quadratic Forms	1	09-10-2025		TLM1	CO2	T1,T2	
35.	Quadratic Forms, Nature of Quadratic Forms	1	10-10-2025		TLM1	CO2	T1,T2	
36.	**TUTORIAL VI**	1	11-10-2025		TLM3	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	13-10-2025		TLM1	CO2	T1,T2	
38.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
39.	Orthogonal Transformation	1	16-10-2025		TLM1	CO2	T1,T2	
40.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
41.	**TUTORIAL VII**	1	18-10-2025		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		20			No. of classes taken:			

I MID EXAMINATIONS (20-10-2025 TO 25-10-2025)

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
42.	Introduction to Unit III	1	27-10-2025		TLM1	CO3	T1,T2	
43.	Mean Value theorem	1	28-10-2025		TLM1	CO3	T1,T2	
44.	Rolle's theorem	1	30-10-2025		TLM3	CO3	T1,T2	
45.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
46.	**TUTORIAL VIII**	1	01-11-2025		TLM3	CO3	T1,T2	
47.	Lagrange's mean value theorem	1	03-11-2025		TLM1	CO3	T1,T2	
48.	Lagrange's mean value theorem	1	04-11-2025		TLM3	CO3	T1,T2	
49.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
50.	Cauchy's mean value theorem	1	07-11-2025		TLM1	CO3	T1,T2	
51.	**TUTORIAL IX**	1	08-11-2025		TLM3	CO3	T1,T2	
52.	Taylor's theorem	1	10-11-2025		TLM1	CO3	T1,T2	
53.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
54.	Maclaurin's theorem	1	13-11-2025		TLM3	CO3	T1,T2	
55.	Problems and applications	1	14-11-2025		TLM1	CO3	T1,T2	
56.	**TUTORIAL X**	1	15-11-2025		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		15			No. of classes taken:			

UNIT-IV: Partial differentiation and Applications (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Introduction to Unit IV	1	17-11-2025		TLM1	CO4	T1,T2	
58.	Functions of several variables, Continuity and Differentiability	1	18-11-2025		TLM1	CO4	T1,T2	
59.	Partial Derivatives	1	20-11-2025		TLM1	CO4	T1,T2	
60.	Total derivatives, Chain rule, Directional Derivative	1	21-11-2025		TLM1	CO4	T1,T2	
61.	**TUTORIAL XI**	1	22-11-2025		TLM3	CO4	T1,T2	
62.	Taylor's Series expansion	1	24-11-2025		TLM1	CO4	T1,T2	
63.	Maclaurin's series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
64.	Jacobian	1	27-11-2025		TLM1	CO4	T1,T2	
65.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
66.	**TUTORIAL XII**	1	29-11-2025		TLM3	CO4	T1,T2	
67.	Functional Dependence	1	01-12-2025		TLM1	CO4	T1,T2	
68.	Maxima and Minima	1	02-12-2025		TLM1	CO4	T1,T2	
69.	Lagrange Multiplier Method	1	04-12-2025		TLM3	CO4	T1,T2	
70.	Lagrange Multiplier Method	1	05-12-2025		TLM1	CO4	T1,T2	
71.	**TUTORIAL XIII**	1	06-12-2025		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		15			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
72.	Introduction to Unit-V	1	08-12-2025		TLM1	CO5	T1,T2	
73.	Double Integrals - Cartesian coordinates	1	09-12-2025		TLM1	CO5	T1,T2	
74.	Double Integrals- Polar co ordinates	1	11-12-2025		TLM1	CO5	T1,T2	
75.	Triple Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
76.	**TUTORIAL XIV**	1	13-12-2025		TLM3	CO5	T1,T2	
77.	Triple Integrals - Spherical coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
78.	Change of order of Integration	1	18-12-2025		TLM1	CO5	T1,T2	
79.	Change of order of Integration	1	19-12-2025		TLM1	CO5	T1,T2	
80.	**TUTORIAL XV**	1	20-12-2025		TLM3	CO5	T1,T2	
81.	Change of variables	1	22-12-2025		TLM1	CO5	T1,T2	
82.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	

83.	Finding Volume by double and triple Integral	1	26-12-2025		TLM1	CO5	T1,T2	
84.	**TUTORIAL XVI**	1	27-12-2025		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		13			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
85.	Other applications of double integral	1	15-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 03-01-2025)								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr. T. Radha Rani	**Dr. K. Bhanu Lakshmi**	**Dr. A. Rami Reddy**	**Dr. T. Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. A.Narendra Babu
Course Name & Code : Basic Electrical & Electronics Engineering – 23EE01
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem./Sec. : B.Tech/I-ECE-A- Sec **A.Y.:** 2025-26
Regulations: R23

PREREQUISITE: Physics

Course Objectives (COs)

Basic Electrical Engineering:
To expose to the field of electrical & electronics engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.
Basic Electronics Engineering
To teach the fundamentals of semiconductor devices and its applications, principles of digital electronics.

Course Outcomes (COs): At the end of the course, student will be able to

PART-B: BASIC ELECTRONICS ENGINEERING	
CO4	Interpret the characteristics of various semiconductor devices **(Knowledge)**
CO5	Infer the operation of rectifiers, amplifiers. **(Understand)**
CO6	Contrast various logic gates, sequential and combinational logic circuits. **(Understand)**

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO4	3	2										1	2		3	2
CO5	3	2										1	2		3	2
CO6	2	2	2										2		2	1
1 - Low **2 –**Medium **3 -** High																

TEXTBOOKS:

1. R. L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009

REFERENCE BOOKS:

1. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017
2. Basic Electrical and Electronics Engineering, S. K. Bhatacharya, Person Publications, 2018, Second Edition.
3. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
4. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
5. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson Education, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): IT-B Section

PART B: BASIC ELECTRONICS ENGINEERING

UNIT-I: Semiconductor Devices

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction – Course Outcomes	1	18-08-2025		TLM1	
2.	Evolution of electronics, Vacuum tubes to nano electronics	1	20-		TLM1	
3.	Characteristics of PN Junction Diode	1	21-08-2025		TLM1	
4.	Zener Effect — Zener Diode and its Characteristics	1	22-08-2025		TLM1	
5.	Zener Effect — Zener Diode and its Characteristics	1	23-08-2025		TLM1	
6.	Bipolar Junction Transistor	1	25-08-2025		TLM1	
7.	Bipolar Junction Transistor	1	29-08-2025		TLM1	
8.	CB Configurations and Characteristics	1	30-08-2025		TLM2	
9.	CE,CC Configurations and Characteristics.	1	01-09-2025		TLM2	
10.	Elementary Treatment of Small Signal CE Amplifier.	1	03-09-2025		TLM1	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: Basic Electronic Circuits and Instrumentation

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	**Rectifiers and power supplies**: Block diagram description of a DC power supply	1	06-09-2025		TLM1	
12.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	08-09-2025		TLM1	
13.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	10-09-2025		TLM1	
14.	Working of simple Zener voltage regulator.	1	12-09-2025		TLM1	
15.	**Amplifiers**: Block diagram of Public Address system	1	15-09-2025		TLM2	
16.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	17-09-2025		TLM2	
17.	**Electronic Instrumentation:** Block diagram of an electronic instrumentation system.	1	19-09-2025		TLM2	
No. of classes required to complete UNIT-II: 07				**No. of classes taken:**		

UNIT-III: Digital Electronics

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Overview of Number Systems	1	20-09-2025		TLM1	
19.	Logic gates including Universal Gates	1	22-09-2025		TLM2	
20.	BCD codes, Excess-3 code	1	24-09-2025		TLM!	
21.	Gray code, Hamming code	1	26-09-2025		TLM!	
22.	Boolean Algebra basics	1	27-09-2025		TLM1	

23.	Basic Theorems and properties of Boolean Algebra	1	06-10-2025		TLM2	
24.	Simple combinational circuits	1	08-10-2025		TLM1	
25.	Half and Full Adders	1	10-10-2025		TLM1	
26.	Introduction to sequential circuits, Flip flops,	1	13-10-2025		TLM2	
27.	Registers and counters	1	15-10-2025		TLM2	
28.	Review	1	17-10-2025		TLM1	
29.	Review	1	18-10-2025		TLM1	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

I Mid Examinations: 20-10-2025 to 25- 10-2025

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-IV, V & UNIT-VI)	A1=5
I-Descriptive Examination (Units-IV, V & UNIT-VI)	M1=15
I-Quiz Examination (Units-IV, V & UNIT-VI)	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-I , II & III)	M2=15
II-Quiz Examination (UNIT-I , II & III)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	**From**	**To**	**Weeks**
I Phase of Instructions	18-08-2025	18-10-2025	8W
I Mid Examinations	20-10-2025	25-10-2024	1W
II Phase of Instructions	27-10-2025	27-12-2025	9W
II Mid Examinations	29-12-2025	03-01-2026	1W
Preparation and Practicals	05-01-2026	10-01-2026	1W
Semester End Examinations	19-01-2026	31-01-2026	2W

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 18-08-2025

Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Dr. A.Narendra Babu	Dr. A.Narendra Babu	Dr. B.V.N.R. Siva Kumar	Dr. G. Srinivasulu

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF Electronics and Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. P. Mary Kamala Kumari
Course Name & Code :IT WORKSHOP Lab &23IT51
L-T-P Structure :0-0-2 **Credits:1**
Program/Sem/Sec : B.Tech. - CSE/I/E/A **A.Y.:**2024-25
PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to impart knowledge about the components of PC, Assembling PC, Installation of OS, software's like MS-Office, LaTex and concepts related to Networking, Internet as well as antivirus.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC. (Understand)
CO2	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO3	Build dialogs and documents using ChatGPT. (Apply)
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. (Apply)

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
CO2	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO3	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 3rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, Pearson Education,2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.

R6	IT Essentials PC Hardware and Software Companion Guide, David Anfins on and Ken Quamme. –CISCO Press, Pearson Education, 3rd edition.
R7	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan– CISCO Press,Pearson Education, 3rd edition.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	21-08-2025		**DM5**	
2.	Task-2	3	28-08-2025		**DM5**	
3.	Task-3	3	28-08-2025		**DM5**	
4.	Task-4	3	04-09-2025		**DM5**	
5.	Task-5	3	04-09-2025		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	11-09-2025		**DM5**	
7.	Task-2	3	11-09-2025		**DM5**	
8.	Task-3	3	18-09-2025		**DM5**	
9.	Task-4	3	18-09-2025		**DM5**	
LaTex and WORD						
10.	Task-1	3	09-10-2025		**DM5**	
11.	Task-2	3	16-10-2025		**DM5**	
12.	Task-3	3	30-10-2025		**DM5**	
13.	Task-4	3	06-11-2025		**DM5**	
EXCEL						
14.	Task-1	3	13-11-2025		**DM5**	
15.	Task-2	3	20-11-2025		**DM5**	
LOOKUP/VLOOKUP						
16.	Task-1	3	27-11-2025		**DM5**	
POWER POINT						
17.	Task-1	3	04-12-2025		**DM5**	
18.	Task-2	3	04-12-2025		**DM5**	
19.	Task-3	3	04-12-2025		**DM5**	
AI TOOLS – ChatGPT						
20.	Task-1	3	11-12-2025		**DM5**	

21.	Task-2	3	11-12-2025		**DM5**	
22.	Task-3	3	11-12-2025		**DM5**	
23.	Internal exam	3	18-12-2025		**DM5**	

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IOT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mrs. P. Mary Kamala Kumari	Mr. N.Srikanth	Dr. D. Venkata Subbaiah	Dr. G.Srinvasulu
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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L.B. Reddy Nagar, Mylavaram, NTR District, Andhra Pradesh - 521230

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: **Dr. K.Dilip Kumar, Professor,**
Dr. B.Sudheer Kumar Sr. Asst. Professor,
Mr. Uma Maheswara reddy, Asst. Professor

Course Name & Code	**:** Engineering Drawing – 23ME01	
L-T-P Structure	**:** 3-0-4	**Credits:** 4
Program/Sem/Sec	: B.Tech/I Sem/A-Sec	**A.Y.:** 2025-26

COURSE EDUCATIONAL OBJECTIVES (CEOs): To recognize the Bureau of Indian Standards of Engineering Drawing and develop an ability to get familiarized with orthographic projections and isometric views of solid objects.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the principles of engineering drawing, including engineering curves, scales, Orthographic and isometric projections. (**Understanding Level –L2**)
CO2	Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views. (**Applying Level –L3**)
CO3	Understand and draw projection of solids in various positions in first quadrant. (**Applying Level –L3**)
CO4	Draw the development of surfaces of simple objects. (**Applying Level –L3**)
CO5	Prepare isometric and orthographic sections of simple solids. (**Applying Level –L3**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO2	3	2	1	2	-	-	-	-	-	-	-	3	1	1	2
CO3	3	2	2	-	-	-	-	-	-	-	-	3	-	1	2
CO4	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO5	3	2	2	-	-	-	-	-	-	-	-	3	-	-	-
1 - Low **2** –Medium **3 -** High															

TEXTBOOKS:

T1 N. D. Bhatt, Engineering Drawing, 51th Revised and Enlarged Edition, Charotar publishers,2012

REFERENCE BOOKS:

R1 Narayana K L, Kannaiah P, Textbook on Engineering Drawing, 2nd Edition, SciTech publishers.

R2 R.K.Dhawan, Engineering Drawing, S.Chand Company LTD.

R3 Venugopal, Engineering Drawing and Graphics, New Age publishers

R4 Dhananjay A. Jolhe, Engineering Drawing, Tata McGraw Hill Publishers

R5 N.S.Parthasarathy, Vela Murali, Engineering Drawing, Oxford Higher Education

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO ENGINEERING GRAPHICS, LETTERING, LINES AND DIMENSIONING, CONICS, CYCLOIDS, INVOLUTES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
1	**UNIT I: INTRODUCTION:** Introduction to Engineering Drawing, CEOs, COs, PEOs, and POs and PSOs	2	18-08-2025		TLM1/ TLM2	
2	Principles of Engineering Graphics and their significance, Drawing Instruments and their use- Conventions in Drawing – Practical orientation					
3	Lettering and Dimensioning – BIS Conventions- Geometrical Constructions – Theory Class					
4	Practice	3	19-08-2025		TLM4	
5	Engineering Curves: Conic Sections- Construction of ellipse, parabola and Hyperbola –Theory class	2	25-08-2025		TLM1	
6	Construction of Parabola, ellipse, hyperbola – General method -Practice	3	26-08-2025		TLM4	
7	Cycloids –Theory class	2	01-09-2025		TLM1	
8	Practice Session	3	02-09-2025		TLM4	
9	Involutes – Theory class	2	08-09-2025		TLM1	
10	Practice Session	3	09-09-2025		TLM4	
No. of classes required to complete UNIT-I: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-II: PROJECTIONS OF POINTS, LINES AND PLANES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
9	Orthographic Projections, First and third angle projection methods, Projections of Points, Lines inclined to one plane	2	15-09-2025		TLM1	
10	Practice Session	3	16-09-2025		TLM4	
11	Projection of lines - Projections of Straight Line Inclined to both the reference planes	2	22-09-2025		TLM1	
12	Practice Session	3	23-09-2025		TLM4	
13	Projections of planes- Regular planes Perpendicular to both reference planes, parallel to one reference plane and inclined to the other reference plane; plane inclined to both the reference planes.	2	06-10-2025		TLM1	
14	Practice Session	3	07-10-2025		TLM4	
15	Revision -unit-1	2	13-10-2025		TLM1	
16	Revision -unit-2	3	14-10-2025		TLM1	
No. of classes required to complete UNIT-II: 20 (Lecture:6 Practice:9)				**No. of classes taken: (including Practice)**		

UNIT-III: PROJECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
16	Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane – Theory and practice	2	27-10-2025		TLM1 TLM4	
17	Axis parallel to both the reference planes, Projection of Solids with axis inclined to one reference plane and parallel to another plane.	3	28-03-2025		TLM1	
18	Practice Session	2	03-11-2025		TLM 4	
No. of classes required to complete UNIT-III: 07 (Lecture:3 Practice:5)				**No. of classes taken: (including Practice)**		

UNIT-IV: SECTIONS OF SOLIDS AND DEVELOPMENT OF SURFACES

S. No.	Topics to be covered	No. of Class Required	Tentative Date	ActualDate	Teaching Learning ng Method	HOD Sign Weekly
19	Sections of Solids Solids in simple positions, Perpendicular and inclined section planes	3	04-11-2025		TLM1	
20	Practice Session	2	10-11-2025		TLM4	
21	Sections of solids: Sectional views and True shape of section	3	11-11-2025		TLM1	
22	Practice Session	2	17-11-2025		TLM4	
23	Development of solids Methods of Development: Parallel line development and radial line development	3	18-11-2025		TLM1	
24	Practice Session	2	24-11-2025		TLM4	
25	Development of solids Development of a cube, prism, cylinder, pyramid and cone.	3	25-11-2025		TLM1	
No. of classes required to complete UNIT-IV: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-V: CONVERSION OF VIEWS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
26	Introduction to Isometric Views – Theory Isometric views, isometric axes, scale, lines & planes	2	01-12-2025		TLM1	
27	Practice Session	3	02-12-2025		TLM4	
28	Orthographic projections to Isometric Projections	2	08-12-2025		TLM1	
29	Practice Session	3	09-12-2025		TLM4	
30	Orthographic Projections to Isometric Projections	2	15-12-2025		TLM1	
31	Practice Session	3	16-12-2025		TLM4	
32	**Content beyond the syllabus:** Scales, Planes inclined to both the planes.	2	22-12-2025		TLM1/ TLM2	
33	Revision	3	23-12-2025		TLM1	

No. of classes required to complete UNIT-V: 20 (Lecture:12 Practice:15)	No. of classes taken:

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
I-Descriptive Examination (Units-I, II)	M1=15
II- Descriptive Examination (UNIT-III , IV & V)	M2=15
Day to Day Evaluation (Assignment)	15
Mid Marks =80% of Max (M1,M2)+ 20% of Min ((M1, M2) + Day to Day Evaluation	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and designsystem components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with anunderstanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professionalengineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainabledevelopment.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports anddesign documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, tomanage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage inindependent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	**To apply the principles of thermal sciences to design and develop various thermal systems.**
PSO2	**To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.**
PSO3	**To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.**

Title	Course Instructor	Course Coordinator	Head of the Department
Name of the Faculty	Dr.K.Dilip Kumar	Mr.J.Subba Reddy	Dr. M B S S Reddy
Signature			

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Samaikya

Course Name & Code : Communicative English Lab, 23FE51

L-T-P Structure : 0-0-3 **Credits:** 01

Program/Sem/Sec : B. Tech (ECE-A) I SEM

A.Y. : 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of introducing this course, Communicative English Laboratory, is to expose the students to a variety of self-instructional, learner friendly modes of language learning. The students will get trained in basic communication skills and also make them ready to face job interviews.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the different aspect of the English language proficiency with emphasis on LSRW skills.	L2
CO2	Apply Communication Skills through various language learning activities	L3
CO3	Identifying the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking, comprehension.	L2
CO4	Exhibit professionalism in participating in debates and group discussions.	L3

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

Course Outcomes / PO's →	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	-	-	-	2	-	-	-	-	3	3	-	2
CO2.	-	-	-	2	-	-	-	-	3	3	-	2
CO3.	-	-	-	2	-	-	-	-	3	3	-	2

CO4.	-	-	-	2	-	-	-	-	3	3	-	2
1 = Slight (Low)			2= Moderate (Medium)					3 = Substantial (High)				

List of Activities:

1. Vowels& Consonants

2. Neutralization/ Accent Rules

3. Communication Skills: JAM

4. Roleplay or Conversational Practice

5. E-mail Writing

6. Resume writing, Cover letter, SOP

7. Group Discussions – methods & Practice

8. Debates – Methods and practice

9. PPT Presentations & Poster Presentations

10. Interview Skills

Suggested Software:

1. Walden

2. Young India Films

Reference Books:

Raman Meenakshi, Sangeeta-Sharma, *Technical Communication,* Oxford Press 2018.
Taylor Grant: *English Conversation Practice,* Tata McGraw-Hill Education India, 2016.

Hewing' s, Martin, Cambridge Academic English (B2), CUP, 2012.
J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English, (2nd Ed.,)Kindle, 2013.*

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	22-08-2025		TLM4	
2.	Self Introduction & Introducing others	03	29-08-2025		TLM4	
3.	Vowels & Consonants	06	12-09-2025 19-09-2025		TLM1, TLM5	
4.	Neutralization / Accent rules	03	26-09-2025		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	10-10-2025		TLM4	
6.	Role Play-I(Formal and Informal)	06	17-10-2025 31-10-2025		TLM4	
7.	E-mail Writing, resume writing, Cover letter, SOP	06	07-11-2025 14-11-2025		TLM1, TLM5	
8.	Group Discussion	03	21-11-2025		TLM4, TLM6	
9.	Debate	03	28-11-2025		TLM4, TLM6	
10.	PPT & Poster Presentation	06	05-12-2025 12-12-2025		TLM2, TLM4	
11.	Mock Interviews	03	19-12-2025		TLM1, TLM6	
12.	Lab Internal Exam	03	26-12-2025			
No. of classes required to complete Syllabus: 48				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Laboratory Examination:

Evaluation Task	Marks
Day-to-Day Work	A1 = 10
Record & Observation	B1 = 5
Internal Exam	C1 = 15
Cumulative Internal Examination (CIE): (A1+B1+C1)	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one' s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs. K. Samaikya	Dr. R. Padma Venkat	Dr. R. Padma Venkat	Dr. T. Satyanarayana
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:**	B. Tech., I-Sem., ECE-A
ACADEMIC YEAR	**:**	2025-2026
COURSE NAME & CODE	**:**	ENGINEERING PHYSICS LAB & 23FE53
L-T-P STRUCTURE	**:**	0-0-2
COURSE CREDITS	**:**	1
COURSE INSTRUCTOR	**:**	**Dr. S. YUSUB**
COURSE COORDINATOR	**:**	**Dr. S. YUSUB**

Course Objectives:
To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes:
CO1: Analyze the wave properties of light using optical instruments (Apply-L3).
CO2: Estimate the elastic modulii of various materials and acceleration due to gravity (Apply-L3).
CO3: Demonstrate the vibrations in stretched strings (Understand-L2).
CO4: Evaluate dielectric constant and magnetic field of circular coil carrying current (Apply-L3).
CO5: Examine the characteristics of semiconductor devices (Apply-L3).

Course articulation matrix (Correlation between CO's and PO's):

Engineering Physics Lab												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes	**Programme Outcomes**											
PO's →	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**2**	**1**				**1**	1			**1**
CO2.	**3**	**3**	**2**	**1**				**1**	1			**1**
CO3.	**3**	**3**	**2**	**1**				**1**	1			**1**

CO4.	**3**	**3**	**2**	**1**				**1**	1			**1**
CO5.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
1 = slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section- ECE-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction	3	20-08-2025		**TLM4**	1,2,3,4	T1	
2.	Demonstration	3	03-09-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
3.	Experiment 1	3	10-09-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
4.	Experiment 2	3	17-09-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
5.	Experiment 3	3	24-09-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
6.	Experiment 4	3	08-10-2025		**TLM4**	CO1, CO2, CO3, CO4	T1	
7.	Experiment 5	3	15-10-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
8.	Demonstration	3	22-10-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
9.	Experiment 6	3	29-10-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
10.	Experiment 7	3	05-11-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
11.	Experiment 8	3	12-11-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
12.	Experiment 9	3	19-11-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	

13.	Experiment 10	3	26-11-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
14.	Revision	3	03-12-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
15.	Revision	3	10-12-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
16.	Revision	3	17-12-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
17.	**Internal Exam**	3	24-12-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
18.	**Internal Exam**	3	31-12-2025		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
No. of classes required to complete UNIT-I		48			No. of classes taken:			

EVALUATION PROCESS:

Evaluation Task	**Marks**
Day-to-Day Work	A1 = 10
Record & Observation	B1 = 5
Internal Exam	C1 = 15
Cumulative Internal Examination (CIE): (A1+B1+C1)	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Graduates of ECE program will be:

PEO 1. To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.

PEO 2. To Function professionally in the rapidly changing world with advances in technology.

PEO 3. To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.

PEO 4. To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

(1). **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

(2). **Problem analysis**: Identify, formulate, review research literature, and analyze complex

engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

(3). **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

(4). **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

(5). **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

(6). **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

(7).**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

(8). **Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

(9). **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

(10). **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

(11). **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

(12).**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the ECE will have the ability to

(1) Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

(2) Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools

(3) Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. S. YUSUB / Mrs. P.V. Sirisha	Dr. S. YUSUB	Dr. S. YUSUB	Dr. T. SATYANARAYANA

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Phone: 08659-222933, **Fax**: 08659-222931

DEPARTMENT OF ECE

LAB HANDOUT

PART-A

Name of Course Instructor : Dr. A.Narendra Babu, Mr.P.James Vijay, Mr.V.V.Ramakrishna
Ms. B.Lakshmi Tirupathamma

Course Name & Code : Electrical & Electronics Engineering Workshop (E & EE WS)

L-T-P Structure : 0-0-3 **Credits** : 1.5

Program/Sem/Sec : B.Tech/I-ECE-A- Sec **A.Y.** : 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

To impart knowledge on the principles of digital electronics and fundamentals of electron devices & its applications.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Compute voltage, current and power in an electrical circuit. (**Apply**)
CO2	Compute medium resistance using Wheat stone bridge. (**Apply**)
CO3	Discover critical field resistance and critical speed of DC shunt generators. (**Apply**)
CO4	Estimate reactive power and power factor in electrical loads. (**Understand**)
CO5	Plot the characteristics of semiconductor devices. (**Apply**)
CO6	Demonstrate the working of various logic gates using ICs. (**Understand**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	2						2	3	2		1				
CO2	2	2		2				2	2	2						
CO3	2	2	2	2				2	2	2				2		
CO4	2	2		3				2	3	2		1	2			
CO5	3	2			2			2	2	2	1	1	2	2	3	2
CO6	3	3		2	2			2	3	3		1			3	
1 - Low **2 –**Medium **3 -** High																

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): B.Tech. IT- II Sem-Sec B

S.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to BEEE Lab (Function Generators, CRO, RPS, Breadboard etc), Course Objectives and Outcomes.	3	23-08-2025		TLM4	
2.	Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	30-08-2025		TLM4	
3.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator	3	06-09-2025		TLM4	
4.	Implementation of half wave and full wave rectifiers	3	13-09-2025		TLM4	
5.	Plot Input & Output characteristics of BJT in CB configuration	3	20-09-2025		TLM4	
6.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	27-09-2025		TLM4	
7.	Verification of Truth Tables of S-R, J-K& D flip flops using respective ICs	3	11-10-2025		TLM4	
8.	Internal Lab Examination (**Electronics**)	3	18-10-2025		TLM4	
No. of classes required: 24				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work	1,2,3,4,5,6,7,8…	A1 =10
Record and observation	1,2,3,4,5,6,7,8…	B1 = 5
Internal Exam	1,2,3,4,5,6,7,8…	**C1=15**
Cumulative Internal Examination (CIE):(A1+B1+C1)	1,2,3,4,5,6,7,8…	**30**
Semester End Examination (SEE)	1,2,3,4,5,6,7,8…	**70**
Total Marks=CIE+SEE		**100**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 18-08-2025

Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Dr. A.Narendra Babu	Mr.M.Sambasiva Reddy	Dr.B.V.N.R. Siva Kumar	Dr. G. Srinivasulu

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor:
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem , ECE-B
A.Y. : 2025-26

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objective of introducing this course, *Communicative English*, is to facilitate effective Listening, Reading, Speaking and Writing skills among the students. It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary. This course helps the students to make them effective in speaking and writing skills and to make them industry ready.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the context, topic, and pieces of specific information from social or Transactional dialogues.	L2
CO2	Apply grammatical structures to formulate sentences and correct word forms.	L3
CO3	Use discourse markers to speak clearly on a specific topic in informal discussions.	L3
CO4	Read / Listen the texts and write summaries based on global comprehension of these texts.	L2
CO5	Prepare a coherent paragraph, essay, and resume.	L3

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

Course Outcomes / PO's →	Programme Outcomes											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	-	-	-	1	-	-	-	-	3	3	-	2
CO2.	-	-	-	1	-	-	-	-	3	3	-	2
CO3.	-	-	-	1	-	-	-	-	3	3	-	2
CO4.	-	-	-	1	-	-	-	-	3	3	-	2
CO5.	-	-	-	1	-	-	-	-	3	3	-	2

1 = Slight (Low) **2= Moderate (Medium)** **3 = Substantial (High)**

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	2 Weeks	04-08-2025 TO 16-08-2025		TLM1	CO1		
2.	Introduction to the course				TLM1	CO1		
3.	Course Outcomes, Program Outcomes				TLM2	CO1		

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	18-08-2025& 19-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	20-08-2025& 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	26-08-2025& 01-09-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	02-09-2025& 03-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	08-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	09-09-2025& 10-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 11						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	02	15-09-2025 & 16-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	17-09-2025& 22-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	23-09-2025& 24-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	

4.	**Cohesive Devices- linkers**	02	06-10-2025& 07-10-2025		TLM2 TLM6	CO2	T1,T2	
5.	**Use of Articles and zero article, Prepositions**	01	08-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	01	13-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 10						**No. of classes taken:**		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Biography: Elon Musk**	02	14-10-2025& 15-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	27-10-2025& 28-10-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	29-10-2025& 03-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	04-11-2025& 05-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	10-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Inspiration: The Toys of Peace- by Saki**	02	11-11-2025& 12-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	17-11-2025& 18-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	19-11-2025& 24-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	25-11-2025& 26-11-2025		TLM2 TLM6	CO4	T1,T2	

5.	**Words often confused, Jargons**	01	01-12-2025		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 09						**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	02	02-12-2025& 03-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	02	08-12-2025& 09-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	02	10-12-2025& 15-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	16-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	17-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 08						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Word Analogy**	01	22-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	23-12-2025		TLM2 &5	
3.	**Technical vocabulary**	01	24-12-2025		TLM2 &5	
No. of classes required to complete UNIT-V:				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. B.Mohan Teja**	**Dr. R. Padma Venkat**	**Dr. B. Samrajya Lakshmi**	**Dr. T. Satyanarayana**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : B. Tech., I-Sem., **ECE-B**

ACADEMIC YEAR : 2025-2026

COURSE NAME & CODE : Engineering Physics-23FE04

L-T-P STRUCTURE : 3-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Dr. S. YUSUB**

COURSE COORDINATOR : **Dr. S. YUSUB**

To bridge the gap between the physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc, enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

Course Outcomes:

CO1: Analyze the intensity variation of light due to interference, diffraction and Polarization (Apply-L3).
CO2: Understand the basics of crystals and their structures (Understand-L2).
CO3: Summarize various types of polarization of dielectrics and classify the magnetic materials (Understand-L2)
CO4: Explain fundamentals of quantum mechanics and free electron theory of metals (Understand-L2).
CO5: Identify the type of semiconductor using Hall Effect (Apply-L3).

COURSE ARTICULATION MATRIX (Correlation between COs& POs, PSOs):

ENGINEERING PHYSICS												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes	**Programme Outcomes**											
PO's →	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO2.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO3.	**3**	**3**	**2**	**1**	**1**	**1**						**1**
CO4.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO5.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
1 = slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BoS APPROVED TEXT BOOKS:

TEXT BOOKS

1. A Text book of "Engineering Physics" M.N. Avadhanulu, P.G. Kshirsagar, TVS Arun Murthy, S. Chand & Co., 11th Edition, 2019.
2. Engineering Physics – *D.K. Bhattacharya & Poonam Tandon, Oxford press (2015)*

REFERENCES

1. Engineering Physics - B.K.Pandey & S. Chaturvedi, Cengage Learning 2021.
2. Engineering Physics - Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics - Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press 2010.
4. Engineering Physics - M.R. Srinivasan, New Age international publishers (2009).

Web Resource: //www.loc.gov/rr/scitech/selected-internet/physics.html

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE-B

UNIT-I : Interference and diffraction

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Course Outcomes INTERFERENCE: Introduction	1	18-08-2025		TLM1	CO1	T1	
2.	Principle of superposition	1	19-08-2025		TLM1	CO1	T1	
3.	Interference of light, Interference in thin films by reflection reflection & applications	1	21-08-2025		TLM2	CO1	T1	
4.	colors in thin films	1	22-08-2025		TLM1	CO1	T1	
5.	Newton's rings	1	25-08-2025		TLM1	CO1	T1	
6.	ination of wavelength active index.	1	26-08-2025		TLM1	CO1	T1	
7.	DIFFRACTION: Introduction,	1	28-08-2025		TLM1	CO1	T1	
8.	Fresnel and Fraunhoffer diffractions	1	29-08-2025		TLM2	CO1	T1	
No. of classes required to complete UNIT-I		8			No. of classes taken:			

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
9.	Fraunhoffer diffraction due to single slit,	1	01-09-2025		TLM1	CO1	T1	
10.	double slit & N slits (Qualitative)	1	02-09-2025		TLM1	CO1	T1	
11.	Diffraction Grating, Dispersive power	1	04-09-2025		TLM2	CO1	T1	
12.	Resolving power of Grating(Qualitative)	1	05-09-2025		TLM1	CO1	T1	
13.	Polarization : Introduction	1	08-09-2025		TLM1	CO1	T1	
14.	Types of polarization	1	09-09-2025		TLM1	CO1	T1	
15.	Polarization by reflection	1	11-09-2025		TLM1	CO1	T1	
16.	refraction & double refraction	1	12-09-2025		TLM2	CO1	T1	
17.	Nicol's prism	1	15-09-2025		TLM1	CO1	T1	
18.	half wave and quarter wave plates	1	16-09-2025		TLM1	CO1	T1	
No. of classes required to complete UNIT-II		10			No. of classes taken:			

UNIT – II: Crystallography & X– ray Diffraction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19	Crystallography, Space lattice; Basis, Unit cell	1	18-09-2025		TLM1	CO2	T1	
20	Lattice parameters, Bravais Lattices	1	19-09-2025		TLM2	CO2	T1	
21	Crystal Systems (3D)- Coordination number, Packing fraction of -SC	1	22-09-2025		TLM1	CO2	T1	
22	BCC, FCC	1	23-09-2025		TLM1	CO2	T1	
23	ndices, separation between ve (hkl) planes.	1	25-09-2025		TLM2	CO2	T1	
24	X–ray diffraction: Bragg's law; X–ray Diffractometer,	1	26-09-2025		TLM1	CO2	T1	
25	Structure determination by vder methods.	1	06-10-2025		TLM1	CO2	T1	

26	Revision	1	07-10-2025		TLM2	CO1, CO2		
27	Revision	1	09-10-2025		TLM2	CO1, CO2,		
28	Revision	1	10-10-2025		TLM2	CO1, CO2,		
29	Revision	1	13-10-2025		TLM2	CO1, CO2		
30	Revision	1	14-10-2025		TLM2	CO1, CO2,		
31	Revision	1	16-10-2025		TLM2	CO1, CO2,		
32	Revision	1	18-10-2025		TLM2	CO1, CO2,		
33	I MID	1.5	20-10-2025			CO1, CO2,		
34	I MID	1.5	22-10-2025			CO1, CO2,		
35	I MID	1.5	23-10-2025			CO1, CO2,		
36	I MID	1.5	24-10-2025			CO1, CO2,		
37	I MID	1.5	25-10-2025			CO1, CO2,		
No. of classes required to complete UNIT-II		16		No. of classes taken:				

UNIT – III : DIELECTRIC & MAGNETIC MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
38.	DIELECTRIC MATERIALS: Introduction	1	27-10-2025		TLM1	CO3	T1	
39.	Dielectric polarization- Dielectric polarizability, Susceptibility,	1	28-10-2025		TLM2	CO3	T1	

	Dielectric constant & Displacement Vector							
40.	Relation between the electric vectors	1	30-10-2025		TLM1	CO3	T1	
41.	Types of polarizations- Electronic (Quantitative), ionic (Quantitative) & orientation polarizations (Qualitative)	1	31-10-2025		TLM2	CO3	T1	
42.	Lorentz internal field	1	03-11-2025		TLM1	CO3	T1	
43.	Claussius-Mosotti equation	1	04-11-2025		TLM2	CO3	T1	
44.	ex dielectric constant – cy dependence of polariz tric loss.	1	06-11-2025		TLM1	CO3	T1	
45.	MAGNETIC MATERIALS : Introduction:	1	07-11-2025		TLM2	CO3	T1	
46.	Magnetic dipole moment – Magnetization- Magnetic susceptibility & permeability	1	10-11-2025		TLM2	CO3	T1	
47.	Atomic origin of magnetism	1	11-11-2025		TLM2	CO3	T1	
48.	Classification of magnetic materials- Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	13-11-2025		TLM1	CO3	T1	
49.	Domain concept for Ferromagnetism & Domain walls	1	14-11-2025		TLM2	CO3	T1	
50.	Hysteresis – soft and hard magnetic materials	1	17-11-2025		TLM2	CO3	T1	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT – IV: QUANTUM MECHANICS & FREE ELECTRON THEORY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
51.	QUANTUM MECHANICS: Dual	1	18-11-2025		TLM1	CO4	T1	

	nature of matter- Heisenberg's Uncertainty Principle							
52.	significance & properties of wave function	1	20-11-2025		TLM2	CO4	T1	
53.	Schrodinger's time independent and dependent wave equations	1	21-11-2025		TLM2	CO4	T1	
54.	in a one –dimensional i l well.	1	24-11-2025		TLM1	CO4	T1	
55.	FREE ELECTRON THEORY: Classical free electron theory (Qualitative with discussion of merits and demerits)	1	25-11-2025		TLM2	CO4	T1	
56.	Quantum free electron theory	1	27-11-2025		TLM1	CO4	T1	
57.	electrical conductivity based on quantum free electron theory	1	28-11-2025		TLM2	CO4	T1	
58.	Fermi -Dirac distribution	1	01-12-2025		TLM2	CO4	T1	
59.	Density of states – Fermi energy	1	02-12-2025		TLM1	CO4	T1	
	V: SEMI CONDUCTORS							
60.	SEMI CONDUCTORS: Formation of energy bands	1	04-12-2025		TLM2	CO5	T1	
61.	classification of crystalline solids- Intrinsic semiconductors	1	05-12-2025		TLM1	CO5	T1	
62.	Density of charge carriers- Electrical conductivity- Fermi level -Extrinsic semiconductors	1	08-12-2025		TLM1	CO5	T1	
63.	Density of charge	1	09-12-2025		TLM1	CO5	T1	

	carriers							
64.	dependence of Fermi energy on carrier concentration and temperature	1	11-12-2025		TLM1	CO5	T1	
65.	Drift and Diffusion Currents	1	12-12-2025		TLM1	CO5	T1	
66.	Einstein's equation	1	15-12-2025		TLM2	CO5	T1	
67.	fect & its applications.	1	16-12-2025		TLM1	CO5	T1	
68.	Revision	1	18-12-2025		TLM1		T1	
69.	Revision	1	19-12-2025		TLM1		T1	
70.	Revision	1	22-12-2025		TLM1		T1	
71.	Revision	1	23-12-2025		TLM1		T1	
72.	Revision	1	26-12-2025		TLM1		T1	
No. of classes required to complete UNIT-V		12			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
73.	SEM	1	18-12-2025		TLM1		R1	
74.	Conventional energy sources	1	19-12-2025		TLM1		R1	
75	Mid II	1	29-12-2025			CO3, CO4, CO5		
76	Mid II	1	30-12-2025			CO3, CO4, CO5		
77	Mid II	1	31-12-2025			CO3, CO4, CO5		
78	Mid II	1	02-01-2026			CO3, CO4, CO5		
79	Mid II	1	03-01-2026			CO3, CO4, CO5		
81	Preparation and Practicals	05-01-2026 to 10-01-2026						

	Sankranthi holidays	12-01-2026 to 17-01-2026
82	Semester end examinations	19-01-2026 to 31-01-2026

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Graduates of ECE program will be:

PEO 1. To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.

PEO 2. To Function professionally in the rapidly changing world with advances in technology.

PEO 3. To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.

PEO 4. To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solution sin societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the Electronics and Communication Engineering will have the ability to

(a) Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

(b) Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools

(c) Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. S. YUSUB	Dr. S. YUSUB	Dr. S. YUSUB	Dr. T. SATYANARAYANA

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., ECE-B
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : G. Vijaya Lakshmi
COURSE COORDINATOR : Dr. K.Bhanu Lakshmi
PRE-REQUISITES : Basics of Matrices**,** Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs): To equip the students with standard concepts and tools at an intermediate to advanced level Mathematics, to develop the confidence and ability among the students to handle various real-world problems and their applications.

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

CO1: Apply matrix algebra techniques to solve engineering problems – **L3**
CO2: Use Eigen values and Eigen vectors concept to find nature of quadratic form, inverse and powers of matrix – **L3**
CO3: Expand various functions using Mean value theorems – **L2**
CO4: Understand the concepts of functions of several variables which are useful in optimization – **L2**
CO5: Evaluate areas and volumes by using double and triple integrals – **L3**

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	1
CO2	3	2	-	-	-	-	-	-	-	-	-	1
CO3	3	1	-	-	-	-	-	-	-	-	-	1
CO4	3	2	-	-	-	-	-	-	-	-	-	1
CO5	3	2	-	-	-	-	-	-	-	-	-	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 44nd Edition, Khanna Publishers, New Delhi, 2017.
T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

R1 George B. Thomas, Maurice D. Weir and Joel Hass, "*Thomas Calculus*", 14th Edition, Pearson Publishers, 2018.
R2 R.K. Jain and S.R.K. Iyengar, "*Advanced Engineering Mathematics*", 5th Edition (9th reprint), Alpha Science International Ltd., 2021.
R3 Glyn James, "*Advanced Modern Engineering Mathematics*", 5th Edition, Pearson Publishers, 2018.
R4 Michael D.Greenberg, "*Advanced Engineering Mathematics*", 9th Edition, Pearson Publishers.
R5 H.K. Das, Er. Rajnish Verma, "*Higher Engineering Mathematics*", 3rd Edition (Reprint 2021), S. Chand Publications, 2014.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	04-08-2025 To 16-08-2025	04-08-2025 To 16-08-2025	TLM1			
2.	Introduction to the course	1	18-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-08-2025		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	21-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	25-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	28-08-2025		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-08-2025		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	30-08-2025		TLM1	CO1	T1,T2	
11.	**TUTORIAL I**	1	01-09-2025		TLM3	CO1	T1,T2	
12.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
13.	Homogeneous System of Equations	1	04-09-2025		TLM1	CO1	T1,T2	
14.	Non-Homogeneous System of Equations	1	05-09-2025		TLM1	CO1	T1,T2	
15.	**TUTORIAL II**	1	06-09-2025		TLM3	CO1	T1,T2	
16.	Gauss Elimination Method	1	08-09-2025		TLM1	CO1	T1,T2	
17.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	11-09-2025		TLM1	CO1	T1,T2	
19.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
20.	**TUTORIAL III**	1	13-09-2025		TLM3	CO1	T1,T2	
21.	Gauss-Seidel Method	1	15-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		21			No. of classes taken:			

UNIT-II: Eigen Values, Eigen Vectors and Orthogonal Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	17-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	18-09-2025		TLM1	CO2	T1,T2	
24.	Eigen values, Eigen vectors	1	19-09-2025		TLM1	CO2	T1,T2	
25.	**TUTORIAL IV**	1	20-09-2025		TLM3	CO2	T1,T2	
26.	Properties	1	22-09-2025		TLM1	CO2	T1,T2	
27.	Properties	1	24-09-2025		TLM1	CO2	T1,T2	

28.	Cayley-Hamilton Theorem	1	25-09-2025		TLM1	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	26-09-2025		TLM1	CO2	T1,T2	
30.	**TUTORIAL V**	1	27-09-2025		TLM3	CO2	T1,T2	
31.	Finding Inverse and Powers of matrix	1	06-10-2025		TLM1	CO2	T1,T2	
32.	Diagonalization of a matrix	1	08-10-2025		TLM1	CO2	T1,T2	
33.	Diagonalization of a matrix	1	09-10-2025		TLM1	CO2	T1,T2	
34.	**TUTORIAL VI**	1	11-10-2025		TLM3	CO2	T1,T2	
35.	Quadratic Forms, Nature of Quadratic Forms	1	13-10-2025		TLM1	CO2	T1,T2	
36.	Reduction of Quadratic form to Canonical form	1	15-10-2025		TLM1	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	16-10-2025		TLM1	CO2	T1,T2	
38.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
39.	**TUTORIAL VII**	1	18-10-2025		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		18			No. of classes taken:			

I MID EXAMINATIONS (20-10-2025 TO 25-10-2025)

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
40.	Introduction to Unit III	1	27-10-2025		TLM1	CO3	T1,T2	
41.	Mean Value theorem	1	29-10-2025		TLM1	CO3	T1,T2	
42.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
43.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
44.	**TUTORIAL VIII**	1	01-11-2025		TLM3	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	03-11-2025		TLM1	CO3	T1,T2	
46.	Lagrange's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
47.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
48.	Cauchy's mean value theorem	1	07-11-2025		TLM1	CO3	T1,T2	
49.	**TUTORIAL IX**	1	08-11-2025		TLM3	CO3	T1,T2	
50.	Taylor's theorem	1	10-11-2025		TLM1	CO3	T1,T2	
51.	Taylor's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
52.	Maclaurin's theorem	1	13-11-2025		TLM1	CO3	T1,T2	
53.	Problems and applications	1	14-11-2025		TLM1	CO3	T1,T2	
54.	**TUTORIAL X**	1	15-11-2025		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		15			No. of classes taken:			

UNIT-IV: Partial differentiation and Applications (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly

55.	Introduction to Unit IV	1	17-11-2025		TLM1	CO4	T1,T2	
56.	Functions of several variables, Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
57.	Partial Derivatives	1	20-11-2025		TLM1	CO4	T1,T2	
58.	Total derivatives, Chain rule, Directional Derivative	1	21-11-2025		TLM1	CO4	T1,T2	
59.	**TUTORIAL XI**	1	22-11-2025		TLM3	CO4	T1,T2	
60.	Taylor's Series expansion	1	24-11-2025		TLM1	CO4	T1,T2	
61.	Maclaurin's series expansion	1	26-11-2025		TLM1	CO4	T1,T2	
62.	Jacobian	1	27-11-2025		TLM1	CO4	T1,T2	
63.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
64.	**TUTORIAL XII**	1	29-11-2025		TLM3	CO4	T1,T2	
65.	Functional Dependence	1	01-12-2025		TLM1	CO4	T1,T2	
66.	Maxima and Minima	1	03-12-2025		TLM1	CO4	T1,T2	
67.	Lagrange Multiplier Method	1	04-12-2025		TLM1	CO4	T1,T2	
68.	Lagrange Multiplier Method	1	05-12-2025		TLM1	CO4	T1,T2	
69.	**TUTORIAL XIII**	1	06-12-2025		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		15			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
70.	Introduction to Unit-V	1	08-12-2025		TLM1	CO5	T1,T2	
71.	Double Integrals - Cartesian coordinates	1	09-12-2025		TLM1	CO5	T1,T2	
72.	Double Integrals- Polar co ordinates	1	11-12-2025		TLM1	CO5	T1,T2	
73.	Triple Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
74.	**TUTORIAL XIV**	1	13-12-2025		TLM3	CO5	T1,T2	
75.	Triple Integrals - Spherical coordinates	1	15-12-2025		TLM1	CO5	T1,T2	
76.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
77.	Change of order of Integration	1	18-12-2025		TLM1	CO5	T1,T2	
78.	**TUTORIAL XV**	1	19-12-2025		TLM3	CO5	T1,T2	
79.	Change of variables	1	20-12-2025		TLM1	CO5	T1,T2	
80.	Finding area by double Integral	1	22-12-2025		TLM1	CO5	T1,T2	
81.	Finding Volume by double and triple Integral	1	24-12-2025		TLM1	CO5	T1,T2	

82.	**TUTORIAL XVI**	1	27-12-2025		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		13			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
83.	Other applications of double integral	1	26-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 03-01-2025)								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

G. Vijaya Lakshmi	**Dr. K. Bhanu Lakshmi**	**Dr. A. Rami Reddy**	**Dr. T. Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, **Fax**: 08659-222931

DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. G. Srinivasulu
Course Name & Code : Basic Electrical & Electronics Engineering – 23EE01
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem./Sec. : B.Tech/I/ECE-B Sec **A.Y.:** 2025-26
Regulations: R23

Course Objectives (COs)

Basic Electrical Engineering:
To expose to the field of electrical & electronics engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.
Basic Electronics Engineering
To teach the fundamentals of semiconductor devices and its applications, principles of digital electronics.

Course Outcomes (COs): At the end of the course, student will be able to

PART-B: BASIC ELECTRONICS ENGINEERING	
CO4	Interpret the characteristics of various semiconductor devices **(Knowledge)**
CO5	Infer the operation of rectifiers, amplifiers. **(Understand)**
CO6	Contrast various logic gates, sequential and combinational logic circuits. **(Understand)**

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO4	3	2	-	-	-	-	-	-	-	-	-	1	2	-	3	2
CO5	3	2	-	-	-	-	-	-	-	-	-	1	2	-	3	2
CO6	2	2	2	-	-	-	-	-	-	-	-	-	2	-	2	1
1 - Low			**2 –**Medium									**3 -** High				

TEXTBOOKS:

1. R. L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009

REFERENCE BOOKS:

1. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017
2. Basic Electrical and Electronics Engineering, S. K. Bhatacharya, Person Publications, 2018, Second Edition.
3. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
4. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
5. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson Education, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE- D Section

PART B: BASIC ELECTRONICS ENGINEERING

UNIT-IV: Semiconductor Devices

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction – Course Outcomes	1	19-08-2025		TLM1	
2.	Evolution of electronics, Vacuum tubes to nano electronics	1	21-08-2025		TLM1	
3.	Characteristics of PN Junction Diode	1	22-08-2025		TLM1	
4.	Zener Effect — Zener Diode and its Characteristics	1	23-08-2025		TLM1	
5.	Zener Effect — Zener Diode and its Characteristics	1	26-08-2025		TLM1	
6.	Bipolar Junction Transistor	1	28-08-2025		TLM1	
7.	Bipolar Junction Transistor	1	29-08-2025		TLM1	
8.	CB Configurations and Characteristics	1	30-08-2025		TLM2	
9.	CE Configurations and Characteristics.	1	02-09-2025		TLM2	
10.	CC Configurations and Characteristics.	1	04-09-2025		TLM2	
11.	Elementary Treatment of Small Signal CE Amplifier.	1	05-09-2025		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-V: Basic Electronic Circuits and Instrumentation

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	**Rectifiers and power supplies**: Block diagram description of a DC power supply	1	06-09-2025		TLM1	
13.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	09-09-2025		TLM1	
14.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	11-09-2025		TLM1	
15.	Working of simple Zener voltage regulator.	1	12-09-2025		TLM1	
16.	**Amplifiers**: Block diagram of Public Address system	1	16-09-2025		TLM2	
17.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	18-09-2025		TLM2	
18.	**Electronic Instrumentation:** Block diagram of an electronic instrumentation system.	1	19-09-2025		TLM2	
19.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	20-09-2025		TLM2	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		

UNIT-VI: Digital Electronics

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
20.	Overview of Number Systems	1	23-09-2025		TLM1	
21.	Logic gates including Universal	1	25-09-2025		TLM2	

22.	BCD codes, Excess-3 code, gray code	1	26-09-2025		TLM1	
23.	Hamming code	1	27-09-2025		TLM2	
24.	Boolean Algebra	1	07-10-2025		TLM1	
25.	Basic Theorems and properties of Boolean Algebra	1	09-10-2025		TLM1	
26.	Truth Tables and Functionality of Logic Gates NOT, OR, AND	1	10-10-2025		TLM2	
27.	NOR, NAND, XOR and XNOR	1	11-10-2025		TLM1	
28.	Simple combinational circuits	1	14-10-2025		TLM2	
29.	Half and Full Adders	1	16-10-2025		TLM2	
30.	Introduction to sequential circuits, Flip flops	1	17-10-2025		TLM1	
31.	Registers and counters	1	18-10-2025		TLM1	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

I Mid Examinations: 20-10-2025 to 25-10-2025

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-IV, V & UNIT-VI)	A1=5
I-Descriptive Examination (Units-IV, V & UNIT-VI)	M1=15
I-Quiz Examination (Units-IV, V & UNIT-VI)	Q1=10
Assignment-II (Units-I, II & UNIT-III)	A2=5
II- Descriptive Examination (Units-I, II & UNIT-III)	M2=15
II-Quiz Examination (Units-I, II & UNIT-III)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	**From**	**To**	**Weeks**
I Phase of Instructions	18-08-2025	27-09-2025	6W
Dasara Holydays	29-09-2025	04-10-2025	1W
I Phase of Instructions	06-10-2025	18-10-2025	2W
I Mid Examinations	20-10-2025	25-10-2025	1W
II Phase of Instructions	27-10-2025	27-12-2025	9W
II Mid Examinations	29-12-2025	03-01-2026	1W
Preparation and Practical's	05-01-2026	10-01-2026	1W
Semester End Examinations	19-01-2026	31-01-2026	2W

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 13-08-2025

Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Dr. G. Srinivasulu	Dr. A. Narendra Babu	Dr.B.V.N.R. Siva Kumar	Dr. G. Srinivasulu

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. Y. Praveen Kumar
Course Name & Code : IT Workshop Lab & 23IT51
L-T-P Structure : 0-0-2 **Credits:** 1
Program/Sem/Sec : B.Tech - ECE/I/B **A.Y.:** 2025-26

PREREQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to impart knowledge about the components of PC, Assembling PC, Installation of OS, software's like MS-Office, LaTex and concepts related to Networking, Internet as well as antivirus.

COURSE OUTCOMES (COs): At the end of the course, the student will be able to

CO1	Identify the components of a PC and Assemble & disassemble the same. (Understand)
CO2	Experiment with installation of Operating System and Secure a computer from Cyber threats. (Apply)
CO3	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO4	Build dialogs and documents using ChatGPT. (Apply)

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
CO2	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO3	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 3rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, PearsonEducation,2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.
R6	IT Essentials PC Hardware and Software Companion Guide, David Anfins on and Ken Quamme. –CISCO Press, Pearson Education, 3rd edition.
R7	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan– CISCO Press, Pearson Education, 3rd edition.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	22-08-2025		DM5	
2.	Task-2	3	29-08-2025		DM5	
3.	Task-3	3	05-09-2025		DM5	
4.	Task-4	3	12-09-2025		DM5	
5.	Task-5	3	19-09-2025		DM5	
Internet & World Wide Web						
6.	Task-1	3	26-09-2025		DM5	
7.	Task-2	3	03-10-2025		DM5	
8.	Task-3	3	10-10-2025		DM5	
9.	Task-4	3	17-10-2025		DM5	
LaTex and WORD						
10.	Task-1	3	31-10-2025		DM5	
11.	Task-2	3	07-11-2025		DM5	
12.	Task-3	3	14-11-2025		DM5	
13.	Task-4	3	21-11-2025		DM5	
EXCEL						
14.	Task-1	3	28-11-2025		DM5	
15.	Task-2	3	28-11-2025		DM5	

LOOKUP/VLOOKUP						
16.	Task-1	3	05-12-2025		DM5	
POWER POINT						
17.	Task-1	3	12-12-2025		DM5	
18.	Task-2	3	12-12-2025		DM5	
19.	Task-3	3	12-12-2025		DM5	
AI TOOLS – ChatGPT						
20.	Task-1	3	19-12-2025		DM5	
21.	Task-2	3	19-12-2025		DM5	
22.	Task-3	3	19-12-2025		DM5	
23.	Internal exam	3	09-01-2026		DM5	

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Y. Praveen Kumar**	**N. Srikanth**	**DR. D. Venkata Subbaiah**	**DR. S. Nagarjuna Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(An Autonomous Institution since 2010)

Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada

L.B. Reddy Nagar, Mylavaram, NTR District, Andhra Pradesh - 521230

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: **Dr. K.Dilip Kumar, Professor,**
Dr. B.Sudheer Kumar Sr. Asst. Professor,
Mr.K.Lakshmi Prasad, Sr. Asst. Professor

Course Name & Code	**:** Engineering Drawing – 23ME01	
L-T-P Structure	**:** 3-0-4	**Credits:** 4
Program/Sem/Sec	: B.Tech/I Sem/B-Sec	**A.Y.:** 2025-26

COURSE EDUCATIONAL OBJECTIVES (CEOs): To recognize the Bureau of Indian Standards of Engineering Drawing and develop an ability to get familiarized with orthographic projections and isometric views of solid objects.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the principles of engineering drawing, including engineering curves, scales, Orthographic and isometric projections. (**Understanding Level –L2**)
CO2	Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views. (**Applying Level –L3**)
CO3	Understand and draw projection of solids in various positions in first quadrant. (**Applying Level –L3**)
CO4	Draw the development of surfaces of simple objects. (**Applying Level –L3**)
CO5	Prepare isometric and orthographic sections of simple solids. (**Applying Level –L3**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO2	3	2	1	2	-	-	-	-	-	-	-	3	1	1	2
CO3	3	2	2	-	-	-	-	-	-	-	-	3	-	1	2
CO4	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO5	3	2	2	-	-	-	-	-	-	-	-	3	-	-	-
1 - Low					**2** –Medium							**3** - High			

TEXTBOOKS:

T1 N. D. Bhatt, Engineering Drawing, 51th Revised and Enlarged Edition, Charotar publishers,2012

REFERENCE BOOKS:

R1 Narayana K L, Kannaiah P, Textbook on Engineering Drawing, 2nd Edition, SciTech publishers.

R2 R.K.Dhawan, Engineering Drawing, S.Chand Company LTD.

R3 Venugopal, Engineering Drawing and Graphics, New Age publishers

R4 Dhananjay A. Jolhe, Engineering Drawing, Tata McGraw Hill Publishers

R5 N.S.Parthasarathy, Vela Murali, Engineering Drawing, Oxford Higher Education

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO ENGINEERING GRAPHICS, LETTERING, LINES AND DIMENSIONING, CONICS, CYCLOIDS, INVOLUTES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
1	**UNIT I: INTRODUCTION:** Introduction to Engineering Drawing, CEOs, COs, PEOs, and POs and PSOs	2	19-08-2025		TLM1/ TLM2	
2	Principles of Engineering Graphics and their significance, Drawing Instruments and their use- Conventions in Drawing – Practical orientation					
3	Lettering and Dimensioning – BIS Conventions- Geometrical Constructions – Theory Class					
4	Practice	3	20-08-2025		TLM4	
5	Engineering Curves: Conic Sections- Construction of ellipse, parabola and Hyperbola –Theory class	2	26-08-2025		TLM1	
6	Construction of Parabola, ellipse, hyperbola – General method -Practice	2	02-09-2025		TLM4	
7	Cycloids –Theory class	3	03-09-2025		TLM1	
8	Practice Session	2	09-09-2025		TLM4	
9	Involutes – Theory class	3	10-09-2025		TLM1	
10	Practice Session	2	16-09-2025		TLM4	
No. of classes required to complete UNIT-I: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-II: PROJECTIONS OF POINTS, LINES AND PLANES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
9	Orthographic Projections, First and third angle projection methods, Projections of Points, Lines inclined to one plane	3	17-09-2025		TLM1	
10	Practice Session	2	23-09-2025		TLM4	
11	Projection of lines - Projections of Straight Line Inclined to both the reference planes	3	24-09-2025		TLM1	
12	Practice Session	2	07-10-2025		TLM4	
13	Projections of planes- Regular planes Perpendicular to both reference planes, parallel to one reference plane and inclined to the other reference plane; plane inclined to both the reference planes.	3	08-10-2025		TLM1	
14	Practice Session	2	14-10-2025		TLM4	
15	Revision -unit-1	3	15-10-2025		TLM1	
16	Revision -unit-2	3	22-10-2025		TLM1	
No. of classes required to complete UNIT-II: 20 (Lecture:6 Practice:9)				**No. of classes taken: (including Practice)**		

UNIT-III: PROJECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
16	Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane – Theory and practice	2	28-10-2025		TLM1 TLM4	
17	Axis parallel to both the reference planes, Projection of Solids with axis inclined to one reference plane and parallel to another plane.	3	29-03-2025		TLM1	
18	Practice Session	2	04-11-2025		TLM 4	
No. of classes required to complete UNIT-III: 07 (Lecture:3 Practice:5)				**No. of classes taken: (including Practice)**		

UNIT-IV: SECTIONS OF SOLIDS AND DEVELOPMENT OF SURFACES

S. No.	Topics to be covered	No. of Class Required	Tentative Date	ActualDate	Teaching Learning ng Method	HOD Sign Weekly
19	Sections of Solids Solids in simple positions, Perpendicular and inclined section planes	3	05-11-2025		TLM1	
20	Practice Session	2	11-11-2025		TLM4	
21	Sections of solids: Sectional views and True shape of section	3	12-11-2025		TLM1	
22	Practice Session	2	18-11-2025		TLM4	
23	Development of solids Methods of Development: Parallel line development and radial line development	3	19-11-2025		TLM1	
24	Practice Session	2	25-11-2025		TLM4	
25	Development of solids Development of a cube, prism, cylinder, pyramid and cone.	3	26-11-2025		TLM1	
No. of classes required to complete UNIT-IV: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-V: CONVERSION OF VIEWS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
26	Introduction to Isometric Views – Theory Isometric views, isometric axes, scale, lines & planes	2	02-12-2025		TLM1	
27	Practice Session	3	03-12-2025		TLM4	
28	Orthographic projections to Isometric Projections	2	09-12-2025		TLM1	
29	Practice Session	3	10-12-2025		TLM4	
30	Orthographic Projections to Isometric Projections	2	16-12-2025		TLM1	
31	Practice Session	3	17-12-2025		TLM4	
32	**Content beyond the syllabus:** Scales, Planes inclined to both the planes.	2	23-12-2025		TLM1/ TLM2	
33	Revision	3	24-12-2025		TLM1	

No. of classes required to complete UNIT-V: 20 (Lecture:12 Practice:15)	No. of classes taken:

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
I-Descriptive Examination (Units-I, II)	M1=15
II- Descriptive Examination (UNIT-III , IV & V)	M2=15
Day to Day Evaluation (Assignment)	15
Mid Marks =80% of Max (M1,M2)+ 20% of Min ((M1, M2) + Day to Day Evaluation	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and designsystem components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with anunderstanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainabledevelopment.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports anddesign documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, tomanage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage inindependent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	**To apply the principles of thermal sciences to design and develop various thermal systems.**
PSO2	**To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.**
PSO3	**To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.**

Title	**Course Instructor**	**Course Coordinator**	**Head of the Department**
Name of the Faculty	Dr.K.Dilip Kumar	Mr.J.Subba Reddy	Dr. M B S S Reddy
Signature			

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.B.Mohan Teja

Course Name & Code **:** CE LAB, 23FE51

L-T-P Structure **: 0-0-3** **Credits:** 01

Program/Sem/Sec : B. Tech .ECE-B

A.Y. **:** 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of introducing this course, Communicative English Laboratory, is to expose the students to a variety of self-instructional, learner friendly modes of language learning. The students will get trained in basic communication skills and also make them ready to face job interviews.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the different aspect of the English language proficiency with emphasis on LSRW skills.	L2
CO2	Apply Communication Skills through various language learning activities	L3
CO3	Identifying the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking, comprehension.	L2
CO4	Exhibit professionalism in participating in debates and group discussions.	L3

Course Articulation Matrix

(Correlation between COs & POs)

Course Outcomes PO's →	Programme Outcomes											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	-	-	-	2	-	-	-	-	3	3	-	2
CO2.	-	-	-	2	-	-	-	-	3	3	-	2
CO3.	-	-	-	2	-	-	-	-	3	3	-	2
CO4.	-	-	-	2	-	-	-	-	3	3	-	2
1 = Slight (Low) 2= Moderate (Medium) 3 = Substantial (High)												

List of Activities:

1. Vowels & Consonants
2. Neutralization / Accent rules
3. Communication Skills: JAM
4. Conversational Practice: Roleplay
5. E-mail Writing
6. Resume writing, Cover letter, SOP
7. Group Discussions - methods & Practice
8. Debates – Methods and practice
9. PPT Presentations & Poster Presentations
10. Interview Skills: Mock Interviews

Suggested Software:

1.Walden Infotech

2.Young India Films

Reference Books:

Raman Meenakshi, Sangeeta-Sharma, *Technical Communication,* Oxford Press 2018.

Taylor Grant: *English Conversation Practice,* Tata McGraw-Hill Education India, 2016.

Hewing's, Martin, Cambridge Academic English (B2), CUP, 2012.

J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English, (*2nd Ed.,*)Kindle, 2013.*

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	21-08-2025		TLM4	
2.	Vowels & Consonants	06	04-09-2025& 11-09-2025		TLM1 TLM5	
3.	Neutralization	03	18-09-2025		TLM1, TLM5	
4.	Accent rules	03	25-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	03	09-10-2025		TLM4	
6.	Role Play-I (Formal and Informal)	03	16-10-2025		TLM4	
7.	e-mail Writing,	03	30-10-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	06-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	13-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	20-11-2025		TLM4, TLM6	

11.	PPT Presentation	03	27-11-2025		TLM2, TLM4	
12.	Poster Presentation	03	04-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	11-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	18-12-2025			
No. of classes required to complete Syllabus: 45				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Laboratory Examination:

Evaluation Task	**Marks**
Day-to-Day Work	A1 = 10
Record & Observation	B1 = 5
Internal Exam	C1 = 15
Cumulative Internal Examination (CIE): (A1+B1+C1)	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. B.Mohan Teja**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : **B.Tech.,I-Sem., ECE B**

ACADEMIC YEAR : **2025-26**

COURSE NAME : **ENGINEERING PHYSICS LAB (23FE53)**

L-T-PSTRUCTURE : **0 – 0 – 3**

COURSE CREDITS : **1**

COURSE INSTRUCTOR : **P. Vijaya Sirisha /Dr N Aruna**

COURSE COORDINATOR : **Dr. S Yusuf**

Pre-requisites : **Nil**

Course Objective: To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes:

CO1: Analyze the wave properties of light using optical instruments (Apply-L3).
CO2: Estimate the elastic modulii of various materials and acceleration due to gravity (Apply-L3).
CO3: Demonstrate the vibrations in stretched strings (Understand-L2).
CO4: Evaluate dielectric constant and magnetic field of circular coil carrying current (Apply-L3).
CO5: Examine the characteristics of semiconductor devices (Apply-L3).

Course articulation matrix (Correlation between CO's and PO's):

Engineering Physics Lab												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes PO's →	**Programme Outcomes**											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO2.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO3.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO4.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO5.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
1 = slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

List of Experiments

1. Determination of radius of curvature of a given Plano - Convex lens by Newton's rings.
2. Determination of dielectric constant using charging and discharging method.
3. Determination of wavelength of a laser light using diffraction grating.
4. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.
5. Determination of temperature coefficients of a thermistor.
6. Determination of acceleration due to gravity and radius of Gyration by using a compound pendulum.
7. Determination of Frequency of electrically maintained tuning fork by Melde's experiment.
8. Determination of rigidity modulus of the material of the given wire using Torsional pendulum.
9. Sonometer- Verification of laws of a stretched string.
10. Determination of energy band gap of a semiconductor using p-n junction diode.
11. Verification of Brewster's Law.
12. Determination of Hall coefficient and Hall voltage.

References:

- A Textbook of Practical Physics – S. Balasubramanian, M.N. Srinivasan, S. Chand publishers-2017.

BOSAPPROVEDTEXTBOOKS:

1. Lab Manual Prepared by the LBRCE.

EVALUATIONPROCESS:

Evaluation Task	**Marks**
Day-to-Day Work	A1 = **10**
Record & Observation	B1 = **5**
Internal Exam	C1 = **15**
Cumulative Internal Examination (CIE): (A1+B1+C1)	**30**
Semester End Examination (SEE)	**70**
Total Marks = CIE + SEE	**100**

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE B

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	TeachingLearningMethods	LearningOutcomeCOs	f
1.	Introduction	3	23-08-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
2.	Demonstration	3	30-08-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
3.	Experiment 1	3	06-09-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
4.	Experiment 2	3	13-09-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
5.	Demonstration	3	20-09-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
6.	Experiment 3	3	27-09-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
7.	Experiment 4	3	04-10-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
8.	Experiment 5	3	11-10-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
9	Repetition	3	18-10-2025		**TLM--4**	---	
10	**MID-1 Exam**		25-10-2025				
11.	Experiment 6	3	01-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
12.	Experiment 7	3	08-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
13.	Experiment 8	3	15-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
14.	Repetition	3	22-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
15.	Experiment 9 (Virtual Lab)	3	29-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
16.	Experiment10 (Virtual Lab)	3	06-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
17.	Revision	3	13-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
18.	**Internal Exam**	3	20-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	
19.	**Internal Exam**	3	27-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	

PROGRAM OUT COMES: Engineering Graduates will be able to:

1 **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4 **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern-engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assesssocietal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8 **Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams and in multi disciplinary settings.

10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CourseInstructor	**Course-coordinator**	**Module Coordinator**	**HOD**
P V Sirisha Dr N Aruna	Dr.S.Yusuf	Dr.S.Yusuf	Dr. T. Satyanarayana

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DEPARTMENT OF ECE

LAB HANDOUT

PART-A

Name of Course Instructor : Dr. G. Srinivasulu, Mr. P. James Vijay, Ms.B. Lakshmi Tirupathamma, Mr. P. Venkateswara Rao

Course Name & Code : Electrical & Electronics Engineering Workshop (E & EE WS)

L-T-P Structure : 0-0-3 **Credits** : 1.5

Program/Sem : B.Tech. ECE- I Sem-Sec B **A.Y.** : 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

To impart knowledge on the principles of digital electronics and fundamentals of electron devices & its applications.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Compute voltage, current and power in an electrical circuit. (**Apply**)
CO2	Compute medium resistance using Wheat stone bridge. (**Apply**)
CO3	Discover critical field resistance and critical speed of DC shunt generators. (**Apply**)
CO4	Estimate reactive power and power factor in electrical loads. (**Understand**)
CO5	Plot the characteristics of semiconductor devices. (**Apply**)
CO6	Demonstrate the working of various logic gates using ICs. (**Understand**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	-	-	-	-	2	3	2	-	1	-	-	-	-
CO2	2	2	-	2	-	-	-	2	2	2	-	-	-	-	-	-
CO3	2	2	2	2	-	-	-	2	2	2	-	-	-	2	-	-
CO4	2	2	-	3	-	-	-	2	3	2	-	1	2	-	-	-
CO5	3	2	-	-	2	-	-	2	2	2	1	1	2	2	3	2
CO6	3	3	-	2	2	-	-	2	3	3	-	1	-	-	3	-
1 - Low				**2 –**Medium								**3 -** High				

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to BEEE Lab (Function Generators, CRO, RPS, Breadboard etc), Course Objectives and Outcomes.	3	18-08-2025		TLM4	
2.	Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	25-08-2025		TLM4	

3.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator.	3	01-09-2025		TLM4
4.	Implementation of half wave and full wave rectifiers	3	08-09-2025		TLM4
5.	Plot Input & Output characteristics of BJT in CB configuration	3	15-09-2025		TLM4
6.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	22-09-2025		TLM4
7.	Verification of Truth Tables of S-R, J-K& D flip flops using respective ICs	3	06-10-2025		TLM4
8.	Internal Lab Examination (**Electronics**)	3	13-10-2025		TLM4
No. of classes required: 24				**No. of classes taken:**	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work	1,2,3,4,5,6,7,8…	A1 =10
Record and observation	1,2,3,4,5,6,7,8…	B1 = 5
Internal Exam	1,2,3,4,5,6,7,8…	**C1=15**
Cumulative Internal Examination (CIE):(A1+B1+C1)	1,2,3,4,5,6,7,8…	**30**
Semester End Examination (SEE)	1,2,3,4,5,6,7,8…	**70**
Total Marks=CIE+SEE		**100**

ACADEMIC CALENDAR:

Description	**From**	**To**	**Weeks**
I Phase of Instructions	18-08-2025	27-09-2025	6W
Dasara Holydays	29-09-2025	04-10-2025	1W
I Phase of Instructions	06-10-2025	18-10-2025	2W
I Mid Examinations	20-10-2025	25-10-2025	1W
II Phase of Instructions	27-10-2025	27-12-2025	9W
II Mid Examinations	29-12-2025	03-01-2026	1W
Preparation and Practical's	05-01-2026	10-01-2026	1W
Semester End Examinations	19-01-2026	31-01-2026	2W

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 13-08-2025

Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Mr. M. Sambasiva Reddy	Mr.M Sambasiva Reddy	Dr.B.V.N.R. Siva Kumar	Dr. G. Srinivasulu

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. D. Chaithanya
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem (ECE-C)
A.Y. : 2025-26

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objective of introducing this course, *Communicative English*, is to facilitate effective Listening, Reading, Speaking and Writing skills among the students. It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary. This course helps the students to make them effective in speaking and writing skills and to make them industry ready.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the context, topic, and pieces of specific information from social or Transactional dialogues.	L2
CO2	Apply grammatical structures to formulate sentences and correct word forms.	L3
CO3	Use discourse markers to speak clearly on a specific topic in informal discussions.	L3
CO4	Read / Listen the texts and write summaries based on global comprehension of these texts.	L2
CO5	Prepare a coherent paragraph, essay, and resume.	L3

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

Course Outcomes	Programme Outcomes											
PO's →	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	-	-	-	1	-	-	-	-	3	3	-	2
CO2.	-	-	-	1	-	-	-	-	3	3	-	2
CO3.	-	-	-	1	-	-	-	-	3	3	-	2
CO4.	-	-	-	1	-	-	-	-	3	3	-	2
CO5.	-	-	-	1	-	-	-	-	3	3	-	2
1 = Slight (Low)			2= Moderate (Medium)					3 = Substantial (High)				

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	2 Weeks	04-08-2025 TO 16-08-2025		TLM1	CO1		
2.	Introduction to the course				TLM1	CO1		
3.	Course Outcomes, Program Outcomes				TLM2	CO1		

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	18-08-2025 20-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23-08-2025 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	30-08-2025 01-09-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	01	03-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	06-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	08-09-2025 10-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 10						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	03	15-09-2025 17-09-2025 20-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	22-09-2025 24-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	27-09-2025 06-10-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	02	08-10-2025 13-10-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	01	15-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	01	18-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 11						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	27-10-2025 29-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	01-11-2025 3-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	05-11-2025 10-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	12-11-2025 15-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	17-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	19-11-2025 22-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	24-11-2025 26-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing: Official Letters, Resumes**	02	29-11-2025 01-12-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	03-12-2025 06-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	08-12-2025		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 09						**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	02	10-12-2025 15-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	02	17-12-2025 20-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	22-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	24-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	27-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 07						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Idioms**	01	15-09-2025		TLM2 &5	
2.	**Conditionals -If**	01	22-10-2025		TLM2 &5	
3.	**One-word substitutes, Phrasal verbs**	01	29- 10-2025		TLM2 &5	
No. of classes required to complete: 03				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs. D. Chaithanya**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., ECE-C
ACADEMIC YEAR	**:** 2025-26
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 4-1-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Dr. K. Jhansi Rani
COURSE COORDINATOR	**:** Dr. K.Bhanu Lakshmi
PRE-REQUISITES	**:** Basics of Matrices**,** Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs): To equip the students with standard concepts and tools at an intermediate to advanced level Mathematics, to develop the confidence and ability among the students to handle various real-world problems and their applications.

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

CO1: Apply matrix algebra techniques to solve engineering problems – **L3**

CO2: Use Eigen values and Eigen vectors conceptto find nature of quadratic form, inverse and powers of matrix – **L3**

CO3: Expand various functions using Mean value theorems – **L2**

CO4: Understand the concepts of functions of several variables which are useful in optimization – **L2**

CO5: Evaluate areas and volumes by using double and triple integrals – **L3**

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	1
CO2	3	2	-	-	-	-	-	-	-	-	-	1
CO3	3	1	-	-	-	-	-	-	-	-	-	1
CO4	3	2	-	-	-	-	-	-	-	-	-	1
CO5	3	2	-	-	-	-	-	-	-	-	-	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**

1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 44nd Edition, Khanna Publishers, New Delhi, 2017.

T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

R1 George B. Thomas, Maurice D. Weir and Joel Hass, "*Thomas Calculus*", 14th Edition, Pearson Publishers, 2018.

R2 R.K. Jain and S.R.K. Iyengar, "*Advanced Engineering Mathematics*", 5th Edition (9th reprint), Alpha Science International Ltd., 2021.

R3 Glyn James, "*Advanced Modern Engineering Mathematics*", 5th Edition, Pearson Publishers, 2018.

R4 Michael D.Greenberg, "*Advanced Engineering Mathematics*", 9th Edition, Pearson Publishers.

R5 H.K. Das, Er. RajnishVerma, "*Higher Engineering Mathematics*", 3rd Edition(Reprint 2021), S. Chand Publications, 2014.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	04-08-2025To 16-08-2025	04-08-2025To 16-08-2025	TLM1			
2.	Introduction to the course	1	18-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	21-08-2025		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	22-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	23-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	25-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	28-08-2025		TLM3	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-08-2025		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	30-08-2025		TLM1	CO1	T1,T2	
11.	**TUTORIAL I**	1	30-08-2025		TLM3	CO1	T1,T2	
12.	Homogeneous System of Equations	1	01-09-2025		TLM1	CO1	T1,T2	
13.	Homogeneous System of Equations	1	04-09-2025		TLM1	CO1	T1,T2	
14.	Non-Homogeneous System of Equations	1	05-09-2025		TLM1	CO1	T1,T2	
15.	Gauss Elimination Method	1	06-09-2025		TLM1	CO1	T1,T2	
16.	**TUTORIAL II**	1	06-09-2025		TLM3	CO1	T1,T2	
17.	Jacobi Iteration Method	1	08-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	11-09-2025		TLM1	CO1	T1,T2	
19.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	13-09-2025		TLM1	CO1	T1,T2	
21.	**TUTORIAL III**	1	13-09-2025		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		21			No. of classes taken:			

UNIT-II: Eigen Values, Eigen Vectors and Orthogonal Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	15-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	18-09-2025		TLM1	CO2	T1,T2	
24.	Eigen values, Eigen vectors	1	19-09-2025		TLM1	CO2	T1,T2	
25.	Properties	1	20-09-2025		TLM1	CO2	T1,T2	
26.	**TUTORIAL IV**	1	20-09-2025		TLM3	CO2	T1,T2	

27.	Properties	1	22-09-2025		TLM1	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	25-09-2025		TLM1	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	26-09-2025		TLM1	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	27-09-2025		TLM1	CO2	T1,T2	
31.	**TUTORIAL V**	1	27-09-2025		TLM3	CO2	T1,T2	
32.	Diagonalization of a matrix	1	06-10-2025		TLM1	CO2	T1,T2	
33.	Diagonalization of a matrix	1	09-10-2025		TLM1	CO2	T1,T2	
34.	Quadratic Forms, Nature of Quadratic Forms	1	10-10-2025		TLM1	CO2	T1,T2	
35.	Quadratic Forms, Nature of Quadratic Forms	1	11-10-2025		TLM1	CO2	T1,T2	
36.	**TUTORIAL VI**	1	11-10-2025		TLM3	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	13-10-2025		TLM1	CO2	T1,T2	
38.	Reduction of Quadratic form to Canonical form	1	16-10-2025		TLM1	CO2	T1,T2	
39.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
40.	Orthogonal Transformation	1	18-10-2025		TLM1	CO2	T1,T2	
41.	**TUTORIAL VII**	1	18-10-2025		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		20			No. of classes taken:			

I MID EXAMINATIONS (20-10-2025 TO 25-10-2025)

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
42.	Introduction to Unit III	1	27-10-2025		TLM1	CO3	T1,T2	
43.	Mean Value theorem	1	30-10-2025		TLM1	CO3	T1,T2	
44.	Rolle's theorem	1	31-10-2025		TLM3	CO3	T1,T2	
45.	Rolle's theorem	1	01-11-2025		TLM1	CO3	T1,T2	
46.	**TUTORIAL VIII**	1	01-11-2025		TLM3	CO3	T1,T2	
47.	Lagrange's mean value theorem	1	03-11-2025		TLM1	CO3	T1,T2	
48.	Lagrange's mean value theorem	1	06-11-2025		TLM3	CO3	T1,T2	
49.	Cauchy's mean value theorem	1	07-11-2025		TLM1	CO3	T1,T2	
50.	Cauchy's mean value theorem	1	08-11-2025		TLM1	CO3	T1,T2	
51.	**TUTORIAL IX**	1	08-11-2025		TLM3	CO3	T1,T2	
52.	Taylor's theorem	1	10-11-2025		TLM1	CO3	T1,T2	
53.	Taylor's theorem	1	13-11-2025		TLM1	CO3	T1,T2	
54.	Maclaurin's theorem	1	14-11-2025		TLM3	CO3	T1,T2	
55.	Problems and applications	1	15-11-2025		TLM1	CO3	T1,T2	
56.	**TUTORIAL X**	1	15-11-2025		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		15			No. of classes taken:			

UNIT-IV: Partial differentiation and Applications (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Introduction to Unit IV	1	17-11-2025		TLM1	CO4	T1,T2	
58.	Functions of several variables, Continuity and Differentiability	1	20-11-2025		TLM1	CO4	T1,T2	
59.	Partial Derivatives	1	21-11-2025		TLM1	CO4	T1,T2	
60.	Total derivatives, Chain rule, Directional Derivative	1	22-11-2025		TLM1	CO4	T1,T2	
61.	**TUTORIAL XI**	1	22-11-2025		TLM3	CO4	T1,T2	
62.	Taylor's Series expansion	1	24-11-2025		TLM1	CO4	T1,T2	
63.	Maclaurin's series expansion	1	27-11-2025		TLM1	CO4	T1,T2	
64.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
65.	Jacobian	1	29-11-2025		TLM1	CO4	T1,T2	
66.	**TUTORIAL XII**	1	29-11-2025		TLM3	CO4	T1,T2	
67.	Functional Dependence	1	01-12-2025		TLM1	CO4	T1,T2	
68.	Maxima and Minima	1	04-12-2025		TLM1	CO4	T1,T2	
69.	Lagrange Multiplier Method	1	05-12-2025		TLM3	CO4	T1,T2	
70.	Lagrange Multiplier Method	1	06-12-2025		TLM1	CO4	T1,T2	
71.	**TUTORIAL XIII**	1	06-12-2025		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		15			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
72.	Introduction to Unit-V	1	08-12-2025		TLM1	CO5	T1,T2	
73.	Double Integrals - Cartesian coordinates	1	11-12-2025		TLM1	CO5	T1,T2	
74.	Double Integrals- Polar co ordinates	1	12-12-2025		TLM1	CO5	T1,T2	
75.	Triple Integrals - Cartesian coordinates	1	13-12-2025		TLM1	CO5	T1,T2	
76.	**TUTORIAL XIV**	1	13-12-2025		TLM3	CO5	T1,T2	
77.	Triple Integrals - Spherical coordinates	1	15-12-2025		TLM1	CO5	T1,T2	
78.	Change of order of Integration	1	18-12-2025		TLM1	CO5	T1,T2	
79.	Change of order of Integration	1	19-12-2025		TLM1	CO5	T1,T2	
80.	**TUTORIAL XV**	1	20-12-2025		TLM3	CO5	T1,T2	
81.	Change of variables	1	20-12-2025		TLM1	CO5	T1,T2	

82.	Finding area by double Integral	1	22-12-2025		TLM1	CO5	T1,T2	
83.	Finding Volume by double and triple Integral	1	26-12-2025		TLM1	CO5	T1,T2	
84.	**TUTORIAL XVI**	1	27-12-2025		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		13			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
85.	Other applications of double integral	1	27-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 03-01-2025)								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the

	professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr.T. K. Jhansi Rani	**Dr. K. Bhanu Lakshmi**	**Dr. A. Rami Reddy**	**Dr.T.Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

FRESHMANENGINEERINGDEPARTMENT

COURSEHANDOUT

PART-A

PROGRAM	**:I B.Tech.,I-Sem.,ECE-C**
ACADEMICYEAR	**:2025-26**
COURSENAME &CODE	**: ENGINEERING PHYSICS**
L-T-PSTRUCTURE	**:4-0-0**
COURSECREDITS	**3**
COURSEINSTRUCTOR	**:Dr. P. Sobhanachalam**
PRE-REQUISITE	**:Basic Knowledge of Physics**

Course Objectives:

To bridge the gap between the physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc, enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

COURSEOUTCOMES (COs): At the end of this course, the student will be able to

CO1	Analyze the intensity variation of light due to interference, diffraction and Polarization (Apply)
CO2	Understand the basics of crystals and their structures (Understand)
CO3	Summarize various types of polarization of dielectrics and classify the magnetic materials (Understand)
CO4	Explain fundamentals of quantum mechanics and free electron theory of metals (Understand)
CO5	Identify the type of semiconductor using Hall Effect (Apply)

COURSE ARTICULATION MATRIX(Correlation between COs, Pos & PSOs):

ENGINEERING PHYSICS												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes PO's	**Programme Outcomes**											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1. →	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO2.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO3.	**3**	**3**	**2**	**1**	**1**	**1**						**1**
CO4.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO5.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
1 = Slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

TEXT BOOKS

1. A Text book of "Engineering Physics" M.N. Avadhanulu, P.G. Kshirsagar, TVS Arun Murthy, S. Chand & Co., 11th Edition, 2019.
2. Engineering Physics – *D.K. Bhattacharya & Poonam Tandon, Oxford press (2015)*

REFERENCES

1. Engineering Physics -B.K.Pandey& S. Chaturvedi, Cengage Learning 2021.
2. Engineering Physics -Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics -Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press 2010.
4. Engineering Physics -M.R. Srinivasan, New Age international publishers (2009).

WEBRESOURCES

1. http://www.loc.gov/rr/scitech/selected-internet/physics.html
2. http://www.freebookcentre.net/Physics/Solid-State-Physics-Books.html
3. http://physicsdatabase.com/free-physics-books/
4. http://www.e-booksdirectory.com
5. http://www.thphys.physics.ox.ac.uk

TEACHINGLEARNINGMETHODS			
TLM-1	Chalk and Talk	**TLM-4**	Demonstration(Lab/Field Visit)
TLM-2	PPT/A illustrations	**TLM-5**	ICT(NPTEL/Swayam Prabha /MOOCS)
TLM-3	Tutorial/Quiz/Assignment	**TLM-6**	Group Discussion/Project

PART-B

COURSEDELIVERYPLAN(LESSONPLAN):

UNIT-I:INTERFERENCE,DIFFRACTION& POLARIZATION

Course Outcome :-CO1;TextBook:-T1,R2

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction to the Subject, Course Outcomes	1	18.8.25		**TLM-2**		
2.	Principle of superposition, Interference of light	1	21.8.25		**TLM-3**		
3.	Interference in thin films by reflection & applications	1	22.8.25		**TLM-2**		
4.	Colors in thin films, Newton's rings	1	23.8.25		**TLM-1**		
5.	Determination of wavelength and refractive index	1	25.8.25		**TLM-4**		
6.	Problems& Assignment/Quiz	1	28.8.25		**TLM-1**		
7.	Introduction, Fresnel and	1	29.8.25		**TLM-3**		

	Fraunhoffer diffractions						
8.	Fraunhoffer diffraction due to single slit	1	30.8.25		**TLM-2**		
9.	Double slit& N slits(Qualitative)	1	1.9.25		**TLM-4**		
10.	Diffraction Grating, Dispersive power & Resolving power of Grating-Qualitative	1	4.9.25		**TLM-4**		
11.	Problems& Assignment/Quiz	1	6.9.25		**TLM-3**		
12.	Introduction – Types of polarization	1	8.9.25		**TLM-2**		
13.	Polarization by reflection, refraction & double refraction	1	11.9.25		**TLM-2**		
14.	Nicol's prism	1	12.9.25		**TLM-5**		
15.	Half wave and Quarter wave plates	1	13.9.25		**TLM-2**		
16.	Problems& Assignment/Quiz	1	15.9.25		**TLM-3**		
No.of classes required to complete UNIT-I:16				No.of classes taken:			

UNIT-II:CRYSTALLOGRAPHY & X– RAY DIFFRACTION

Course Outcome :-CO2;TextBook:-T1,R2

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Space lattice; Basis, Unit cell & Lattice parameters	1	18.9.25		**TLM-3**		
2.	Bravais Lattices	1	19.9.25		**TLM-2**		
3.	Crystal Systems(3D)	1	20.9.25		**TLM-2**		
4.	Coordination number – Packing fraction of –SC, BCC	1	22.9.25		**TLM-1**		
5.	Coordination number – Packing fraction of FCC	1	25.9.25		**TLM-1**		
6.	Miller indices& Properties	1	26.9.25		**TLM-2**		
7.	Separation between successive (hkl) planes	1	27.9.25		**TLM-1**		

8.	Bragg's law; X–ray Diffractometer	1	6.10.25		**TLM-3**		
9.	Crystal Structure determination by Laue's method	1	9.10.25		**TLM-2**		
10.	Crystal Structure determination by Powder method	1	10.10.25		**TLM-5**		
11.	Problems	1	11.10.25		**TLM-3**		
12.	Assignment	1	13.10.25		**TLM-3**		
13.	Quiz	1	16.10.25		**TLM-3**		
14.	Revision	1	17.10.25		**TLM-3**		
15.	Revision	1	18.10.25		**TLM-3**		
16.	MID-1 Examinations	1	23.10.25		----		
17.	MID-1 Examinations	1	24.10.25		----		
18.	MID-1 Examinations	1	25.10.25		----		
No.of classes required to complete UNIT-II: 15				No.of classes taken:			

UNIT-III :DIELECTRIC & MAGNETIC MATERIALS

Course Outcome :-CO3;TextBook:-T1,R2

S.No	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Dielectric polarization Dielectric polarizability, Susceptibility	1	27.10.25		**TLM-2**		
2.	Dielectric constant & Displacement Vector, Relation between the electric vectors	1	30.10.25		**TLM-3**		
3.	Types of polarizations-Electronic polarization	1	31.10.25		**TLM-1**		
4.	Types of polarizations- ionic & orientation polarizations	1	1.11.25		**TLM-1**		

	(Qualitative)						
5.	Lorentz internal field	1	3.11.25		**TLM-2**		
6.	Claussius-Mosotti equation, Complex dielectric constant	1	6.11.25		**TLM-1**		
7.	Frequency dependence of polarization dielectric loss	1	7.11.25		**TLM-5**		
8.	Problems& Assignment/Quiz	1	8.11.25		**TLM-3**		
9.	Introduction Magnetic dipole moment, Magnetization Magnetic susceptibility & permeability	1	10.11.25		**TLM-4**		
10.	Atomic origin of magnetism	1	13.11.25		**TLM-1**		
11.	Classification of magnetic materials-Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	14.11.25		**TLM-2**		
12.	Domain concept for Ferromagnetism & Domain walls	1	15.11.25		**TLM-2**		
13.	Hysteresis	1	17.11.25		**TLM-5**		
14.	soft and hard magnetic materials	1	20.11.25		**TLM-1**		
15.	Problems& Assignment/Quiz	1	21.11.25		**TLM-3**		
No.of classes required to complete UNIT-III:15				No.of classes taken:			

UNIT-IV :QUANTUM MECHANICS&FREEELECTRONTHEORY

Course Outcome :-CO4;TextBook:-T1,R2

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Dual nature of matter,De-Broglie's Hypothesis	1	22.11.25		**TLM-2**		
2.	Heisenberg's Uncertainty Principle	1	24.11.25		**TLM-2**		
3.	Significance & properties of wave function	1	27.11.25		**TLM-2**		
4.	Schrodinger's time independent and dependent wave equations	1	28.11.25		**TLM-1**		
5.	Particle in a one – dimensional infinite	1	29.11.25		**TLM-1**		

	potential well						
6.	Problems& Assignment/Quiz	1	1.12.25		**TLM-3**		
7.	Classical free electron theory-merits and demerits, Quantum free electron theory	1	4.12.25		**TLM-2**		
8.	Electrical conductivity based on quantum free electron theory	1	5.12.25		**TLM-1**		
9.	Fermi -Dirac distribution and temperature dependence	1	6.12.25		**TLM-5**		
10.	Density of states, Fermi energy	1	8.12.25		**TLM-1**		
11.	Problems& Assignment/Quiz	1	11.12.25		**TLM-3**		
No.of classes required to complete UNIT-IV:11				No.of classes taken:			

UNIT-V:SEMICONDUCTORPHYSICS

Course Outcome :-CO5;TextBook:-T2,R1

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Formation of energy bands, Classification of crystalline solids	1	12.12.25		**TLM-6**		
2.	Intrinsic semiconductors, Density of charge carriers	1	13.12.25		**TLM-1**		
3.	Electrical conductivity, Fermi level	1	15.12.25		**TLM-2**		
4.	Extrinsic semiconductors, Density of charge carriers	1	18.12.25		**TLM-1**		
5.	Dependence of Fermi energy on carrier concentration &temperature	1	19.12.25		**TLM-2**		
6.	Drift and Diffusion Currents, Einstein's equation	1	20.12.25		**TLM-1**		
7.	Hall Effect & its applications	1	22.12.25		**TLM-4**		
8.	Problems& Assignment/Quiz	1	26.12.25		**TLM-3**		

9.	Problems& Assignment/Quiz	1	27.12.25		**TLM-3**		
10.	MID-2 Examinations	1			----		
11.	MID-2 Examinations	1			----		
12.	MID-2 Examinations	1			----		
13.	MID-2 Examinations	1			----		
No.of classes required to complete UNIT-V:10				No.of classes taken:			

PART-C

EVALUATION PROCESS(R-23Regulation)

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=**5**
I-Descriptive Examination (Units-I, II)	M1=**15**
I-Quiz Examination (Units-I, II)	Q1=**10**
Assignment-II (Unit-III, IV & V)	A2=**5**
II- Descriptive Examination (UNIT-III, IV & V)	M2=**15**
II-Quiz Examination (UNIT-III, IV & V)	Q2=**10**
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=**30**
Cumulative Internal Examination (CIE): M	**30**
Semester End Examination (SEE)	**70**
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMMEOUTCOMES(POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals,andanengineeringspecializationtothesolutionofcomplex Engineering problems.
PO 2	**Problem analysis**:Identify,formulate,review research literature and analyze complexengineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics,natural sciences and engineering sciences.
PO 3	**Design/development of solutions**:Design solutions for complex engineering problems and design system components or processes that meet the specified needswithappropriateconsiderationforthepublichealthandsafetyand the cultural, Societal and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and Research methods including design of experiments,analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO 5	**Modern tool usage**:Create,select,andapplyappropriatetechniques,resources,and modernengineeringandITtoolsincludingpredictionandmodelingtocomplexengineeringactivitieswithanunderstandingofthe limitations
PO 6	**The engineer and society**:Apply reasoning informed by the contextual knowledge to assess societal,health,safety,legal and cultural issues and the consequent responsibilitiesrelevanttotheprofessionalengineeringpractice
PO 7	**Environment and sustainability**: Understandtheimpactoftheprofessionalengineeringsolutionsinsocietalandenvironmentalcontexts,and demonstrate the knowledge of and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and Responsibilities and norms of the engineering practice.
PO 9	**Individualandteamwork**:Functioneffectivelyasanindividual,andasamember orleaderindiverseteams,andinmultidisciplinarysettings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as,beingabletocomprehendandwriteeffectivereportsanddesigndocumentation,make effective presentations, give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as am ember and leader in a team,to manage projects and in multidisciplinary environments.
PO 12	**Life-longlearning**:Recognizetheneedforandhavethepreparationandabilityto engageinindependentandlife-longlearninginthebroadestcontextoftechnologicalchange.

CourseInstructor	CourseCoordinator	ModuleCoordinator	HOD
Dr. P. Sobhanachalam	**Dr.S.YUSUF**	**Dr.S.YUSUF**	**Dr.T. Satyanarayana**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with "A" Grade & NBA (Under Tier - I)

An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution

Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada

L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.

Phone: 08659-222933, **Fax**: 08659-222931

DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.M.Sambasivareddy
Course Name & Code : Basic Electrical & Electronics Engineering – 23EE01
L-T-P Structure **: 3-0-0**
Program/Sem./Sec. : B.Tech/I/ECE-C Sec

Credits: 3
A.Y.: 2025-26
Regulations: R23

PREREQUISITE: Physics

Course Objectives (COs)

Basic Electrical Engineering:
To expose to the field of electrical & electronics engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.

Basic Electronics Engineering
To teach the fundamentals of semiconductor devices and its applications, principles of digital electronics.

Course Outcomes (COs): At the end of the course, student will be able to

PART-B: BASIC ELECTRONICS ENGINEERING	
CO4	Interpret the characteristics of various semiconductor devices **(Knowledge)**
CO5	Infer the operation of rectifiers, amplifiers. **(Understand)**
CO6	Contrast various logic gates, sequential and combinational logic circuits. **(Understand)**

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO4	3	2										1	2		3	2
CO5	3	2										1	2		3	2
CO6	2	2	2										2		2	1
1 - Low					**2 –**Medium							**3 -** High				

TEXTBOOKS:

1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, Dhanpat Rai & Co, 2013
3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition
4. R. L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
5. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009

REFERENCE BOOKS:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Mc Graw Hill, 2019, Fourth Edition
2. Principles of Power Systems, V.K. Mehtha, S.Chand Technical Publishers, 2020
3. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017
4. Basic Electrical and Electronics Engineering, S. K. Bhatacharya, Person Publications, 2018, Second Edition.
5. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.

6. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
7. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson Education, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE- A Section

PART B: BASIC ELECTRONICS ENGINEERING

UNIT-I: Semiconductor Devices

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction – Course Outcomes Evolution of electronics, Vacuum tubes to nano electronics	2	18-08-2025 20-08-2025		TLM1	
2.	Characteristics of PN Junction Diode	1	22-08-2025		TLM1	
3.	Zener Effect — Zener Diode and its Characteristics	2	23-08-2025 25-08-2025		TLM1	
4.	Bipolar Junction Transistor	1	29-08-2025		TLM1	
5.	CB,CE Configurations and Characteristics	2	30-08-2025 01-09-2025		TLM1	
6.	CC Configurations and Characteristics.	2	03-09-2025 06-09-2025		TLM1	
7.	Elementary Treatment of Small Signal CE Amplifier.	1	08-09-2025		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Basic Electronic Circuits and Instrumentation

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	**Rectifiers and power supplies**: Block diagram description of a DC power supply	1	10-09-2025		TLM1	
9.	Working of full wave bridge rectifier, capacitor filter (no analysis)	2	12-09-2025 15-09-2025		TLM1	
10.	Working of simple Zener voltage regulator.	1	17-09-2025		TLM1	
11.	**Amplifiers**: Block diagram of Public Address system	1	19-09-2025			
12.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	2	20-09-2025 22-09-2025		TLM1	
13.	**Electronic Instrumentation:** Block diagram of an electronic instrumentation system.	1	24-09-2025		TLM2	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		

UNIT-III: Digital Electronics

Sl.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	Overview of Number Systems, Logic gates including Universal Gates	2	26-09-2025 27-09-2025		TLM1	
15.	BCD codes, Excess-3 code, gray code	1	06-10-2025		TLM2	
16.	Hamming code	1	08-10-2025		TLM1	
17.	Boolean Algebra, Basic Theorems	1	10-10-2025			
18.	Properties of Boolean Algebra,	1	11-10-2025		TLM2	
19.	Truth Tables and Functionality of Logic Gates NOT, OR, AND, NOR, NAND, XOR and XNOR	1	13-10-2025			
20.	Simple combinational circuits, Half and Full Adders	1	15-10-2025		TLM1	
21.	Introduction to sequential circuits, Flip flops, Registers and counters	1	17-10-2025		TLM1	
No. of classes required to complete UNIT-III: 9				**No. of classes taken:**		

I Mid Examinations: 20-10-2025 to 25-10-2025

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	18-08-2025	27-09-2025	6W
Dasara Holidays	29-09-2025	04-10-2025	1W
I Phase of Instructions(Contd.)	06-10-2025	18-10-2025	2W
I Mid Examinations	20-10-2024	25-10-2024	1W

II Phase of Instructions	27-10-2025	27-12-2025	9W
II Mid Examinations	29-12-2025	03-01-2026	1W
Preparation and Practicals	05-01-2026	10-01-2026	1W
Sankranthi Holidays	12-01-2026	17-01-2026	1W
Semester End Examinations	19-01-2026	31-01-2026	2W

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 03-08-2024

Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Mr.M.Sambasivareddy	Dr. Narendrababu	Dr. B.V.N.R.Sivakumar	Dr. G. Srinivasulu

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L.B. Reddy Nagar, Mylavaram, NTR District, Andhra Pradesh - 521230

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: **Dr. B. Sudheer Kumar, Sr.Asst.Professor,**
Mr. Mallikarjuna Rao, Sr. Asst. Professor,
Mr. K. Sai Babu, Asst. Professor

Course Name & Code	**:** Engineering Drawing – 23ME01	
L-T-P Structure	**:** 3-0-4	**Credits:** 4
Program/Sem/Sec	: B.Tech/I Sem	**A.Y.:** 2025-26

COURSE EDUCATIONAL OBJECTIVES (CEOs): To recognize the Bureau of Indian Standards of Engineering Drawing and develop an ability to get familiarized with orthographic projections and isometric views of solid objects.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the principles of engineering drawing, including engineering curves, scales, Orthographic and isometric projections. (**Understanding Level –L2**)
CO2	Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views. (**Applying Level –L3**)
CO3	Understand and draw projection of solids in various positions in first quadrant. (**Applying Level –L3**)
CO4	Draw the development of surfaces of simple objects. (**Applying Level –L3**)
CO5	Prepare isometric and orthographic sections of simple solids. (**Applying Level –L3**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO2	3	2	1	2	-	-	-	-	-	-	-	3	1	1	2
CO3	3	2	2	-	-	-	-	-	-	-	-	3	-	1	2
CO4	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO5	3	2	2	-	-	-	-	-	-	-	-	3	-	-	-

1 - Low **2** –Medium **3** - High

TEXTBOOKS:

T1 N. D. Bhatt, Engineering Drawing, 51th Revised and Enlarged Edition, Charotar publishers,2012

REFERENCE BOOKS:

R1 Narayana K L, Kannaiah P, Textbook on Engineering Drawing, 2nd Edition, SciTech publishers.

R2 R.K.Dhawan, Engineering Drawing, S.Chand Company LTD.

R3 Venugopal, Engineering Drawing and Graphics, New Age publishers

R4 Dhananjay A. Jolhe, Engineering Drawing, Tata McGraw Hill Publishers

R5 N.S.Parthasarathy, Vela Murali, Engineering Drawing, Oxford Higher Education

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO ENGINEERING GRAPHICS, LETTERING, LINES AND DIMENSIONING, CONICS, CYCLOIDS, INVOLUTES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
1	**UNIT I: INTRODUCTION:** Introduction to Engineering Drawing, CEOs, COs, PEOs, and POs and PSOs	2	18-08-2025		TLM1/ TLM2	
2	Principles of Engineering Graphics and their significance, Drawing Instruments and their use- Conventions in Drawing – Practical orientation					
3	Lettering and Dimensioning – BIS Conventions- Geometrical Constructions – Theory Class					
4	Practice	3	19-08-2025		TLM4	
5	Engineering Curves: Conic Sections- Construction of ellipse, parabola and Hyperbola –Theory class	2	25-08-2025		TLM1	
6	Construction of Parabola, ellipse, hyperbola – General method -Practice	3	26-08-2025		TLM4	
7	Cycloids –Theory class	2	01-09-2025		TLM1	
8	Practice Session	3	02-09-2025		TLM4	
9	Involutes – Theory class	2	08-09-2025		TLM1	
10	Practice Session	3	09-09-2025		TLM4	
No. of classes required to complete UNIT-I: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-II: PROJECTIONS OF POINTS, LINES AND PLANES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
9	Orthographic Projections, First and third angle projection methods, Projections of Points, Lines inclined to one plane	2	15-09-2025		TLM1	
10	Practice Session	3	16-09-2025		TLM4	
11	Projection of lines - Projections of Straight Line Inclined to both the reference planes	2	22-09-2025		TLM1	
12	Practice Session	3	23-09-2025		TLM4	
13	Projections of planes- Regular planes Perpendicular to both reference planes, parallel to one reference plane and inclined to the other reference plane; plane inclined to both the reference planes.	2	06-10-2025		TLM1	
14	Practice Session	3	07-10-2025		TLM4	
15	Revision -unit-1	2	13-10-2025		TLM1	
16	Revision -unit-2	3	14-10-2025		TLM1	
No. of classes required to complete UNIT-II: 20 (Lecture:6 Practice:9)				**No. of classes taken: (including Practice)**		

UNIT-III: PROJECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
16	Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane – Theory and practice	2	27-10-2025		TLM1 TLM4	
17	Axis parallel to both the reference planes, Projection of Solids with axis inclined to one reference plane and parallel to another plane.	3	28-03-2025		TLM1	
18	Practice Session	2	03-11-2025		TLM 4	
No. of classes required to complete UNIT-III: 07 (Lecture:3 Practice:5)				**No. of classes taken: (including Practice)**		

UNIT-IV: SECTIONS OF SOLIDS AND DEVELOPMENT OF SURFACES

S. No.	Topics to be covered	No. of Class Required	Tentative Date	ActualDate	Teaching Learning ng Method	HOD Sign Weekly
19	Sections of Solids Solids in simple positions, Perpendicular and inclined section planes	3	04-11-2025		TLM1	
20	Practice Session	2	10-11-2025		TLM4	
21	Sections of solids: Sectional views and True shape of section	3	11-11-2025		TLM1	
22	Practice Session	2	17-11-2025		TLM4	
23	Development of solids Methods of Development: Parallel line development and radial line development	3	18-11-2025		TLM1	
24	Practice Session	2	24-11-2025		TLM4	
25	Development of solids Development of a cube, prism, cylinder, pyramid and cone.	3	25-11-2025		TLM1	
No. of classes required to complete UNIT-IV: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-V: CONVERSION OF VIEWS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
26	Introduction to Isometric Views – Theory Isometric views, isometric axes, scale, lines & planes	2	01-12-2025		TLM1	
27	Practice Session	3	02-12-2025		TLM4	
28	Orthographic projections to Isometric Projections	2	08-12-2025		TLM1	
29	Practice Session	3	09-12-2025		TLM4	
30	Orthographic Projections to Isometric Projections	2	15-12-2025		TLM1	
31	Practice Session	3	16-12-2025		TLM4	
32	**Content beyond the syllabus:** Scales, Planes inclined to both the planes.	2	22-12-2025		TLM1/ TLM2	
33	Revision	3	23-12-2025		TLM1	

No. of classes required to complete UNIT-V: 20 (Lecture:12 Practice:15)	No. of classes taken:

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
I-Descriptive Examination (Units-I, II)	M1=15
II- Descriptive Examination (UNIT-III , IV & V)	M2=15
Day to Day Evaluation (Assignment)	15
Mid Marks =80% of Max (M1,M2)+ 20% of Min ((M1, M2) + Day to Day Evaluation	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and designsystem components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with anunderstanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainabledevelopment.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports anddesign documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, tomanage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage inindependent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	**To apply the principles of thermal sciences to design and develop various thermal systems.**
PSO2	**To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.**
PSO3	**To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.**

Title	**Course Instructor**	**Course Coordinator**	**Head of the Department**
Name of the Faculty	Dr.B.Sudheer Kumar	Mr.J.Subba Reddy	Dr. M B S S Reddy
Signature			

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. D. Chaithanya
Course Name & Code : Communicative English Lab, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech (ECE-C) I SEM
A.Y. : 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of introducing this course, Communicative English Laboratory, is to expose the students to a variety of self-instructional, learner friendly modes of language learning. The students will get trained in basic communication skills and also make them ready to face job interviews.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the different aspect of the English language proficiency with emphasis on LSRW skills.	L2
CO2	Apply Communication Skills through various language learning activities	L3
CO3	Identifying the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking, comprehension.	L2
CO4	Exhibit professionalism in participating in debates and group discussions.	L3

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

Course Outcomes / PO's →	Programme Outcomes											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	-	-	-	2	-	-	-	-	3	3	-	2
CO2.	-	-	-	2	-	-	-	-	3	3	-	2
CO3.	-	-	-	2	-	-	-	-	3	3	-	2
CO4.	-	-	-	2	-	-	-	-	3	3	-	2
1 = Slight (Low)				**2= Moderate (Medium)**						**3 = Substantial (High)**		

List of Activities:

1. Vowels& Consonants

2. Neutralization/ Accent Rules

3. Communication Skills: JAM

4. Roleplay or Conversational Practice

5. E-mail Writing

6. Resume writing, Cover letter, SOP

7. Group Discussions - methods & Practice

8. Debates – Methods and practice

9. PPT Presentations & Poster Presentations

10. Interview Skills

Suggested Software:

1. Walden

2. Young India Films

Reference Books:

Raman Meenakshi, Sangeeta-Sharma, *Technical Communication,* Oxford Press 2018.
Taylor Grant: *English Conversation Practice,* Tata McGraw-Hill Education India, 2016.
Hewing's, Martin, Cambridge Academic English (B2), CUP, 2012.
J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English, (*2nd Ed.*,)Kindle, 2013.*

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	21-08-2025		TLM4	
2.	Self Introduction & Introducing others	03	28-08-2025		TLM4	
3.	Vowels & Consonants	06	04-09-2025 11-09-2025		TLM1, TLM5	
4.	Neutralization / Accent rules	03	18-09-2025		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	06	25-09-2025 9-10-2025		TLM4	

6.	Role Play-I(Formal and Informal)	06	16-10-2025 23-10-2025		TLM4	
7.	E-mail Writing, resume writing, Cover letter, SOP	06	30-10-2025 06-11-2025		TLM1, TLM5	
8.	Group Discussion	03	13-11-2025		TLM4, TLM6	
9.	Debate	03	20-11-2025		TLM4, TLM6	
10.	PPT & Poster Presentation	06	27-11-2025 04-12-2025		TLM2, TLM4	
11.	Mock Interviews	03	11-12-2025		TLM1, TLM6	
12.	Lab Internal Exam	03	18-12-2025			
No. of classes required to complete Syllabus: 51				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Laboratory Examination:

Evaluation Task	**Marks**
Day-to-Day Work	A1 = 10
Record & Observation	B1 = 5
Internal Exam	C1 = 15
Cumulative Internal Examination (CIE): (A1+B1+C1)	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs. D.Chaithanya**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

FRESHMANENGINEERINGDEPARTMENT

COURSEHANDOUT

Part-A

PROGRAM	**:**	**B.Tech.,I-Sem.,ECE-C**
ACADEMICYEAR	**:**	**2025-26**
COURSENAME &CODE	**:**	**ENGINEERING PHYSICS LAB**
L-T-PSTRUCTURE	**:**	**0 – 0 – 3**
COURSECREDITS	**:**	**1**
COURSEINSTRUCTOR	**:**	**Dr. P. Sobhanachalam / Dr. N.Aruna**
COURSECOORDINATOR	**:**	

Pre-requisites : Nil

Course Objective: To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes:

CO1: Analyze the wave properties of light using optical instruments (Apply-L3).
CO2: Estimate the elastic modulii of various materials and acceleration due to gravity (Apply-L3).
CO3: Demonstrate the vibrations in stretched strings (Understand-L2).
CO4: Evaluate dielectric constant and magnetic field of circular coil carrying current (Apply-L3).
CO5: Examine the characteristics of semiconductor devices (Apply-L3).

Course articulation matrix (Correlation between CO's and PO's):

Engineering Physics Lab												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes PO's	**Programme Outcomes**											
▶	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO2.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO3.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO4.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO5.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
1 = slight (Low) 2 = Moderate (Medium) 3 = Substantial (High)												

List of Experiments

1. Determination of radius of curvature of a given Plano - Convex lens by Newton's rings.
2. Determination of dielectric constant using charging and discharging method.
3. Determination of wavelength of a laser light using diffraction grating.
4. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.
5. Determination of temperature coefficients of a thermistor.
6. Determination of acceleration due to gravity and radius of Gyration by using a compound pendulum.
7. Determination of Frequency of electrically maintained tuning fork by Melde's experiment.
8. Determination of rigidity modulus of the material of the given wire using Torsional pendulum.
9. Sonometer- Verification of laws of a stretched string.
10. Determination of energy band gap of a semiconductor using p-n junction diode.
11. Verification of Brewster's Law.
12. Determination of Hall coefficient and Hall voltage.

References:

- A Textbook of Practical Physics – S. Balasubramanian, M.N. Srinivasan, S. Chand publishers-2017.

BOSAPPROVEDTEXTBOOKS:

1. LabManualPreparedbytheLBRCE.

EVALUATIONPROCESS:

Evaluation Task	**Marks**
Day-to-Day Work	A1 = **10**
Record & Observation	B1 = **5**
Internal Exam	C1 = **15**
Cumulative Internal Examination (CIE): (A1+B1+C1)	**30**
Semester End Examination (SEE)	**70**
Total Marks = CIE + SEE	**100**

Part-B

COURSEDELIVERYPLAN (LESSONPLAN): ECE-C

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	Introduction & Demonstration	3	19.8.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
2.	Experiment1	3	26.8.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
3.	Experiment2	3	2.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
4.	Experiment3	3	9.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
5.	Experiment 3	3	16.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
6.	Experiment 4	3	23.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
7.	Experiment5	3	7.10.25		---	---	---	
8.	Experiment 6	3	14.10.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
9.	**MID-1 Exam**	3	21.01.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
10.	Experiment 7	3	28.10.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
11.	Experiment8	3	4.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
12.	Experiment 8	3	11.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
13.	Experiment 9	3	18.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
14.	Experiment 10	3	25.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
15.	Revision	3	2.12.25		**TLM-4**	CO1, CO2,CO3,CO4	T1	
16.	Revision	3	9.12.25		**TLM-4**	& CO	T1	
17.	**Internal Exam**	3	16.12.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
18.	**Internal**	3	23.12.25		**TLM-4**	CO1, CO2,CO3,CO4	T1	

	Exam					& CO5		
19.	**MID-2 Exam**	3	30.12.25					
No.of classes required to completed		16			No.of classes taken:			

PROGRAM OUT COMES: Engineering Graduates will be able to:

(1).**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

(2).**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

(3).**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

(4). **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

(5). **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

(6). **The engineer and society**: Apply reasoning informed by the contextual knowledge to assesssocietal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

(7). Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

(8). Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

(9). **Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams and in multi disciplinary settings.

(10).**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

(11).**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

(12). **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CourseInstructor	CourseCoordinator	ModuleCoordinator	H.O.D
Dr. P. Sobhanachalam/ Dr. N.Aruna	**Dr.S.YUSUF**	**Dr.S.YUSUF**	**Dr.T. Satyanarayana**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with "A" Grade & NBA (Under Tier - I)

An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution

Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada

L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.

Phone: 08659-222933, **Fax**: 08659-222931

DEPARTMENT OF ECE

LAB HANDOUT

PART-A

Name of Course Instructor : P.James Vijay, N.Dharmachari, Ms.T.LakshmiTirupathamma,Dr.B.Sivahariprasad

Course Name & Code : Electrical & Electronics Engineering Workshop (E & EE WS)

L-T-P Structure : 0-0-3 **Credits** : 1.5

Program/Sem : B.Tech. ECE- I Sem-Sec C **A.Y.** : 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

To impart knowledge on the principles of digital electronics and fundamentals of electron devices & its applications.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Compute voltage, current and power in an electrical circuit. (**Apply**)
CO2	Compute medium resistance using Wheat stone bridge. (**Apply**)
CO3	Discover critical field resistance and critical speed of DC shunt generators. (**Apply**)
CO4	Estimate reactive power and power factor in electrical loads. (**Understand**)
CO5	Plot the characteristics of semiconductor devices. (**Apply**)
CO6	Demonstrate the working of various logic gates using ICs. (**Understand**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	2						2	3	2		1				
CO2	2	2		2				2	2	2						
CO3	2	2	2	2				2	2	2				2		
CO4	2	2		3				2	3	2		1	2			
CO5	3	2			2			2	2	2	1	1	2	2	3	2
CO6	3	3		2	2			2	3	3		1			3	
1 - Low **2 –**Medium **3 -** High																

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to BEEE Lab (Function Generators, CRO, RPS, Breadboard etc), Course Objectives and Outcomes. Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	20-08-2025		TLM4	
2.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator.	3	03-09-2025		TLM4	
3.	Implementation of half wave and full wave rectifiers	3	10-09-2025		TLM4	
4.	Plot Input & Output characteristics of BJT in CB configuration	3	17-09-2025		TLM4	
5.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	24-09-2025		TLM4	
6.	Verification of Truth Tables of S-R, J-K& D flip flops using respective ICs	3	09-10-2025		TLM4	
7.	Internal Lab Examination (**Electronics**)	3	16-10-2024		TLM4	
No. of classes required: 21				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work	1,2,3,4,5,6,7,8…	A1 =10
Record and observation	1,2,3,4,5,6,7,8…	B1 = 5
Internal Exam	1,2,3,4,5,6,7,8…	**C1=15**
Cumulative Internal Examination (CIE):(A1+B1+C1)	1,2,3,4,5,6,7,8…	**30**
Semester End Examination (SEE)	1,2,3,4,5,6,7,8…	**70**
Total Marks=CIE+SEE		**100**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 31-07-2024

Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Mr.P.James Vijay	Mr.M.Sambasivareddy	Dr. B.V.N.R.Sivakumar	Dr. G. Srinivasulu

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230
hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRONICS &COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. M.Samyuktha
Course Name & Code :IT WORKSHOP Lab &23IT51
L-T-P Structure :0-0-2 **Credits:1**
Program/Sem/Sec : B.Tech. - ECE/I/E **A.Y.:**2025-26
PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to impart knowledge about the components of PC, Assembling PC, Installation of OS, software's like MS-Office, LaTeX and concepts related to Networking, Internet as well as antivirus.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC. (Understand)
CO2	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO3	Build dialogs and documents using ChatGPT. (Apply)
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. (Apply)

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
CO2	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO3	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1 - Low **2** –Medium **3** –High

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 3rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, PearsonEducation,2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.

R6	IT Essentials PC Hardware and Software Companion Guide, David Anfins on and KenQuamme. –CISCO Press, Pearson Education, 3rd edition.
R7	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan– CISCO Press,Pearson Education, 3rd edition.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	22-08-2025		**DM5**	
2.	Task-2	3	22-08-2025		**DM5**	
3.	Task-3	3	29-08-2025		**DM5**	
4.	Task-4	3	05-09-2025		**DM5**	
5.	Task-5	3	05-09-2025		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	12-09-2025		**DM5**	
7.	Task-2	3	19-09-2025		**DM5**	
8.	Task-3	3	26-09-2025		**DM5**	
9.	Task-4	3	10-10-2025		**DM5**	
LaTex and WORD						
10.	Task-1	3	10-10-2025		**DM5**	
11.	Task-2	3	17-10-2025		**DM5**	
12.	Task-3	3	31-10-2025		**DM5**	
13.	Task-4	3	07-11-2025		**DM5**	
EXCEL						
14.	Task-1	3	07-11-2025		**DM5**	
15.	Task-2	3	14-11-2025		**DM5**	
LOOKUP/VLOOKUP						
16.	Task-1	3	21-11-2025		**DM5**	
POWER POINT						
17.	Task-1	3	21-11-2025		**DM5**	
18.	Task-2	3	28-11-2025		**DM5**	
19.	Task-3	3	05-12-2025		**DM5**	
AI TOOLS – ChatGPT						
20.	Task-1	3	12-12-2025		**DM5**	

21.	Task-2	3	19-12-2025		**DM5**	
22.	Task-3	3	19-12-2025		**DM5**	
23.	Internal exam	3	26-12-2025		**DM5**	

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IOT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Ms.M.Samyuktha	Mr. N Srikanth	**Dr. D.Venkata Subbaiah**	Dr.S. Nagarjuna Reddy
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: **K. Raju**
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem/ ECE-D
A.Y. : 2025-26

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objective of introducing this course, *Communicative English,* is to facilitate effective Listening, Reading, Speaking and Writing skills among the students. It enhances the same in their comprehending abilities, oral presentations, reporting useful information and providing knowledge of grammatical structures and vocabulary. This course helps the students to make them effective in speaking and writing skills and to make them industry ready.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the context, topic, and pieces of specific information from social or Transactional dialogues.	L2
CO2	Apply grammatical structures to formulate sentences and correct word forms.	L3
CO3	Use discourse markers to speak clearly on a specific topic in informal discussions.	L3
CO4	Read / Listen the texts and write summaries based on global comprehension of these texts.	L2
CO5	Prepare a coherent paragraph, essay, and resume.	L3

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

Course Outcomes / PO's →	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	-	-	-	1	-	-	-	-	3	3	-	2
CO2.	-	-	-	1	-	-	-	-	3	3	-	2
CO3.	-	-	-	1	-	-	-	-	3	3	-	2
CO4.	-	-	-	1	-	-	-	-	3	3	-	2
CO5.	-	-	-	1	-	-	-	-	3	3	-	2
1 = Slight (Low)			2= Moderate (Medium)					3 = Substantial (High)				

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	2 Weeks	04-08-2025 TO 16-08-2025		TLM1	CO1		
2.	Introduction to the course				TLM1	CO1		
3.	Course Outcomes, Program Outcomes				TLM2	CO1		

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	18/08/25 20/08/25		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23/08/25 25/08/25		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	30/08/25 01/09/25		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	03/09/25 06/09/25		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	08/09/25		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	10/09/25 15/09/25		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 11						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	02	17/09/25 20/09/25		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	22/09/25 24/09/25		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	27/09/25 06/10/25		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	02	08/10/25 11/10/25		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	01	13/10/25		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	01	15/10/25		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 10						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	18/10/25 27/10/25		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	29/10/25 01/11/25		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	03/11/25 05/11/25		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	10/11/25 12/11/25		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	15/11/25		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	17/11/25 19/11/25		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	22/11/25 24/11/25		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	26/11/25 29/11/25		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	01/12/25 03/12/25		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	06/12/25		TLM2 TLM5	CO4	T1,T2	

No. of classes required to complete UNIT-IV: 09			No. of classes taken:

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	02	08/12/25 10/12/25		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	15/12/25		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	17/12/25		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	20/12/25		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	22/12/25		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 08						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Word Analogy**	01	27/12/25		TLM2 &5	
2.	**One-word substitutes**	01	27/12/25		TLM2 &5	
3.	**Technical vocabulary**	01	27/12/25		TLM2 &5	
No. of classes required to complete UNIT-V:				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**K. Raju**	**Dr. R. Padma**	**Dr. R. Padma**	**Dr. T. Satyanarayana**
Signature				

FRESHMANENGINEERINGDEPARTMENT

COURSEHANDOUT

PART-A

PROGRAM	**:I B.Tech.,I-Sem., ECE-D**
ACADEMICYEAR	**:2025-26**
COURSENAME &CODE	**:ENGINEERING PHYSICS**
L-T-PSTRUCTURE	**:4-0-0**
COURSECREDITS	**:3**
COURSEINSTRUCTOR	**:Dr. Kumara Raja Kandula**
PRE-REQUISITE	**: Basic Knowledge of Physics**

Course Objectives:

To bridge the gap between the physics in school at 10+2 level and UG level engineering courses by identifying the importance of the optical phenomenon like interference, diffraction etc, enlightening the periodic arrangement of atoms in crystalline solids and concepts of quantum mechanics, introduce novel concepts of dielectric and magnetic materials, physics of semiconductors.

COURSE OUTCOMES (COs): At the end of this course, the student will be able to

CO1	Analyze the intensity variation of light due to interference, diffraction and Polarization (Apply)
CO2	Understand the basics of crystals and their structures (Understand)
CO3	Summarize various types of polarization of dielectrics and classify the magnetic materials (Understand)
CO4	Explain fundamentals of quantum mechanics and free electron theory of metals (Understand)
CO5	Identify the type of semiconductor using Hall Effect (Apply)

COURSE ARTICULATION MATRIX (Correlation between COs, Pos & PSOs):

ENGINEERING PHYSICS												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes PO's	**Programme Outcomes**											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1. →	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO2.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO3.	**3**	**3**	**2**	**1**	**1**	**1**						**1**
CO4.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
CO5.	**3**	**3**	**2**	**1**	**1**	**1**	**1**					**1**
1 = Slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

TEXT BOOKS

1. A Text book of "Engineering Physics" M.N. Avadhanulu, P.G. Kshirsagar, TVS Arun Murthy, S. Chand & Co., 11th Edition, 2019.
2. Engineering Physics – *D.K. Bhattacharya & Poonam Tandon, Oxford press (2015)*

REFERENCES

1. Engineering Physics -B.K.Pandey& S. Chaturvedi, Cengage Learning 2021.
2. Engineering Physics -Shatendra Sharma, Jyotsna Sharma, Pearson Education, 2018.
3. Engineering Physics -Sanjay D. Jain, D. Sahasrabudhe and Girish, University Press 2010.
4. Engineering Physics -M.R. Srinivasan, New Age international publishers (2009).

WEBRESOURCES

1. http://www.loc.gov/rr/scitech/selected-internet/physics.html
2. http://www.freebookcentre.net/Physics/Solid-State-Physics-Books.html
3. http://physicsdatabase.com/free-physics-books/
4. http://www.e-booksdirectory.com
5. http://www.thphys.physics.ox.ac.uk

TEACHINGLEARNINGMETHODS			
TLM-1	Chalk and Talk	**TLM-4**	Demonstration(Lab/Field Visit)
TLM-2	PPT/A illustrations	**TLM-5**	ICT(NPTEL/Swayam Prabha /MOOCS)
TLM-3	Tutorial/Quiz/Assignment	**TLM-6**	Group Discussion/Project

PART-B

COURSEDELIVERYPLAN(LESSONPLAN):

UNIT-I:INTERFERENCE, DIFFRACTION& POLARIZATION

Course Outcome :-CO1;TextBook:-T1,R2

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Introduction to the Subject, Course Outcomes	1	18-08-2025		**TLM-2**		
2	Principle of superposition, Interference of light	1	20-08-2025		**TLM-3**		
3	Interference in thin films by reflection & applications	1	21-08-2025		**TLM-2**		
4	Colors in thin films, Newton's rings	1	22-08-2025		**TLM-1**		
5	Determination of wavelength and refractive index	1	25-08-2025		**TLM-4**		
6	Problems& Assignment/Quiz	1	28-08-2025		**TLM-1**		
7	Introduction, Fresnel and	1	29-08-2025		**TLM-3**		

	Fraunhoffer diffractions						
8	Fraunhoffer diffraction due to single slit	1	01-09-2025		**TLM-2**		
9	Double slit& N slits(Qualitative)	1	03-09-2025		**TLM-4**		
10	Diffraction Grating, Dispersive power & Resolving power of Grating-Qualitative	1	04-09-2025		**TLM-4**		
11	Problems& Assignment/Quiz	1	08-09-2025		**TLM-3**		
12	Introduction – Types of polarization	1	10-09-2025		**TLM-2**		
13	Polarization by reflection, refraction & double refraction	1	11-09-2025		**TLM-2**		
14	Nicol's prism	1	12-09-2025		**TLM-5**		
15	Half wave and Quarter wave plates	1	15-09-2025		**TLM-2**		
16	Problems& Assignment/Quiz	1	17-09-2025		**TLM-3**		
No.of classes required to complete UNIT-I:16				No.of classes taken:			

UNIT-II:CRYSTALLOGRAPHY & X– RAY DIFFRACTION

Course Outcome :-CO2;TextBook:-T1,R2

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Space lattice; Basis, Unit cell & Lattice parameters	1	18-09-2025		**TLM-3**		
2	Bravais Lattices	1	19-09-2025		**TLM-2**		
3	Crystal Systems(3D)	1	22-09-2025		**TLM-2**		
4	Coordination number – Packing fraction of –SC, BCC	1	24-09-2025		**TLM-1**		
5	Coordination number – Packing fraction of FCC	1	25-09-2025		**TLM-1**		
6	Miller indices& Properties	1	26-09-2025		**TLM-2**		
7	Separation between successive (hkl) planes	1	06-10-2025		**TLM-1**		

8	Bragg's law; X–ray Diffractometer	1	08-10-2025		**TLM-3**		
9	Crystal Structure determination by Laue's method	1	09-10-2025		**TLM-2**		
10	Crystal Structure determination by Powder method	1	10-10-2025		**TLM-5**		
11	Problems& Assignment/Quiz	1	13-10-2025		**TLM-3**		
12	Revision	1	15-10-2025		**TLM-3**		
13	Revision	1	16-10-2025		**TLM-3**		
14	Revision	1	17-10-2025		**TLM-3**		
15	MID-1 Examinations	1	22-10-2025		**----**		
16	MID-1 Examinations	1	23-10-2025		**----**		
17	MID-1 Examinations	1	24-10-2025		**----**		
No.of classes required to complete UNIT-II: 14				No.of classes taken:			

UNIT-III :DIELECTRIC & MAGNETIC MATERIALS

Course Outcome :-CO3;TextBook:-T1,R2

S.No	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Dielectric polarization Dielectric polarizability, Susceptibility	1	27-10-2025		**TLM-2**		
2	Dielectric constant & Displacement Vector, Relation between the electric vectors	1	29-10-2025		**TLM-3**		
3	Types of polarizations-Electronic polarization	1	30-10-2025		**TLM-1**		
4	Types of polarizations- ionic & orientation polarizations (Qualitative)	1	31-10-2025		**TLM-1**		
5	Lorentz internal field	1	03-11-2025		**TLM-2**		

6	Claussius-Mosotti equation, Complex dielectric constant	1	05-11-2025		**TLM-1**		
7	Frequency dependence of polarization dielectric loss	1	06-11-2025		**TLM-5**		
8	Problems& Assignment/Quiz	1	07-11-2025		**TLM-3**		
9	Introduction Magnetic dipole moment, Magnetization Magnetic susceptibility & permeability	1	10-11-2025		**TLM-4**		
10	Atomic origin of magnetism	1	12-11-2025		**TLM-1**		
11	Classification of magnetic materials-Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	13-11-2025		**TLM-2**		
12	Domain concept for Ferromagnetism & Domain walls	1	14-11-2025		**TLM-2**		
13	Hysteresis	1	17-11-2025		**TLM-5**		
14	soft and hard magnetic materials	1	19-11-2025		**TLM-1**		
15	Problems& Assignment/Quiz	1	20-11-2025		**TLM-3**		
No.of classes required to complete UNIT-III: 15				No.of classes taken:			

UNIT-IV :QUANTUM MECHANICS & FREE ELECTRON THEORY

Course Outcome :-CO4;TextBook:-T1,R2

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Dual nature of matter,De-Broglie's Hypothesis	1	21-11-2025		**TLM-2**		
2	Heisenberg's Uncertainty Principle	1	24-11-2025		**TLM-2**		
3	Significance & properties of wave function	1	26-11-2025		**TLM-2**		
4	Schrodinger's time independent and dependent wave equations	1	27-11-2025		**TLM-1**		
5	Particle in a one – dimensional infinite potential well	1	28-11-2025		**TLM-1**		

6	Problems& Assignment/Quiz	1	01-12-2025		**TLM-3**		
7	Classical free electron theory-merits and demerits, Quantum free electron theory	1	03-12-2025		**TLM-2**		
8	Electrical conductivity based on quantum free electron theory	1	04-12-2025		**TLM-1**		
9	Fermi -Dirac distribution and temperature dependence	1	05-12-2025		**TLM-5**		
10	Density of states, Fermi energy	1	08-12-2025		**TLM-1**		
11	Problems& Assignment/Quiz	1	10-12-2025		**TLM-3**		
No.of classes required to complete UNIT-IV:11				No.of classes taken:			

UNIT-V: SEMICONDUCTOR PHYSICS

Course Outcome :-CO5;TextBook:-T2,R1

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Formation of energy bands, Classification of crystalline solids	1	11-12-2025		**TLM-6**		
2	Intrinsic semiconductors, Density of charge carriers	1	12-12-2025		**TLM-1**		
3	Electrical conductivity, Fermi level	1	15-12-2025		**TLM-2**		
4	Extrinsic semiconductors, Density of charge carriers	1	17-12-2025		**TLM-1**		
5	Dependence of Fermi energy on carrier concentration &temperature	1	18-12-2025		**TLM-2**		
6	Drift and Diffusion Currents, Einstein's equation	1	19-12-2025		**TLM-1**		
7	Hall Effect & its applications	1	22-12-2025		**TLM-4**		

8.	Problems& Assignment/Quiz	1	24-12-2025		**TLM-3**		
9	Revision	1	26-12-2025		**TLM-3**		
10	MID-2 Examinations	1	29-12-2025				
11	MID-2 Examinations	1	31-12-2025				
12	MID-2 Examinations	1	01-01-2026				
12	MID-2 Examinations	1	02-01-2026		**----**		
No.of classes required to complete UNIT-V:09				No.of classes taken:			

PART-C

EVALUATION PROCESS(R-23Regulation)

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=**5**
I-Descriptive Examination (Units-I, II)	M1=**15**
I-Quiz Examination (Units-I, II)	Q1=**10**
Assignment-II (Unit-III, IV & V)	A2=**5**
II- Descriptive Examination (UNIT-III, IV & V)	M2=**15**
II-Quiz Examination (UNIT-III, IV & V)	Q2=**10**
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=**30**
Cumulative Internal Examination (CIE): M	**30**
Semester End Examination (SEE)	**70**
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMMEOUTCOMES(POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals,andanengineeringspecializationtothesolutionofcomplex engineeringproblems.
PO 2	**Problem analysis**:Identify,formulate,reviewer search literature,and analyze complexengineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics,natural sciences,and engineering sciences.

PO 3	**Design/development of solutions**:Design solutions for complex engineering problems and design system components or processes that meet the specified needswithappropriateconsiderationforthepublichealthandsafety,and the cultural, societal,and environmental considerations.
PO 4	**Conductivestigations of complex problems**:Use research-based knowledge and Research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**:Create,select,and apply appropriate techniques,resources,and Modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**:Apply reasoning informed by the contextual knowledge to assesssocietal, health,safety,legal and cultural is sues and the consequent responsibilitiesrelevanttotheprofessionalengineeringpractice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts,and demonstrate the Knowledge of,and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and Responsibilities and norms of the engineering practice.
PO 9	**Individualandteamwork**:Functioneffectivelyasanindividual,andasamember orleaderindiverseteams,andinmultidisciplinarysettings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as,being able to comprehend and write effective reports and design documentation,make effective presentations,and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as amember and lead erina team,to manageprojectsandinmultidisciplinary environments.
PO 12	**Life-long learning**:Recognizetheneedforandhavethepreparationandabilityto engageinindependentandlife-longlearninginthebroadestcontextoftechnologicalchange.

CourseInstructor	Course Coordinator	ModuleCoordinator	HOD
Dr. Kumara Raja Kandula	**Dr.S.YUSUF**	**Dr.S.YUSUF**	**Dr.T.Sathyanarayana**

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., ECE-D
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : K. N. V. Lakshmi
COURSE COORDINATOR : Dr. K. Bhanu Lakshmi
PRE-REQUISITES : Basics of Matrices, Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs): To equip the students with standard concepts and tools at an intermediate to advanced level Mathematics, to develop the confidence and ability among the students to handle various real-world problems and their applications.

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

CO1: Apply matrix algebra techniques to solve engineering problems – **L3**
CO2: Use Eigen values and Eigen vectors concept to find nature of quadratic form, inverse and powers of matrix – **L3**
CO3: Expand various functions using Mean value theorems – **L2**
CO4: Understand the concepts of functions of several variables which are useful in optimization – **L2**
CO5: Evaluate areas and volumes by using double and triple integrals – **L3**

COURSE ARTICULATION MATRIX (Correlation between Cos &POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	-	-	-	-	-	-	1
CO2	3	2	-	-	-	-	-	-	-	-	-	1
CO3	3	1	-	-	-	-	-	-	-	-	-	1
CO4	3	2	-	-	-	-	-	-	-	-	-	1
CO5	3	2	-	-	-	-	-	-	-	-	-	1

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 44nd Edition, Khanna Publishers, New Delhi, 2017.
T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

R1 George B. Thomas, Maurice D. Weir and Joel Hass, "*Thomas Calculus*", 14th Edition, Pearson Publishers, 2018.
R2 R.K. Jain and S.R.K. Iyengar, "*Advanced Engineering Mathematics*", 5th Edition (9th reprint), Alpha Science International Ltd., 2021.
R3 Glyn James, "*Advanced Modern Engineering Mathematics*", 5th Edition, Pearson Publishers, 2018.
R4 Michael D. Greenberg, "*Advanced Engineering Mathematics*", 9th Edition, Pearson Publishers.

R5 H.K. Das, Er. Rajnish Verma, "*Higher Engineering Mathematics*", 3rd Edition (Reprint 2021), S. Chand Publications, 2014.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	04-08-2025 To 16-08-2025	04-08-2025 To 16-08-2025	TLM1			
2.	Introduction to the course	1	19-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-08-2025		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	21-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	21-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	22-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	26-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	28-08-2025		TLM1	CO1	T1,T2	
9.	**TUTORIAL I**	1	28-08-2025		TLM3	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	29-08-2025		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	02-09-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	04-09-2025		TLM1	CO1	T1,T2	
14.	**TUTORIAL II**	1	04-09-2025		TLM3	CO1	T1,T2	
15.	Gauss Elimination Method	1	05-09-2025		TLM1	CO1	T1,T2	
16.	Jacobi Iteration Method	1	09-09-2025		TLM1	CO1	T1,T2	
17.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
18.	Gauss-Seidel Method	1	11-09-2025		TLM1	CO1	T1,T2	
19.	**TUTORIAL III**	1	11-09-2025		TLM3	CO1	T1,T2	
20.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
21.	Problems	1	16-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

UNIT-II: Eigen Values, Eigen Vectors and Orthogonal Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	17-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	18-09-2025		TLM1	CO2	T1,T2	
24.	**TUTORIAL IV**	1	18-09-2025		TLM3	CO2	T1,T2	

25.	Eigen values, Eigen vectors	1	19-09-2025		TLM1	CO2	T1,T2	
26.	Properties	1	23-09-2025		TLM1	CO2	T1,T2	
27.	Properties	1	24-09-2025		TLM1	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	25-09-2025		TLM1	CO2	T1,T2	
29.	**TUTORIAL V**	1	25-09-2025		TLM3	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	26-09-2025		TLM1	CO2	T1,T2	
31.	Finding Inverse and Powers of matrix	1	07-10-2025		TLM1	CO2	T1,T2	
32.	Diagonalization of a matrix	1	08-10-2025		TLM1	CO2	T1,T2	
33.	Diagonalization of a matrix	1	09-10-2025		TLM1	CO2	T1,T2	
34.	**TUTORIAL VI**	1	09-10-2025		TLM3	CO2	T1,T2	
35.	Quadratic Forms, Nature of Quadratic Forms	1	10-10-2025		TLM1	CO2	T1,T2	
36.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	15-10-2025		TLM1	CO2	T1,T2	
38.	Orthogonal Transformation	1	16-10-2025		TLM1	CO2	T1,T2	
39.	**TUTORIAL VII**	1	16-10-2025		TLM3	CO2	T1,T2	
40.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		19			No. of classes taken:			

I MID EXAMINATIONS (20-10-2025 TO 25-10-2025)

UNIT-III: Calculus(Mean Value theorems)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
41.	Introduction to Unit III	1	28-10-2025		TLM1	CO3	T1,T2	
42.	Rolle's theorem	1	29-10-2025		TLM1	CO3	T1,T2	
43.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
44.	**TUTORIAL VIII**	1	30-10-2025		TLM3	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	31-10-2025		TLM1	CO3	T1,T2	
46.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
47.	Cauchy's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
48.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
49.	**TUTORIAL IX**	1	06-11-2025		TLM3	CO3	T1,T2	
50.	Taylor's theorem	1	07-11-2025		TLM1	CO3	T1,T2	
51.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
52.	Maclaurin's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
53.	Problems and applications	1	13-11-2025		TLM1	CO3	T1,T2	
54.	**TUTORIAL X**	1	13-11-2025		TLM3	CO3	T1,T2	
55.	Problems	1	14-11-2025		TLM1	CO3	T1,T2	

No. of classes required to complete UNIT-III	15	No. of classes taken:

UNIT-IV: Partial differentiation and Applications (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
56.	Introduction to Unit IV	1	18-11-2025		TLM1	CO4	T1,T2	
57.	Functions of several variables, Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
58.	Partial Derivatives	1	20-11-2025		TLM1	CO4	T1,T2	
59.	**TUTORIAL XI**	1	20-11-2025		TLM3	CO4	T1,T2	
60.	Total derivatives, Chain rule, Directional Derivative	1	21-11-2025		TLM1	CO4	T1,T2	
61.	Taylor's Series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
62.	Maclaurin's series expansion	1	26-11-2025		TLM1	CO4	T1,T2	
63.	Jacobian	1	27-11-2025		TLM1	CO4	T1,T2	
64.	**TUTORIAL XII**	1	27-11-2025		TLM3	CO4	T1,T2	
65.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
66.	Functional Dependence	1	02-12-2025		TLM1	CO4	T1,T2	
67.	Maxima and Minima	1	03-12-2025		TLM1	CO4	T1,T2	
68.	Lagrange Multiplier Method	1	04-12-2025		TLM1	CO4	T1,T2	
69.	**TUTORIAL XIII**	1	04-12-2025		TLM3	CO4	T1,T2	
70.	Lagrange Multiplier Method	1	05-12-2025		TLM1	CO4	T1,T2	
No. of classes required to complete UNIT-IV		15			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
71.	Introduction to Unit-V	1	09-12-2025		TLM1	CO5	T1,T2	
72.	Double Integrals - Cartesian coordinates	1	10-12-2025		TLM1	CO5	T1,T2	
73.	Double Integrals- Polar co ordinates	1	11-12-2025		TLM1	CO5	T1,T2	
74.	**TUTORIAL XIV**	1	11-12-2025		TLM3	CO5	T1,T2	
75.	Triple Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
76.	Triple Integrals - Spherical coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
77.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
78.	Change of order of Integration	1	18-12-2025		TLM1	CO5	T1,T2	
79.	**TUTORIAL XV**	1	18-12-2025		TLM3	CO5	T1,T2	

80.	Change of variables	1	19-12-2025		TLM1	CO5	T1,T2	
81.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	
82.	Finding Volume by double and triple Integral	1	24-12-2025		TLM1	CO5	T1,T2	
No. of classes required to complete UNIT-V		12			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
83.	Other applications of double integral	1	26-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 03-01-2025)								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Mrs. K. N. V. Lakshmi	**Dr. K. Bhanu Lakshmi**	**Dr. A. Rami Reddy**	**Dr. T. Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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Phone: 08659-222933, **Fax**: 08659-222931

DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: M. Sambasiva Reddy

Course Name & Code : Basic Electrical & Electronics Engineering – 23EE01

L-T-P Structure : **3-0-0** **Credits:** 3

Program/Sem./Sec. : B.Tech/I/ECE-D Sec **A.Y.:** 2025-26

Regulations: R23

Course Objectives (COs)

Basic Electrical Engineering:

To expose to the field of electrical & electronics engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.

Basic Electronics Engineering

To teach the fundamentals of semiconductor devices and its applications, principles of digital electronics.

Course Outcomes (COs): At the end of the course, student will be able to

PART-B: BASIC ELECTRONICS ENGINEERING	
CO4	Interpret the characteristics of various semiconductor devices **(Knowledge)**
CO5	Infer the operation of rectifiers, amplifiers. **(Understand)**
CO6	Contrast various logic gates, sequential and combinational logic circuits. **(Understand)**

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO4	3	2	-	-	-	-	-	-	-	-	-	1	2	-	3	2
CO5	3	2	-	-	-	-	-	-	-	-	-	1	2	-	3	2
CO6	2	2	2	-	-	-	-	-	-	-	-	-	2	-	2	1
1 - Low **2 –**Medium **3 -** High																

TEXTBOOKS:

1. R. L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009

REFERENCE BOOKS:

1. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017
2. Basic Electrical and Electronics Engineering, S. K. Bhatacharya, Person Publications, 2018, Second Edition.
3. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
4. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
5. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson Education, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE- D Section

PART B: BASIC ELECTRONICS ENGINEERING

UNIT-IV: Semiconductor Devices

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction – Course Outcomes	1	18-08-2025		TLM1	
2.	Evolution of electronics, Vacuum tubes to nano electronics	1	19-08-2025		TLM1	
3.	Characteristics of PN Junction Diode	1	22-08-2025		TLM1	
4.	Zener Effect — Zener Diode and its Characteristics	1	23-08-2025		TLM1	
5.	Zener Effect — Zener Diode and its Characteristics	1	25-08-2025		TLM1	
6.	Bipolar Junction Transistor	1	26-08-2025		TLM1	
7.	Bipolar Junction Transistor	1	29-08-2025		TLM1	
8.	CB Configurations and Characteristics	1	30-08-2025		TLM2	
9.	CE Configurations and Characteristics.	1	01-09-2025		TLM2	
10.	CC Configurations and Characteristics.	1	02-09-2025		TLM2	
11.	Elementary Treatment of Small Signal CE Amplifier.	1	06-09-2025		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-V: Basic Electronic Circuits and Instrumentation

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	**Rectifiers and power supplies**: Block diagram description of a DC power supply	1	08-09-2025		TLM1	
13.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	09-09-2025		TLM1	
14.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	12-09-2025		TLM1	
15.	Working of simple Zener voltage regulator.	1	13-09-2025		TLM1	
16.	**Amplifiers**: Block diagram of Public Address system	1	15-09-2025		TLM2	
17.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	16-09-2025		TLM2	
18.	**Electronic Instrumentation:** Block diagram of an electronic instrumentation system.	1	19-09-2025		TLM2	
19.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	20-09-2025		TLM2	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		

UNIT-VI: Digital Electronics

SI.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
20.	Overview of Number Systems	1	22-09-2025		TLM1	
21.	Logic gates including Universal	1	23-09-2025		TLM2	

22.	BCD codes, Excess-3 code, gray code	1	26-09-2025		TLM1	
23.	Hamming code	1	27-09-2025		TLM2	
24.	Boolean Algebra	1	06-10-2025		TLM1	
25.	Basic Theorems and properties of Boolean Algebra	1	07-10-2025		TLM1	
26.	Truth Tables and Functionality of Logic Gates NOT, OR, AND	1	10-10-2025		TLM2	
27.	NOR, NAND, XOR and XNOR	1	11-10-2025		TLM1	
28.	Simple combinational circuits	1	13-10-2025		TLM2	
29.	Half and Full Adders	1	14-10-2025		TLM2	
30.	Introduction to sequential circuits, Flip flops	1	17-10-2025		TLM1	
31.	Registers and counters	1	18-10-2025		TLM1	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

I Mid Examinations: 20-10-2025 to 25-10-2025

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-IV, V & UNIT-VI)	A1=5
I-Descriptive Examination (Units-IV, V & UNIT-VI)	M1=15
I-Quiz Examination (Units-IV, V & UNIT-VI)	Q1=10
Assignment-II (Units-I, II & UNIT-III)	A2=5
II- Descriptive Examination (Units-I, II & UNIT-III)	M2=15
II-Quiz Examination (Units-I, II & UNIT-III)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	**From**	**To**	**Weeks**
I Phase of Instructions	18-08-2025	27-09-2025	6W
Dasara Holydays	29-09-2025	04-10-2025	1W
I Phase of Instructions	06-10-2025	18-10-2025	2W
I Mid Examinations	20-10-2025	25-10-2025	1W
II Phase of Instructions	27-10-2025	27-12-2025	9W
II Mid Examinations	29-12-2025	03-01-2026	1W
Preparation and Practical's	05-01-2026	10-01-2026	1W
Semester End Examinations	19-01-2026	31-01-2026	2W

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 13-08-2025

Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
M. Sambasiva Reddy	Dr. A. Narendra Babu	Dr.B.V.N.R. Siva Kumar	Dr. G. Srinivasulu

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. B.Lavanya
Course Name & Code : IT Workshop Lab &23IT51
L-T-P Structure :0-0-2 **Credits:**1
Program/Sem/Sec : B.Tech - ECE/I/D **A.Y.:** 2025-26

PREREQUISITE :NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to impart knowledge about the components of PC, Assembling PC, Installation of OS, software's like MS-Office, LaTex and concepts related to Networking, Internet as well as antivirus.

COURSE OUTCOMES (COs): At the end of the course, the student will be able to

CO1	Identify the components of a PC and Assemble & disassemble the same. (Understand)
CO2	Experiment with installation of Operating System and Secure a computer from Cyber threats. (Apply)
CO3	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO4	Build dialogs and documents using ChatGPT. (Apply)

COURSE ARTICULATION MATRIX(Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
CO2	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO3	3	-	-	-	2	-	-	-	-	-	-	-	2	2	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 3rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, PearsonEducation,2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.
R6	IT Essentials PC Hardware and Software Companion Guide, David Anfins on and KenQuamme. –CISCO Press, Pearson Education, 3rd edition.
R7	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan– CISCO Press,Pearson Education, 3rd edition.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	19-08-2025		DM5	
2.	Task-2	3	19-08-2025		DM5	
3.	Task-3	3	26-08-2025		DM5	
4.	Task-4	3	02-09-2025		DM5	
5.	Task-5	3	02-09-2025		DM5	
Internet & World Wide Web						
6.	Task-1	3	09-09-2025		DM5	
7.	Task-2	3	09-09-2025		DM5	
8.	Task-3	3	16-09-2025		DM5	
9.	Task-4	3	16-09-2025		DM5	
LaTex and WORD						
10.	Task-1	3	23-09-2025		DM5	
11.	Task-2	3	07-10-2025		DM5	
12.	Task-3	3	14-10-2025		DM5	
13.	Task-4	3	28-10-2025		DM5	
EXCEL						
14.	Task-1	3	04-11-2025		DM5	
15.	Task-2	3	04-11-2025		DM5	
LOOKUP/VLOOKUP						

16.	Task-1	3	11-11-2025		DM5	
POWER POINT						
17.	Task-1	3	11-11-2025		DM5	
18.	Task-2	3	18-12-2025		DM5	
19.	Task-3	3	18-12-2025		DM5	
AI TOOLS – ChatGPT						
20.	Task-1	3	02-12-2025		DM5	
21.	Task-2	3	09-12-2025		DM5	
22.	Task-3	3	16-12-2025		DM5	
23.	Internal exam	3	23-12-2025		DM5	

Teaching Learning Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICT Tools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs.B.Lavanya**	**Mr.N.Srikanth**	**DR.D.Venkata subbaiah**	**DR.S.Nagarjuna Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(An Autonomous Institution since 2010)

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L.B. Reddy Nagar, Mylavaram, NTR District, Andhra Pradesh - 521230

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: **Dr. B. Sudheer Kumar, Sr.Asst.Professor,**
Mrs. B.Kamala Priya, Sr. Asst. Professor,
Mr. K. Sai Babu, Asst. Professor

Course Name & Code	**:** Engineering Drawing – 23ME01	
L-T-P Structure	**:** 3-0-4	**Credits:** 4
Program/Sem/Sec	: B.Tech/I Sem	**A.Y.:** 2025-26

COURSE EDUCATIONAL OBJECTIVES (CEOs): To recognize the Bureau of Indian Standards of Engineering Drawing and develop an ability to get familiarized with orthographic projections and isometric views of solid objects.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the principles of engineering drawing, including engineering curves, scales, Orthographic and isometric projections. (**Understanding Level –L2**)
CO2	Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views. (**Applying Level –L3**)
CO3	Understand and draw projection of solids in various positions in first quadrant. (**Applying Level –L3**)
CO4	Draw the development of surfaces of simple objects. (**Applying Level –L3**)
CO5	Prepare isometric and orthographic sections of simple solids. (**Applying Level –L3**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO2	3	2	1	2	-	-	-	-	-	-	-	3	1	1	2
CO3	3	2	2	-	-	-	-	-	-	-	-	3	-	1	2
CO4	3	2	2	-	-	-	-	-	-	-	-	3	2	1	2
CO5	3	2	2	-	-	-	-	-	-	-	-	3	-	-	-
1 - Low					**2** –Medium							**3** - High			

TEXTBOOKS:

T1 N. D. Bhatt, Engineering Drawing, 51th Revised and Enlarged Edition, Charotar publishers,2012

REFERENCE BOOKS:

R1 Narayana K L, Kannaiah P, Textbook on Engineering Drawing, 2nd Edition, SciTech publishers.

R2 R.K.Dhawan, Engineering Drawing, S.Chand Company LTD.

R3 Venugopal, Engineering Drawing and Graphics, New Age publishers

R4 Dhananjay A. Jolhe, Engineering Drawing, Tata McGraw Hill Publishers

R5 N.S.Parthasarathy, Vela Murali, Engineering Drawing, Oxford Higher Education

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO ENGINEERING GRAPHICS, LETTERING, LINES AND DIMENSIONING, CONICS, CYCLOIDS, INVOLUTES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
1	**UNIT I: INTRODUCTION:** Introduction to Engineering Drawing, CEOs, COs, PEOs, and POs and PSOs	2	20-08-2025		TLM1/ TLM2	
2	Principles of Engineering Graphics and their significance, Drawing Instruments and their use- Conventions in Drawing – Practical orientation					
3	Lettering and Dimensioning – BIS Conventions- Geometrical Constructions – Theory Class					
4	Practice	3	21-08-2025		TLM4	
5	Engineering Curves: Conic Sections- Construction of ellipse, parabola and Hyperbola –Theory class	2	27-08-2025		TLM1	
6	Construction of Parabola, ellipse, hyperbola – General method -Practice	3	28-08-2025		TLM4	
7	Cycloids –Theory class	2	03-09-2025		TLM1	
8	Practice Session	3	04-09-2025		TLM4	
9	Involutes – Theory class	2	10-09-2025		TLM1	
10	Practice Session	3	11-09-2025		TLM4	
No. of classes required to complete UNIT-I: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-II: PROJECTIONS OF POINTS, LINES AND PLANES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
9	Orthographic Projections, First and third angle projection methods, Projections of Points, Lines inclined to one plane	2	17-09-2025		TLM1	
10	Practice Session	3	18-09-2025		TLM4	
11	Projection of lines - Projections of Straight Line Inclined to both the reference planes	2	24-09-2025		TLM1	
12	Practice Session	3	25-09-2025		TLM4	
13	Projections of planes- Regular planes Perpendicular to both reference planes, parallel to one reference plane and inclined to the other reference plane; plane inclined to both the reference planes.	2	01-10-2025		TLM1	
14	Practice Session	2	08-10-2025		TLM4	
15	Practice Session	3	09-10-2025		TLM1	
16	Revision -unit-1	2	15-10-2025		TLM1	
17	Revision -unit-2	3	16-10-2025		TLM1	
No. of classes required to complete UNIT-II: 22 (Lecture:6 Practice:9)				**No. of classes taken: (including Practice)**		

UNIT-III: PROJECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
16	Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane – Theory	2	29-10-2025		TLM1	
17	Practice Session	3	30-10-2025		TLM 4	
18	Axis parallel to both the reference planes, Projection of Solids with axis inclined to one reference plane and parallel to another plane.	2	05-11-2025		TLM1	
No. of classes required to complete UNIT-III: 07 (Lecture:3 Practice:5)				**No. of classes taken: (including Practice)**		

UNIT-IV: SECTIONS OF SOLIDS AND DEVELOPMENT OF SURFACES

S. No.	Topics to be covered	No. of Class Required	Tentative Date	ActualDate	Teaching Learning ng Method	HOD Sign Weekly
19	Sections of Solids Solids in simple positions, Perpendicular and inclined section planes	2	06-11-2025		TLM1	
20	Practice Session	3	12-11-2025		TLM4	
21	Sections of solids: Sectional views and True shape of section	2	13-11-2025		TLM1	
22	Practice Session	3	19-11-2025		TLM4	
23	Development of solids Methods of Development: Parallel line development and radial line development	2	20-11-2025		TLM1	
24	Practice Session	3	26-11-2025		TLM4	
25	Development of solids Development of a cube, prism, cylinder, pyramid and cone.	2	27-11-2025		TLM1	
No. of classes required to complete UNIT-IV: 18 (Lecture:6 Practice:12)				**No. of classes taken: (including Practice)**		

UNIT-V: CONVERSION OF VIEWS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date	Actual Date	Teaching Learning Methods	HOD Sign Weekly
27	Introduction to Isometric Views – Theory Isometric views, isometric axes, scale, lines & planes	2	03-12-2025		TLM1	
28	Practice Session	3	04-12-2025		TLM4	
29	Orthographic projections to Isometric Projections	2	10-12-2025		TLM1	
30	Practice Session	3	11-12-2025		TLM4	
31	Practice Session	2	17-12-2025		TLM4	
32	**Content beyond the syllabus:** Scales, Planes inclined to both the planes.	3	18-12-2025		TLM1	
33	Revision	2	24-12-2025		TLM1	
No. of classes required to complete UNIT-V: 20 (Lecture:12 Practice:15)				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
I-Descriptive Examination (Units-I, II)	M1=15
II- Descriptive Examination (UNIT-III , IV & V)	M2=15
Day to Day Evaluation (Assignment)	15
Mid Marks =80% of Max (M1,M2)+ 20% of Min ((M1, M2) + Day to Day Evaluation	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and designsystem components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with anunderstanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainabledevelopment.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports anddesign documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, tomanage projects and in multidisciplinary environments.
PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage inindependent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	**To apply the principles of thermal sciences to design and develop various thermal systems.**
PSO2	**To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.**
PSO3	**To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.**

Title	Course Instructor	Course Coordinator	Head of the Department
Name of the Faculty	Dr.B.Sudheer Kumar	Mr.J.Subba Reddy	Dr. M B S S Reddy
Signature			

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: K. RAJU
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech / 1st/ ECE-D
A.Y. : 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of introducing this course, Communicative English Laboratory, is to expose the students to a variety of self-instructional, learner friendly modes of language learning. The students will get trained in basic communication skills and also make them ready to face job interviews.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the different aspect of the English language proficiency with emphasis on LSRW skills.	L2
CO2	Apply Communication Skills through various language learning activities	L3
CO3	Identifying the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking, comprehension.	L2
CO4	Exhibit professionalism in participating in debates and group discussions.	L3

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

Course Outcomes / PO's →	Programme Outcomes											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	-	-	-	2	-	-	-	-	3	3	-	2
CO2.	-	-	-	2	-	-	-	-	3	3	-	2
CO3.	-	-	-	2	-	-	-	-	3	3	-	2
CO4.	-	-	-	2	-	-	-	-	3	3	-	2
1 = Slight (Low)				**2= Moderate (Medium)**						**3 = Substantial (High)**		

List of Activities:

1. Vowels & Consonants
2. Neutralization / Accent rules
3. Communication Skills: JAM
4. Conversational Practice: Roleplay
5. E-mail Writing
6. Resume writing, Cover letter, SOP
7. Group Discussions - methods & Practice
8. Debates – Methods and practice
9. PPT Presentations & Poster Presentations
10. Interview Skills: Mock Interviews

Suggested Software:

1.Walden Infotech
2.Young India Films

Reference Books:

Raman Meenakshi, Sangeeta-Sharma, *Technical Communication,* Oxford Press 2018.
Taylor Grant: *English Conversation Practice,* Tata McGraw-Hill Education India, 2016.
Hewing's, Martin, Cambridge Academic English (B2), CUP, 2012.
J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English, (*2nd Ed.,*)Kindle, 2013.*

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	23/08/25		TLM4	
2.	Vowels & Consonants	06	30/08/25 06/09/25		TLM1 TLM5	
3.	Neutralization	03	13/09/25		TLM1, TLM5	
4.	Accent rules	03	20/09/25		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	03	27/09/25		TLM4	

6.	Role Play-I (Formal and Informal)	06	11/10/25 18/10/25		TLM4	
7.	e-mail Writing,	03	21/11/25		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	01/11/25		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	08/11/25		TLM4, TLM6	
10.	Debate: methods & Practice	03	15/11/25		TLM4, TLM6	
11.	PPT Presentation	06	22/11/25 29/11/25		TLM2, TLM4	
12.	Poster Presentation	03	06/12/25		TLM2, TLM4	
13.	Mock Interviews	03	13/12/25		TLM1, TLM6	
14.	Lab Internal Exam	03	20/12/25			
No. of classes required to complete Syllabus:				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Laboratory Examination:

Evaluation Task	**Marks**
Day-to-Day Work	A1 = 10
Record & Observation	B1 = 5
Internal Exam	C1 = 15
Cumulative Internal Examination (CIE): (A1+B1+C1)	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences,

	and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**K.Raju**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T.Satyanarayana**
Signature				

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:**	**B.Tech.,I-Sem., ECE-D**
ACADEMICYEAR	**:**	**2025-26**
COURSENAME &CODE	**:**	**ENGINEERING PHYSICS LAB**
L-T-PSTRUCTURE	**:**	**0 – 0 – 3**
COURSECREDITS	**:**	**1**
COURSEINSTRUCTOR	**:**	**Dr. Kumara Raja Kandula / Dr. N. Aruna**
COURSECOORDINATOR	**:**	

Pre-requisites : Nil

Course Objective: To study the concepts of optical phenomenon like interference, diffraction etc., recognize the importance of energy gap in the study of conductivity and Hall effect in semiconductors and study the parameters and applications of dielectric and magnetic materials by conducting experiments.

Course Outcomes:

CO1: Analyze the wave properties of light using optical instruments (Apply-L3).
CO2: Estimate the elastic modulii of various materials and acceleration due to gravity (Apply-L3).
CO3: Demonstrate the vibrations in stretched strings (Understand-L2).
CO4: Evaluate dielectric constant and magnetic field of circular coil carrying current (Apply-L3).
CO5: Examine the characteristics of semiconductor devices (Apply-L3).

Course articulation matrix (Correlation between CO's and PO's):

Engineering Physics Lab												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes PO's	**Programme Outcomes**											
▶	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO2.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO3.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO4.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
CO5.	**3**	**3**	**2**	**1**				**1**	**1**			**1**
1 = slight (Low) 2 = Moderate (Medium) 3 = Substantial (High)												

List of Experiments

1. Determination of radius of curvature of a given Plano - Convex lens by Newton's rings.
2. Determination of dielectric constant using charging and discharging method.
3. Determination of wavelength of a laser light using diffraction grating.
4. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.
5. Determination of temperature coefficients of a thermistor.
6. Determination of acceleration due to gravity and radius of Gyration by using a compound pendulum.
7. Determination of Frequency of electrically maintained tuning fork by Melde's experiment.
8. Determination of rigidity modulus of the material of the given wire using Torsional pendulum.
9. Sonometer- Verification of laws of a stretched string.
10. Determination of energy band gap of a semiconductor using p-n junction diode.
11. Verification of Brewster's Law.
12. Determination of Hall coefficient and Hall voltage.

References:

- A Textbook of Practical Physics – S. Balasubramanian, M.N. Srinivasan, S. Chand publishers-2017.

BOSAPPROVEDTEXTBOOKS:

1. Lab Manual Prepared by the LBRCE.

EVALUATIONPROCESS:

Evaluation Task	**Marks**
Day-to-Day Work	A1 = **10**
Record & Observation	B1 = **5**
Internal Exam	C1 = **15**
Cumulative Internal Examination (CIE): (A1+B1+C1)	**30**
Semester End Examination (SEE)	**70**
Total Marks = CIE + SEE	**100**

Part-B

COURSEDELIVERYPLAN (LESSONPLAN): ECE-D

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	Introduction & Demonstration	3	22-08-2025		**TLM-4**	CO1, CO2,CO3, CO4 & CO5	T1	
2.	Experiment1	3	29-08-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
3.	Experiment2	3	12-09-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
4.	Experiment3	3	19-09-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
5.	Experiment 3	3	26-09-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
6.	Experiment 4	3	10-10-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
7.	Experiment5	3	17-10-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
8.	**MID-1 Exam**	3	24-10-2025		**---**	**---**	**---**	
9.	Experiment 6	3	31-10-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
10.	Experiment 7	3	07-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
11.	Experiment8	3	14-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
12.	Experiment 8	3	21-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
13.	Experiment 9	3	28-11-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	

14	Experiment10	3	05-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
15	Revision	3	12-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
16	**Internal Exam**	3	19-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
17	**Internal Exam**	3	26-12-2025		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	

PROGRAM OUT COMES: Engineering Graduates will be able to:

1 **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4 **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern-engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assesssocietal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8 **Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams and in multi disciplinary settings.

10. **Communication**: Communicate effectively on complex engineering activities with the

engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CourseInstructor	**Course-coordinator**	**Module Coordinator**	**HOD**
Kumara Raja Kandula / Dr. N. Aruna	Dr.S.YUSUF	Dr.S.YUSUF	Dr.T. Sathyanarayana

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with "A" Grade & NBA (Under Tier - I)

An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution

Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada

L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.

Phone: 08659-222933, **Fax**: 08659-222931

DEPARTMENT OF ECE

LAB HANDOUT

PART-A

Name of Course Instructor	: M.Sambasiva Reddy, Mr. P. James Vijay, Ms.B. Lakshmi Tirupathamma, Dr.V. Ravi Sekhara Reddy		
Course Name & Code	: Electrical & Electronics Engineering Workshop (E & EE WS)		
L-T-P Structure	: 0-0-3	**Credits**	: 1.5
Program/Sem	**:** B.Tech. ECE- I Sem-Sec D	**A.Y.**	: 2025-26

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

To impart knowledge on the principles of digital electronics and fundamentals of electron devices & its applications.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Compute voltage, current and power in an electrical circuit. (**Apply**)
CO2	Compute medium resistance using Wheat stone bridge. (**Apply**)
CO3	Discover critical field resistance and critical speed of DC shunt generators. (**Apply**)
CO4	Estimate reactive power and power factor in electrical loads. (**Understand**)
CO5	Plot the characteristics of semiconductor devices. (**Apply**)
CO6	Demonstrate the working of various logic gates using ICs. (**Understand**)

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	-	-	-	-	2	3	2	-	1	-	-	-	-
CO2	2	2	-	2	-	-	-	2	2	2	-	-	-	-	-	-
CO3	2	2	2	2	-	-	-	2	2	2	-	-	-	2	-	-
CO4	2	2	-	3	-	-	-	2	3	2	-	1	2	-	-	-
CO5	3	2	-	-	2	-	-	2	2	2	1	1	2	2	3	2
CO6	3	3	-	2	2	-	-	2	3	3	-	1	-	-	3	-
1 - Low				**2 –**Medium							**3 -** High					

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to BEEE Lab (Function Generators, CRO, RPS, Breadboard etc), Course Objectives and Outcomes.	3	18-08-2025		TLM4	
2.	Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	25-08-2025		TLM4	

3.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator.	3	01-09-2025		TLM4
4.	Implementation of half wave and full wave rectifiers	3	08-09-2025		TLM4
5.	Plot Input & Output characteristics of BJT in CB configuration	3	15-09-2025		TLM4
6.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	22-09-2025		TLM4
7.	Verification of Truth Tables of S-R, J-K& D flip flops using respective ICs	3	06-10-2025		TLM4
8.	Internal Lab Examination (**Electronics**)	3	13-10-2025		TLM4
No. of classes required: 24				**No. of classes taken:**	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work	1,2,3,4,5,6,7,8…	A1 =10
Record and observation	1,2,3,4,5,6,7,8…	B1 = 5
Internal Exam	1,2,3,4,5,6,7,8…	**C1=15**
Cumulative Internal Examination (CIE):(A1+B1+C1)	1,2,3,4,5,6,7,8…	**30**
Semester End Examination (SEE)	1,2,3,4,5,6,7,8…	**70**
Total Marks=CIE+SEE		**100**

ACADEMIC CALENDAR:

Description	**From**	**To**	**Weeks**
I Phase of Instructions	18-08-2025	27-09-2025	6W
Dasara Holydays	29-09-2025	04-10-2025	1W
I Phase of Instructions	06-10-2025	18-10-2025	2W
I Mid Examinations	20-10-2025	25-10-2025	1W
II Phase of Instructions	27-10-2025	27-12-2025	9W
II Mid Examinations	29-12-2025	03-01-2026	1W
Preparation and Practical's	05-01-2026	10-01-2026	1W
Semester End Examinations	19-01-2026	31-01-2026	2W

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO a	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO b	Design and analyze electrical machines, modern drive and lighting systems
PSO c	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO d	Design controllers for electrical and electronic systems to improve their performance.

Date: 13-08-2025

Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
M. Sambasiva Reddy	Mr.N. Dharma Chari	Dr.B.V.N.R. Siva Kumar	Dr. G. Srinivasulu