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: D.chaithanya
Course Name & Code : Communicative English & 23FE50
L-T-P Structure : **2-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem –EEE-A
A.Y. : 2023-24

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):

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.	Human Values: Gift of Magi	02	23/9/2023 25/9/2023		TLM1 TLM 6	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	26/9/2023		TLM2 TLM5	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	30/9/2023		TLM1 TLM6 TLM5	
4.	Parts of speech	02	3/10/2023 7/10/2023		TLM2 TLM6	
5.	Basic Sentence Structures, Forming questions	01	9/10/2023		TLM2 TLM6	
6.	Synonyms, Antonyms, Affixes, Root Words	01	10/10/2023		TLM2 TLM5	
No. of classes required to complete UNIT-I: 08				**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	HOD Sign Weekly
7.	Nature: The Brook by Alfred Tennyson	02	16/10/2023 17/10/2023		TLM1 TLM 6	
8.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	28/10/2023		TLM2 TLM5	
9.	Structure of Paragraph – Paragraph Writing	01	30/10/2023		TLM1 TLM6 TLM5	
10.	Cohesive Devices- linkers	01	31/10/2023		TLM2 TLM6	
11.	Use of Articles and zero article, Prepositions, Homophones, Homographs, Homonyms	02	4/11/2023 6/11/2023		TLM2 TLM6	
No. of classes required to complete UNIT-II: 07				**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	HOD Sign Weekly
12.	Biography: Elon Musk	02	13/11/2023 14/11/2023		TLM1 TLM 6	
13.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	18/11/2023		TLM2 TLM5	
14.	Summarizing, Note-making, Paraphrasing	01	20/11/2023		TLM1 TLM6 TLM5	
15.	Verbs- Tenses, Subject-verb agreement	03	21/11/2023 25/11/023		TLM2 TLM6	
16.	Compound words, Collocations	01	27/11/2023		TLM2 TLM5	
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	HOD Sign Weekly
17.	Inspiration: The Toys of Peace- by Saki	02	28/11/2023		TLM1 TLM 6	
18.	Study of graphic elements in text to display complicated data	01	2/12/2023		TLM2 TLM5	
19.	Letter Writing : Official Letters, Resumes	02	4/12/2023 5/12/2023		TLM1 TLM6 TLM5	
20.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	11/12/2023 12/12/2023		TLM2 TLM6	
21.	Words often confused, Jargons	01	16/12/2023		TLM2 TLM5	
No. of classes required to complete UNIT-IV: 08				**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	HOD Sign Weekly
22.	Motivation: The Power of Interpersonal Communication	02	18/12/023 19/12/2023		TLM1 TLM 6	
23.	Reading Comprehension	01	23/12/2023		TLM2 TLM5	
24.	Structured Essays on specific topics	01	23/12/2023		TLM1 TLM6 TLM5	
25.	Editing Texts – Correcting Common errors	02	26/12/2023 30/12/2023		TLM2 TLM6	
26.	Technical Jargon	01	30/12/2023		TLM2 TLM5	
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.					TLM2 &5	
2.					TLM2 &5	
3.					TLM2 &5	
No. of classes required to complete UNIT-V: 07				**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

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 1	Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering.
PSO 2	Possesses ability to plan, examine and analyse the various laboratory tests required for the professional demands.
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**D.chaithanya**			**Dr. A. Ramireddy**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. R. Padma Venkat
Course Name & Code : Communicative English (T) & 23FE50
L-T-P Structure : **2-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem, EEE - B
A.Y. : 2023-24

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**
CO6.	-	-	-	1	-	-	-	-	3	3	-	2
CO7.	-	-	-	1	-	-	-	-	3	3	-	2
CO8.	-	-	-	1	-	-	-	-	3	3	-	2
CO9.	-	-	-	1	-	-	-	-	3	3	-	2
CO10.	-	-	-	1	-	-	-	-	3	3	-	2

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

PART-B

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
27.	Human Values: Gift of Magi	02	19-09-23 22-09-23		TLM1 TLM 6	
28.	Skimming to get main idea; Scanning for specific pieces of information	01	25-09-23		TLM2 TLM5	
29.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	26-09-23		TLM1 TLM6 TLM5	
30.	Parts of speech	02	29-09-23 03-10-23		TLM2 TLM6	
31.	Basic Sentence Structures, Forming questions	01	06-10-23		TLM2 TLM6	
32.	Synonyms, Antonyms	01	09-10-23		TLM2 TLM5	
33.	Affixes, Root Words	01	10-10-23		TLM2 TLM5	
No. of classes required to complete UNIT-I: 09				**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	HOD Sign Weekly
34.	Nature: The Brook by Alfred Tennyson	02	13-10-23 16-10-23		TLM1 TLM 6	
35.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	17-10-23		TLM2 TLM5	
36.	Structure of Paragraph – Paragraph Writing	01	20-10-23		TLM1 TLM6 TLM5	
37.	Cohesive Devices- linkers	01	24-10-23		TLM2 TLM6	
38.	Use of Articles and zero article, Prepositions	02	27-10-23 30-10-23		TLM2 TLM6	
39.	Homophones, Homographs, Homonyms	01	31-10-23		TLM2 TLM5	
No. of classes required to complete UNIT-II: 08				**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	HOD Sign Weekly
40.	Biography: Elon Musk	02	03-11-23 13-11-23		TLM1 TLM 6	
41.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	14-11-23		TLM2 TLM5	
42.	Summarizing, Note-making, Paraphrasing	02	17-11-23 20-11-23		TLM1 TLM6 TLM5	
43.	Verbs- Tenses, Subject-verb agreement	03	21-11-23 24-11-23 27-11-23		TLM2 TLM6	

44.	Compound words, Collocations	01	28-11-23		TLM2 TLM5	
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	HOD Sign Weekly
45.	Inspiration: The Toys of Peace- by Saki	02	01-12-23 04-12-23		TLM1 TLM 6	
46.	Study of graphic elements in text to display complicated data	01	05-12-23		TLM2 TLM5	
47.	Letter Writing : Official Letters, Resumes	02	08-12-23 11-12-23		TLM1 TLM6 TLM5	
48.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	01	12-12-23		TLM2 TLM6	
49.	Words often confused, Jargons	01	15-12-23		TLM2 TLM5	
No. of classes required to complete UNIT-IV: 07				**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	HOD Sign Weekly
50.	Motivation: The Power of Interpersonal Communication	01	18-12-23		TLM1 TLM 6	
51.	Reading Comprehension	01	19-12-23		TLM2 TLM5	
52.	Structured Essays on specific topics	01	22-12-23		TLM1 TLM6 TLM5	
53.	Editing Texts – Correcting Common errors	01	26-12-23		TLM2 TLM6	
54.	Technical Jargon	01	29-12-23		TLM2 TLM5	
No. of classes required to complete UNIT-V: 05				**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
4.					TLM2 &5	
5.					TLM2 &5	
6.					TLM2 &5	
No. of classes required to complete UNIT-V: 07				**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

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.
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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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PSO 2	Possesses ability to plan, examine and analyse the various laboratory tests required for the professional demands.
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. R. Padma Venkat	Dr. R. Padma Venkat		Dr. A. Ramireddy
Signature				

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM	**: I B.Tech., I-Sem., EEE-A**
ACADEMIC YEAR	**: 2023-24**
COURSE NAME & CODE	**: ENGINEERING PHYSICS**
L-T-P STRUCTURE	**: 3-0-0**
COURSE CREDITS	**3**
COURSE INSTRUCTOR	**: N. T. SARMA**
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

CO 1	Analyze the intensity variation of light due to interference, diffraction and Polarization (Apply)
CO 2	Understand the basics of crystals and their structures (Understand)
CO 3	ummarize various types of polarization of dielectrics and classify the magnetic naterials (Understand)
CO 4	xplain 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).

WEB RESOURCES

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTERFERENCE, DIFFRACTION & POLARIZATION

Course Outcome :- CO 1; Text Book :- 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	19/09/23		**TLM-2**		
2.	Principle of superposition, Interference of light	1	20/09/23		**TLM-3**		

3.	Interference in thin films by reflection & applications	1	22/09/23		**TLM-2**		
4.	Colors in thin films, Newton's rings	1	25/09/23		**TLM-1**		
5.	Determination of wavelength and refractive index	1	26/09/23		**TLM-4**		
6.	Problems & Assignment/Quiz	1	27/09/23		**TLM-1**		
7.	Introduction, Fresnel and Fraunhoffer diffractions	1	29/09/23		**TLM-3**		
8.	Fraunhoffer diffraction due to single slit	1	03/10/23		**TLM-2**		
9.	Double slit & N slits (Qualitative)	1	04/10/23		**TLM-4**		
10.	Diffraction Grating, Dispersive power & Resolving power of Grating-Qualitative	1	06/10/23		**TLM-4**		
11.	Problems & Assignment/Quiz	1	09/10/23		**TLM-3**		
12.	Introduction – Types of polarization	1	10/10/23		**TLM-2**		
13.	Polarization by reflection, refraction & double refraction	1	11/10/23		**TLM-2**		
14.	Nicol's prism	1	13/10/23		**TLM-5**		
15.	Half wave and Quarter wave plates	1	16/10/23		**TLM-2**		
16.	Problems & Assignment/Quiz	1	17/10/23		**TLM-3**		
No. of classes required to complete UNIT-I: 16				No. of classes taken:			

UNIT-II: CRYSTALLOGRAPHY & X– RAY DIFFRACTION

Course Outcome :- CO 2; Text Book :- 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	18/10/23		**TLM-3**		
2.	Bravais Lattices	1	20/10/23		**TLM-2**		
3.	Crystal Systems (3D)	1	24/10/23		**TLM-2**		
4.	Coordination number – Packing fraction of –SC, BCC	1	25/10/23		**TLM-1**		
5.	Coordination number – Packing fraction of FCC	1	27/10/23		**TLM-1**		
6.	Miller indices & Properties	1	30/10/23		**TLM-2**		
7.	Separation between successive (hkl) planes	1	31/10/23		**TLM-1**		
8.	Problems & Assignment /Quiz	1	01/11/23		**TLM-3**		
9.	Bragg's law; X–ray Diffractometer	1	03/11/23		**TLM-2**		
10.	Crystal Structure determination by Laue's method	1			**TLM-5**		
11.	Crystal Structure determination by Powder method	1			**TLM-5**		
12.	Problems & Assignment/Quiz	1			**TLM-3**		
13.	MID-1 Examinations	1	06/11/23		**----**		
14.	MID-1 Examinations	1	07/11/23		**----**		
15.	MID-1 Examinations	1	08/11/23		**----**		
16.	MID-1 Examinations	1	10/11/23		**----**		
No. of classes required to complete UNIT-II: 12				No. of classes taken:			

UNIT-III : DIELECTRIC & MAGNETIC MATERIALS

Course Outcome :- CO 3; Text Book :- 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	13/11/23		**TLM-2**		
2.	Dielectric constant & Displacement Vector, Relation between the electric vectors	1	14/11/23		**TLM-3**		
3.	Types of polarizations- Electronic polarization	1	15/11/23		**TLM-1**		
4.	Types of polarizations - ionic & orientation polarizations (Qualitative)	1	17/11/23		**TLM-1**		
5.	Lorentz internal field	1	20/11/23		**TLM-2**		
6.	Claussius-Mosotti equation, Complex dielectric constant	1	21/11/23		**TLM-1**		
7.	Frequency dependence of polarization dielectric loss	1	22/11/23		**TLM-5**		
8.	Problems & Assignment/Quiz	1	24/11/23		**TLM-3**		
9.	Magnetic dipole moment, Magnetization Magnetic susceptibility & permeability	1	27/11/23		**TLM-4**		
10.	Atomic origin of magnetism	1	28/11/23		**TLM-1**		
11.	Classification of magnetic materials- Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	29/11/23		**TLM-2**		
12.	Domain concept for Ferromagnetism & Domain walls	1	01/12/23		**TLM-2**		
13.	Hysteresis, soft and hard magnetic materials	1	04/12/23		**TLM-5**		

14.	Problems & Assignment/Quiz	1	05/12/23		**TLM-3**		
No. of classes required to complete UNIT-V: 14				No. of classes taken:			

UNIT-IV : QUANTUM MECHANICS & FREE ELECTRON THEORY

Course Outcome :- CO 4; Text Book :- 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	06/12/23		**TLM-2**		Extra hour
2.	Heisenberg's Uncertainty Principle, Significance & properties of wave function	1	08/12/23		**TLM-2**		
3.	Schrodinger's time independent and dependent wave equations	1	11/12/23		**TLM-1**		
4.	Particle in a one – dimensional infinite potential well	1	12/12/23		**TLM-1**		
5.	Problems & Assignment/Quiz	1	13/12/23		**TLM-3**		
6.	Classical free electron theory- merits and demerits	1	15/12/23		**TLM-2**		
8.	Quantum free electron theory	1	18/12/23		**TLM-2**		
9.	Electrical conductivity based on quantum free electron theory	1	19/12/23		**TLM-1**		
10.	Fermi -Dirac distribution and temperature dependence	1	20/12/23		**TLM-5**		
11.	Density of states, Fermi energy	1	22/12/23		**TLM-1**		
12.	Problems & Assignment/Quiz	1	26/12/23		**TLM-3**		
No. of classes required to complete UNIT-III: 12				No. of classes taken:			

UNIT-V : SEMICONDUCTOR PHYSICS

Course Outcome :- CO 5; Text Book :- 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	27/12/23		**TLM-6**		
2.	Intrinsic semiconductors, Density of charge carriers	1	29/12/23		**TLM-1**		
3.	Electrical conductivity, Fermi level	1			**TLM-2**		
4.	Extrinsic semiconductors, Density of charge carriers	1			**TLM-1**		
5.	Dependence of Fermi energy on carrier concentration & temperature	1			**TLM-2**		
6.	Drift and Diffusion Currents, Einstein's equation	1			**TLM-1**		
7.	Hall Effect & its applications	1			**TLM-4**		
8.	Problems & Assignment/Quiz	1			**TLM-3**		
9.	MID-2 Examinations	1	01/01/24		----		
10.	MID-2 Examinations	1	02/01/24		----		
11.	MID-2 Examinations	1	03/01/24		----		
12.	MID-2 Examinations	1	05/01/24		----		
No. of classes required to complete UNIT-IV: 08				No. of classes taken:			

PART-C

EVALUATION PROCESS (R-23 Regulation)

Evaluation Task	**Marks**
Assignment-I (Units-I, II & III (A))	A-1 = 5
I-Mid Examination (Units-I, II & III (A))	M-1 = 15
I-Quiz Examination (Units-I, II & III (A))	Q-1 = 10
Assignment-III (Units-III (B), IV & V)	A-2 = 5
II-Mid Examination (Units-III (B), IV & V)	M-2 = 15
II-Quiz Examination (Units-III (B), IV & V)	Q-2 = 10
Assignment Marks = Best of A1 & A2	A = 5
Mid Marks = 80% of Max (M-1, M-2) + 20% of Min (M-1, M-2)	M = 15
Quiz Marks = 80% of Max (Q-1, Q-2) + 20% of Min (Q-1, Q-2)	Q = 10
Cumulative Internal Examination (CIE) : A+M+Q	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.

Course Instructor	Course Coordinator	Module Coordinator	HOD
N. T. SARMA	**Dr. S. YUSUF**	**Dr. S. YUSUF**	**Dr. A. RAMI REDDY**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM	**: B.Tech., I-Sem., EEE-B**
ACADEMIC YEAR	**: 2023-24**
COURSE NAME & CODE	**: ENGINEERING PHYSICS**
L-T-P STRUCTURE	**: 3-1-0**
COURSE CREDITS	**: 3**
COURSE INSTRUCTOR	**: P VIJAYA SIRISHA**
PRE-REQUISITE	**: Nil**

COURSE EDUCATIONAL OBJECTIVES (CEOs): To bring 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 maganetic materials, physics of semiconductors.

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

CO 1	**Analyze** the intensity of variation of light due to interference, diffraction and polarization
CO 2	**Understand** the basics of crystals and their structures
CO 3	**Summarize** various types of polarization of dielectrics and classify the magnetic materials
CO 4	**Explain** the fundamentals of quantum mechanics and free electron theory of metals
CO5	**Identify** the type of semiconductor using Hall Effect

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**
CO6.	**3**	**3**	**2**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**
CO7.	**3**	**3**	**2**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**
CO8.	**3**	**3**	**2**	**1**	**1**	**1**		**-**	**-**	**-**	**-**	**1**
CO9.	**3**	**3**	**2**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**
CO10.	**3**	**3**	**2**	**1**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**1**
1 = slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

BOS APPROVED TEXT BOOKS:

T1 : V. Rajendran, "*Engineering Physics*", TMH, New Delhi, 6th Edition, 2014.
T2 :M.N. Avadhanulu, P.G. Kshirsagar, "Engineering *Physics*", S. Chand &Co., 2nd Edition, 2014.

BOS APPROVED REFERENCE BOOKS:

R1: M.N. Avadhanulu, TVS Arun Murthy, "Applied *Physics*", S. Chand & Co., 2nd Edition, 2007.
R2 :P.K. Palani Samy, "*Applied Physics*", Sci. Publ. Chennai, 4th Edition, 2016.
R3 :P. Sreenivasa Rao, K Muralidhar, "*Applied Physics*", Him. Publi. Mumbai,1st Edition, 2016.
R4 :Hitendra K Mallik , AK Singh " *Engineering Physics*", TMH, New Delhi, 1st Edition, 2009.

WEB REFERENCES AND E-TEXT BOOKS

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

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-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: WAVE OPTICS

Course Outcome :- CO 1; Text Book :- 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
55.	Introduction to the Subject, Course Outcomes	1	19/09/2023		**TLM2**		
56.	Superposition of waves, Coherence, Conditions for Interference	1	20/092023		**TLM1**		
57.	Interference from thin films, colours in thin films	1	22/09/2023		**TLM1**		
58.	Newton's rings	1	23/092023		**TLM4**		
59.	TUTORIAL-1	1	26/09/2023		**TLM3**		
60.	Introduction – Diffraction, Types	1	27/092023		**TLM2**		

61.	Single slit diffraction	1	30/09/2023		**TLM4**		
62.	Double slit		03/10/2023		**TLM4**		
63.	N Slits Diffraction grating	1	04/10/2023		**TLM4**		
64.	TUTORIAL-2	1	06/10/2023		**TLM3**		
65.	Dispersive power & Resolving power of Grating	1	07/10/2023		**TLM1**		
66.	Polarization introduction , types	1	10/10/2023		**TLM1**		
67.	Polarization by reflection, refraction	1	11/10/2023		**TLM2**		
68.	Double refraction, Nicol's prism	1	13/10/2023		**TLM2**		
69.	Half wave and quarter wave plate	1	17/10/2023		**TLM2**		
No. of classes required to complete UNIT-I: 15				No. of classes taken:			

UNIT-II: CRYSTALLOGRAPHY AND X RAY DIFFRACTION

Course Outcome :- CO 2; Text Book :- 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.	Crystallography Basic defnitions	1	18/10/2023		**TLM2**		
2.	Bravais Lattices	1	20/10/2023		**TLM1**		
3.	Crystal Systems	1	21/10/2023		**TLM1**		
4.	Packing fraction of SC, BCC	1	25/10/2023		**TLM2**		
5.	FCC	1	27/10/2023		**TLM2**		
6.	Tutorial -2		28/10/2023		**TLM3**		
7.	Miller Indices, separation between (hkl) planes	1	31/10/2023		**TLM2**		
8.	Bragg's law	1	01/11/2023		**TLM1**		
9.	X-ray Diffractometer	1	03/11/2023		**TLM1**		
10.	Laue's method and powder method	1	04/11/2023		**TLM2**		
11.	problems	1	04/11/2023		**TLM1**		
12.	MID 1		07/11/2023				
13.	MID 1		08/11/2023				
14.	MID1		10/11/2023				
No. of classes required to complete UNIT-II: 11				No. of classes taken:			

UNIT-III: DIELECTRIC AND MAGNETIC MATERIALS

Course Outcome :- CO 3; Text Book :- 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.	Basic Definitions Relation between electric vectors	1	14/11/2023		**TLM1**		
2.	Electronic polarization	1	15/11/2023		**TLM1**		
3.	Ionic & Orientation polarization	1	17/11/2023		**TLM1**		
4.	Local field,	1	18/11/2023		**TLM1**		
5	Clausius Mosotti equation, complex dielectric constant	1	21/11/2023		**TLM2**		
6	Frequency dependence of polarization Dielectric loss and problems	1	22/11/2023		**TLM1**		
7	Introduction to Magnetic parameters origin of magnetic moment	1	24/11/2023		**TLM1**		
8	Classification of magnetic materials – Dia, para & Ferro	1	25/11/2023		**TLM1**		
9	Classification of magnetic materials – Dia, para & Ferro Anti ferro and ferri	1	28/11/2023		**TLM2**		
10	Domain concept of ferromagnetism and domain walls	1	29/11/2023		**TLM2**		
11	Hysteresis curve soft and hard magnetic materials	1	01/12/2023		**TLM1**		
No. of classes required to complete UNIT-III: 11				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	HOD Sign	Remarks
1.	Introduction quantum mechanics,De Broglie hypothesis	1	02/12/2023		**TLM1**		
2.	Heisenberg uncertainty principle	1	05/12/2023		**TLM1**		
3.	Physical significance of wave function	1	06/12/2023		**TLM1**		
4.	Schrodinger time dependent & independent wave equations	1	06/12/2023		**TLM1**		
5.	Particle in a box	1	08/12/2023		**TLM2**		
6.	Problems &Assignment/Quiz	1	09/12/2023		**TLM1**		
7.	Classical free electron theory-postulates, Success & Failures	**1**	12/12/2023		**TLM2**		
8.	Quantum free electron theory	**1**	13/12/2023		**TLM2**		
9.	electrical conductivity	**1**	15/12/2023		**TLM2**		
10.	Fermi-Dirac distribution function-Temperature dependence	**1**	16/12/2023		**TLM2**		
11.	Density of states Fermi energy	1	19/12/2023		**TLM2**		
No. of classes required to complete UNIT-IV: 11				No. of classes taken:			

UNIT-V :SEMICONDUCTOR PHYSICS

Course Outcome :- CO 4; Text Book :- 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.	Introduction - Classification of semiconductors	1	19/12/2023		**TLM1**		
2.	Density of Intrinsic and semiconductors	1	20/12/2023		**TLM1**		
3.	Electrical conductivity and fermi level	1	22/12/2023		**TLM1**		

4.	Density of Extrinsic semiconductors	1	23/12/2023		**TLM2**		
5.	Dependence of fermi energy on carrier concentration and fermi energy	1	26/12/2023		**TLM2**		
6.	Drift and diffusion currents	1	27/12/2023		**TLM1**		
7.	Einstein equation	1	29/12/2023		**TLM1**		
8.	Hall effect and applications	1	30/12/2023		**TLM2**		
No. of classes required to complete UNIT-V: 8				No. of classes taken:			

PART-C

EVALUATION PROCESS (R-20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I, II)	M-1=18
I-Quiz Examination (Units-I, II)	Q1=07
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III , IV & V)	M-2=18
II-Quiz Examination (Units-III, IV & V)	Q2=07
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M-1,M-2)+25% of Min(M-1,M-2)	M=18
Quiz Marks =75% of Max(Q-1,Q-2)+25% of Min(Q-1,Q-2)	Q=07
Cumulative Internal Examination (CIE): A+M+Q	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.

Course Instructor Course Coordinator Module Coordinator HOD

Dr. A. Rami Reddy

P Vijaya Sirisha **P Vijaya Sirisha** **Dr. S. Yusub**

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., EEE- A
ACADEMIC YEAR : 2023-24
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Dr. M.Srinivasa Reddy
COURSE COORDINATOR : Dr. A. Rami Reddy
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	08-09-2023 TO 15-09-2023	08-09-2023 TO 15-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-09-2023		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	21-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	26-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	26-10-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-10-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	03-10-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	03-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	06-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	09-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	10-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	10-10-2023		TLM1	CO1	T1,T2	
17.	**TUTORIAL 1**	1	12-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14			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
18.	Introduction to Unit II	1	13-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	17-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	17-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	19-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	26-10-2023		TLM1	CO2	T1,T2	
24.	Diagonalization of a matrix	1	27-10-2023		TLM1	CO2	T1,T2	
25.	Diagonalization of a matrix	1	30-10-2023		TLM1	CO2	T1,T2	

26.	Quadratic Forms	1	31-10-2023		TLM1	CO2	T1,T2	
27.	Nature of Quadratic Forms	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Orthogonal Transformation	1	02-11-2023		TLM1	CO2	T1,T2	
29.	**TUTORIAL 2**	1	02-11-2023		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		12			No. of classes taken:			

I MID EXAMINATIONS (13-11-2023 TO 18-11-2023)

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
30.	Introduction to Unit III	1	06-11-2023		TLM1	CO3	T1,T2	
31.	Mean Value theorem	1	07-11-2023		TLM1	CO3	T1,T2	
32.	Rolle's theorem	1	07-11-2023		TLM1	CO3	T1,T2	
33.	Lagrange's mean value theorem	1	09-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	10-11-2023		TLM1	CO3	T1,T2	
35.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
37.	Taylor's theorem with remainders	1	21-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
39.	Maclaurin's theorem with remainders	1	24-11-2023		TLM1	CO3	T1,T2	
40.	Maclaurin's theorem	1	27-11-2023		TLM1	CO3	T1,T2	
41.	Problems and applications	1	28-11-2023		TLM1	CO3	T1,T2	
42.	**TUTORIAL 3**	1	28-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		13			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
43.	Introduction to Unit IV	1	30-12-2023		TLM1	CO4	T1,T2	
44.	Functions of several variables	1	01-12-2023		TLM1	CO4	T1,T2	
45.	Continuity and Differentiability	1	04-12-2023		TLM1	CO4	T1,T2	
46.	Partial Derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
47.	Total derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
48.	Chain rule, Directional Derivative	1	07-12-2023		TLM1	CO4	T1,T2	
49.	Taylor's Series expansion	1	08-12-2023		TLM1	CO4	T1,T2	
50.	Maclaurin's series expansion	1	11-12-2023		TLM1	CO4	T1,T2	
51.	Jacobian	1	12-12-2023		TLM1	CO4	T1,T2	

52.	Functional Dependence	1	12-12-2023		TLM1	CO4	T1,T2	
53.	Maxima and Minima	1	14-12-2023		TLM1	CO4	T1,T2	
54.	Maxima and Minima	1	15-12-2023		TLM1	CO4	T1,T2	
55.	Lagrange Multiplier Method	1	18-12-2023		TLM1	CO4	T1,T2	
56.	Lagrange Multiplier Method	1	19-12-2023		TLM1	CO4	T1,T2	
57.	**TUTORIAL 4**	1	19-12-2023		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
58.	Introduction to Unit-V	1	21-12-2023		TLM1	CO5	T1,T2	
59.	Double Integrals - Cartesian coordinates	1	22-12-2023		TLM1	CO5	T1,T2	
60.	Double Integrals - Cartesian coordinates	1	26-12-2023		TLM1	CO5	T1,T2	
61.	Double Integrals- Polar co ordinates	1	26-12-2023		TLM1	CO5	T1,T2	
62.	Triple Integrals - Cartesian coordinates	1	28-12-2023		TLM1	CO5	T1,T2	
63.	Triple Integrals - Spherical coordinates	1	29-12-2023		TLM1	CO5	T1,T2	
64.	Change of order of Integration	1	01-01-2024		TLM1	CO5	T1,T2	
65.	Change of order of Integration	1	02-01-2024		TLM1	CO5	T1,T2	
66.	Change of variables	1	02-01-2024		TLM1	CO5	T1,T2	
67.	Finding area by double Integral	1	04-01-2024		TLM1	CO5	T1,T2	
68.	Finding Volume by double and triple Integral	1	05-01-2024		TLM1	CO5	T1,T2	
69.	Revision	1	08-01-2024		TLM1	CO5	T1,T2	
70.	Revision	1	09-01-2024		TLM1	CO5	T1,T2	
71.	Revision	1	09-01-2024		TLM1	CO5	T1,T2	
72.	**TUTORIAL 5**	1	11-01-2024		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		14			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
73.	Other applications of double integral	1	12-01-2023		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (15-01-2024 TO 20-01-2024)								

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
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. M.Srinivasa Reddy	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., EEE B
ACADEMIC YEAR : 2023-24
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Dr. K. Jhansi Rani
COURSE COORDINATOR : Dr. A. Rami Reddy
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	08-09-2023 TO 15-09-2023	08-09-2023 TO 15-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-09-2023		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	21-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	26-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	27-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-09-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	03-10-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	04-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	06-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	09-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	10-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	11-10-2023		TLM1	CO1	T1,T2	
17.	**TUTORIAL 1**	1	13-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14			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
18.	Introduction to Unit II	1	12-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	17-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	18-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	19-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	25-10-2023		TLM1	CO2	T1,T2	
24.	Diagonalization of a matrix	1	26-10-2023		TLM1	CO2	T1,T2	

25.	Quadratic Forms	1	27-10-2023		TLM1	CO2	T1,T2	
26.	Nature of Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	
27.	Reduction of Quadratic form to Canonical form	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Orthogonal Transformation	1	01-11-2023		TLM1	CO2	T1,T2	
29.	Orthogonal Transformation	1	02-11-2023		TLM1	CO2	T1,T2	
30.	**TUTORIAL 2**	1	03-11-2023		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

I MID EXAMINATIONS (06-11-2023 TO 11-11-2023)

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
31.	Introduction to Unit III	1	13-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	14-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	15-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	16-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	17-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem	1	22-11-2023		TLM1	CO3	T1,T2	
39.	Maclaurin's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
40.	Problems and applications	1	27-11-2023		TLM1	CO3	T1,T2	
41.	**TUTORIAL 3**	1	24-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		11			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
42.	Introduction to Unit IV, Functions of several variables.	1	28-11-2023		TLM1	CO4	T1,T2	
43.	Continuity and Differentiability	1	29-11-2023		TLM1	CO4	T1,T2	
44.	Partial Derivatives	1	30-11-2023		TLM1	CO4	T1,T2	
45.	Total derivatives, Chain rule, Directional Derivative	1	01-12-2023		TLM1	CO4	T1,T2	
46.	Taylor's Series expansion	1	04-12-2023		TLM1	CO4	T1,T2	
47.	Maclaurin's series expansion	1	05-12-2023		TLM1	CO4	T1,T2	
48.	Jacobian	1	06-12-2023		TLM1	CO4	T1,T2	
49.	Functional Dependence	1	07-12-2023		TLM1	CO4	T1,T2	

50.	Maxima and Minima	1	11-12-2023		TLM1	CO4	T1,T2	
51.	Lagrange Multiplier Method	1	12-12-2023		TLM1	CO4	T1,T2	
52.	**TUTORIAL 4**	1	08-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		11			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
53.	Introduction to Unit-V	1	13-12-2023		TLM1	CO5	T1,T2	
54.	Double Integrals - Cartesian coordinates	1	14-12-2023		TLM1	CO5	T1,T2	
55.	Double Integrals- Polar co ordinates	1	15-12-2023		TLM1	CO5	T1,T2	
56.	Triple Integrals - Cartesian coordinates	1	18-12-2023		TLM1	CO5	T1,T2	
57.	Triple Integrals - Spherical coordinates	1	19-12-2023		TLM1	CO5	T1,T2	
58.	Change of order of Integration	1	20-12-2023		TLM1	CO5	T1,T2	
59.	Change of order of Integration	1	21-12-2023		TLM1	CO5	T1,T2	
60.	Change of variables	1	22-12-2023		TLM1	CO5	T1,T2	
61.	Finding area by double Integral	1	26-12-2023		TLM1	CO5	T1,T2	
62.	Finding Volume by double and triple Integral	1	27-12-2023		TLM1	CO5	T1,T2	
63.	**TUTORIAL 5**	1	29-12-2023		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			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
64.	Other applications of double integral	1	28-12-2023		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (01-01-2024 TO 06-01-2024)								

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. K. Jhansi Rani	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.B.Pangedaiah
Course Name & Code : BASIC ELECTRICAL & ELECTRONICS ENGINEERING – 23EE01
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I/EEE-A **A.Y.:** 2023-24

PREREQUISITE: Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): 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.

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

CO1	Extract electrical variables of AC & DC circuits using fundamental laws. (Understand)
CO2	Understand the operation of electrical machines and measuring instruments. (Understand)
CO3	Classify various energy resources, safety measures and interpret electricity bill generation in electrical systems. (Understand)
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
CO1															
CO2															
CO3															
CO4															
CO5															
CO6															
1 - Low						**2 –**Medium						**3 -** High			

TEXTBOOKS:

T1	Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
T2	Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, Dhanpat Rai & Co, 20
T3	Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition
T4	R. L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
T5	R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

PART A: BASIC ELECTRICAL ENGINEERING

UNIT-I: DC & AC Circuits

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 subject and course outcomes	1	19-09-2023		TLM1	
2.	**DC Circuits:** Electrical circuit elements (R, L and C)	1	21-09-2023		TLM1	
3.	Ohm's Law and its limitations	1	22-09-2023		TLM1	
4.	KCL & KVL	1	23-09-2023		TLM1	
5.	series, parallel, series-parallel circuits	1	25-09-2023		TLM1	
6.	Super Position theorem	1	26-09-2023		TLM1	
7.	**AC Circuits:** A.C. Fundamentals:	1	29-09-2023		TLM1	
8.	Equation of AC Voltage and current, waveform	1	30-09-2023		TLM1	
9.	time period, frequency, amplitude, phase, phase difference, average value, RMS value	1	03-10-2023		TLM1	
10.	form factor, peak factor, Voltage and current relationship with phasor diagrams in R, L, and C circuits	1	05-10-2023		TLM1	
11.	Concept of Impedance, Active power, reactive power and apparent power	1	06-10-2023		TLM1	
12.	Concept of power factor (Simple Numerical problems).	1	07-10-2023		TLM1	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Machines and Measuring Instruments

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	**Machines:** Construction, principle and operation of DC Motor	1	09-10-2023		TLM1	
14.	Construction, principle and operation of DC Generator	1	10-10-2023		TLM1	
15.	Construction, principle and operation of Three Phase Induction Motor	1	12-10-2023		TLM1	
16.	Construction, principle and operation of Alternator		12-10-2023		TLM1	
17.	Applications of electrical machines	1	13-10-2023		TLM1	
18.	**Measuring Instruments:** Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments	1	14-10-2023		TLM1	
19.	Wheat Stone bridge.	1	16-10-2023		TLM1	
No. of classes required to complete UNIT-II: 06				**No. of classes taken:**		

UNIT-III: Energy Resources, Electricity Bill & Safety Measures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
20.	**Energy Resources:** : Conventional and non-conventional energy resources	1	19-10-2023		TLM1	
21.	Layout and operation of various Power Generation systems: Hydel power generation	1	26-10-2023		TLM1	
22.	Layout and operation of Nuclear power generation	1	27-10-2023		TLM1	
23.	Layout and operation of Solar power generation	1	28-10-2023		TLM1	
24.	Layout and operation of Wind power generation.	1	30-10-2023		TLM1	
25.	**Electricity bill:** : Power rating of household appliances including air conditioners PCs, Laptops, Printers, etc	1	31-10-2023		TLM1	
26.	Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers	1	02-11-2023		TLM1	
27.	**Equipment Safety Measures:** Working principle of Fuse and Miniature circuit breaker(MCB), merits and demerits	1	03-11-2023		TLM1	
28.	Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.	1	04-11-2023		TLM1	
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

PART B: BASIC ELECTRONICS ENGINEERING

UNIT-I: SEMICONDUCTOR DEVICES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29.	Introduction - Evolution of electronics, Vacuum tubes to nano electronics	1	13-11-2023		TLM1	
30.	Characteristics of PN Junction Diode	1	14-11-2023		TLM1	
31.	Zener Effect — Zener Diode and its Characteristics	1	16-11-2023		TLM1	
32.	Bipolar Junction Transistor	1	17-11-2023		TLM1	
33.	CB Configurations and Characteristics	1	18-11-2023		TLM1	
34.	CE Configurations and Characteristics.	1	20-11-2023		TLM1	
35.	CC Configurations and Characteristics.	1	21-11-2023		TLM1	
36.	Elementary Treatment of Small Signal CE Amplifier.	1	23-11-2023		TLM1	
No. of classes required to complete UNIT-IV: 8				**No. of classes taken:**		

UNIT-II: BASIC ELECTRONIC CIRCUITS AND INSTRUMENTTAION

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37.	Rectifiers and power supplies: Block diagram description of a dc power supply	1	24-11-2023		TLM1	
38.	working of full wave bridge rectifier, capacitor filter (no analysis)	1	25-11-2023		TLM1	
39.	Working of simple zener voltage regulator.	1	27-11-2023		TLM1	
40.	Amplifiers: Block diagram of Public Address system	1	28-11-2023		TLM1	
41.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	30-11-2023		TLM1	
42.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	01-12-2023		TLM1	
43.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	02-12-2023		TLM1	
44.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	04-12-2023		TLM1	
No. of classes required to complete UNIT-V: 08				**No. of classes taken:**		

UNIT-III: DIGITAL ELECTRONICS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
45.	Overview of Number Systems	1	05-12-2023		TLM1	
46.	Logic gates including Universal Gates	1	07-12-2023		TLM1	
47.	BCD codes	1	08-12-2023		TLM1	
48.	Excess-3 code, Gray code	1	09-12-2023		TLM1	
49.	Hamming code	1	11-12-2023		TLM1	
50.	Boolean Algebra	1	12-12-2023		TLM1	
51.	Basic Theorems and properties of Boolean Algebra	1	14-12-2023		TLM1	
52.	Truth Tables and Functionality of Logic Gates NOT, OR, AND, NOR, NAND, XOR and XNOR	1	15-12-2023		TLM1	
53.	Truth Tables and Functionality of Logic Gates NOT, OR, AND, NOR, NAND, XOR and XNOR	1	16-12-2023		TLM1	
54.	Simple combinational circuits	1	18-12-2023		TLM1	
55.	Half and Full Adders	1	19-12-2023		TLM1	

56.	Introduction to sequential circuits	1	21-12-2023		TLM1	
57.	Flip flops	1	22-12-2023		TLM1	
58.	Registers and counters	1	23-12-2023		TLM1	
59.	Revision of Part –A Unit-I	1	26-12-2023		TLM1	
60.	Revision of Unit-II &III	1	28-12-2023		TLM1	
61.	Revision of Part-B Unit-I	1	29-12-2023		TLM1	
62.	Revision of Unit-II &III	1	30-12-2023		TLM1	
No. of classes required to complete UNIT-V: 18				**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	**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): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	19-09-2023	11-11-2023	8W
I Mid Examinations	6-11-2023	11-11-11-2023	1W
II Phase of Instructions	13-11-2023	6-1-2024	8W
II Mid Examinations	1-1-2024	6-1-2024	1W
Preparation and Practicals	8-1-2024	20-1-2024	2W
Semester End Examinations	22-1-2024	3-2-2024	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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr.B.Pangedaiah**	**Dr.B.Pangedaiah**	**Dr. G. Nageswararao**	**Dr.J.Siva.Vara.PRASAD**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.B.Pangedaiah
Course Name & Code : BASIC ELECTRICAL & ELECTRONICS ENGINEERING – 23EE01
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I/EEE-B **A.Y.:** 2023-24

PREREQUISITE: Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): 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.

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

CO1	Extract electrical variables of AC & DC circuits using fundamental laws. (Understand)
CO2	Understand the operation of electrical machines and measuring instruments. (Understand)
CO3	Classify various energy resources, safety measures and interpret electricity bill generation in electrical systems. (Understand)
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
CO1															
CO2															
CO3															
CO4															
CO5															
CO6															
1 - Low						**2 –**Medium						**3 -** High			

TEXTBOOKS:

T1	Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
T2	Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, Dhanpat Rai & Co, 20
T3	Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition
T4	R. L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
T5	R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

PART A: BASIC ELECTRICAL ENGINEERING

UNIT-I: DC & AC Circuits

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 subject and course outcomes	1	19-09-2023		TLM1	
2.	**DC Circuits:** Electrical circuit elements (R, L and C)	1	21-09-2023		TLM1	
3.	Ohm's Law and its limitations	1	22-09-2023		TLM1	
4.	KCL & KVL	1	23-09-2023		TLM1	
5.	series, parallel, series-parallel circuits	1	25-09-2023		TLM1	
6.	Super Position theorem	1	26-09-2023		TLM1	
7.	**AC Circuits:** A.C. Fundamentals:	1	29-09-2023		TLM1	
8.	Equation of AC Voltage and current, waveform	1	30-09-2023		TLM1	
9.	time period, frequency, amplitude, phase, phase difference, average value, RMS value	1	03-10-2023		TLM1	
10.	form factor, peak factor, Voltage and current relationship with phasor diagrams in R, L, and C circuits	1	05-10-2023		TLM1	
11.	Concept of Impedance, Active power, reactive power and apparent power	1	06-10-2023		TLM1	
12.	Concept of power factor (Simple Numerical problems).	1	07-10-2023		TLM1	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Machines and Measuring Instruments

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	**Machines:** Construction, principle and operation of DC Motor	1	09-10-2023		TLM1	
14.	Construction, principle and operation of DC Generator	1	10-10-2023		TLM1	
15.	Construction, principle and operation of Three Phase Induction Motor	1	12-10-2023		TLM1	
16.	Construction, principle and operation of Alternator		12-10-2023		TLM1	
17.	Applications of electrical machines	1	13-10-2023		TLM1	
18.	**Measuring Instruments:** Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments	1	14-10-2023		TLM1	
19.	Wheat Stone bridge.	1	16-10-2023		TLM1	
No. of classes required to complete UNIT-II: 06				**No. of classes taken:**		

UNIT-III: Energy Resources, Electricity Bill & Safety Measures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
20.	**Energy Resources:** : Conventional and non-conventional energy resources	1	19-10-2023		TLM1	
21.	Layout and operation of various Power Generation systems: Hydel power generation	1	26-10-2023		TLM1	
22.	Layout and operation of Nuclear power generation	1	27-10-2023		TLM1	
23.	Layout and operation of Solar power generation	1	28-10-2023		TLM1	
24.	Layout and operation of Wind power generation.	1	30-10-2023		TLM1	
25.	**Electricity bill:** : Power rating of household appliances including air conditioners PCs, Laptops, Printers, etc	1	31-10-2023		TLM1	
26.	Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers	1	02-11-2023		TLM1	
27.	**Equipment Safety Measures:** Working principle of Fuse and Miniature circuit breaker(MCB), merits and demerits	1	03-11-2023		TLM1	
28.	Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.	1	04-11-2023		TLM1	
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

PART B: BASIC ELECTRONICS ENGINEERING

UNIT-I: SEMICONDUCTOR DEVICES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29.	Introduction - Evolution of electronics, Vacuum tubes to nano electronics	1	13-11-2023		TLM1	
30.	Characteristics of PN Junction Diode	1	14-11-2023		TLM1	
31.	Zener Effect — Zener Diode and its Characteristics	1	16-11-2023		TLM1	
32.	Bipolar Junction Transistor	1	17-11-2023		TLM1	
33.	CB Configurations and Characteristics	1	18-11-2023		TLM1	
34.	CE Configurations and Characteristics.	1	20-11-2023		TLM1	
35.	CC Configurations and Characteristics.	1	21-11-2023		TLM1	
36.	Elementary Treatment of Small Signal CE Amplifier.	1	23-11-2023		TLM1	
No. of classes required to complete UNIT-IV: 8				**No. of classes taken:**		

UNIT-II: BASIC ELECTRONIC CIRCUITS AND INSTRUMENTTAION

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

37.	Rectifiers and power supplies: Block diagram description of a dc power supply	1	24-11-2023		TLM1	
38.	working of full wave bridge rectifier, capacitor filter (no analysis)	1	25-11-2023		TLM1	
39.	Working of simple zener voltage regulator.	1	27-11-2023		TLM1	
40.	Amplifiers: Block diagram of Public Address system	1	28-11-2023		TLM1	
41.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	30-11-2023		TLM1	
42.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	01-12-2023		TLM1	
43.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	02-12-2023		TLM1	
44.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	04-12-2023		TLM1	
No. of classes required to complete UNIT-V: 08				**No. of classes taken:**		

UNIT-III: DIGITAL ELECTRONICS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
45.	Overview of Number Systems	1	05-12-2023		TLM1	
46.	Logic gates including Universal Gates	1	07-12-2023		TLM1	
47.	BCD codes	1	08-12-2023		TLM1	
48.	Excess-3 code, Gray code	1	09-12-2023		TLM1	
49.	Hamming code	1	11-12-2023		TLM1	
50.	Boolean Algebra	1	12-12-2023		TLM1	
51.	Basic Theorems and properties of Boolean Algebra	1	14-12-2023		TLM1	
52.	Truth Tables and Functionality of Logic Gates NOT, OR, AND, NOR, NAND, XOR and XNOR	1	15-12-2023		TLM1	
53.	Truth Tables and Functionality of Logic Gates NOT, OR, AND, NOR, NAND, XOR and XNOR	1	16-12-2023		TLM1	
54.	Simple combinational circuits	1	18-12-2023		TLM1	
55.	Half and Full Adders	1	19-12-2023		TLM1	
56.	Introduction to sequential circuits	1	21-12-2023		TLM1	
57.	Flip flops	1	22-12-2023		TLM1	

58.	Registers and counters	1	23-12-2023		TLM1	
59.	Revision of Part –A Unit-I	1	26-12-2023		TLM1	
60.	Revision of Unit-II &III	1	28-12-2023		TLM1	
61.	Revision of Part-B Unit-I	1	29-12-2023		TLM1	
62.	Revision of Unit-II &III	1	30-12-2023		TLM1	
No. of classes required to complete UNIT-V: 18				**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	**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): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	19-09-2023	11-11-2023	8W
I Mid Examinations	6-11-2023	11-11-2023	1W
II Phase of Instructions	13-11-2023	6-1-2024	8W
II Mid Examinations	1-1-2024	6-1-2024	1W
Preparation and Practicals	8-1-2024	20-1-2024	2W
Semester End Examinations	22-1-2024	3-2-2024	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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr.B.Pangedaiah**	**Dr.B.Pangedaiah**	**Dr. G. Nageswararao**	**Dr.J.Siva.Vara PRASAD**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. GARIKAPATI DIVYA

Course Name & Code : IT WORKSHOP Lab & 23IT51
L-T-P Structure : 0-0-2 **Credits: 1**
Program/Sem/Sec : B.Tech. - EEE/I/A **A.Y.:** 2023-24
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 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)
CO5	Improve individual / teamwork skills, communication and report writing skills with ethical values

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	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO5	-	-	-	-	-	-	-	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	21-9-2023		**DM5**	
2.	Task-2	3	5-10-2023		**DM5**	
3.	Task-3	3	5-10-2023		**DM5**	
4.	Task-4	3	12-10-2023		**DM5**	
5.	Task-5	3	12-10-2023		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	19-10-2023		**DM5**	
7.	Task-2	3	19-10-2023		**DM5**	
8.	Task-3	3	26-10-2023		**DM5**	
9.	Task-4	3	26-10-2023		**DM5**	
LaTex and WORD						
10.	Task-1	3	2-11-2023		**DM5**	
11.	Task-2	3	2-11-2023		**DM5**	
12.	Task-3	3	16-11-2023		**DM5**	
13.	Task-4	3	16-11-2023		**DM5**	
EXCEL						
14.	Task-1	3	23-11-2023		**DM5**	
15.	Task-2	3	23-11-2023		**DM5**	

LOOKUP/VLOOKUP					
16.	Task-1	3	4-12-2023		**DM5**
POWER POINT					
17.	Task-1	3	30-11-2023		**DM5**
18.	Task-2	3	30-11-2023		**DM5**
19.	Task-3	3	14-12-2023		**DM5**
AI TOOLS – ChatGPT					
20.	Task-1	3	14-12-2023		**DM5**
21.	Task-2	3	21-12-2023		**DM5**
22.	Task-3	3	21-12-2023		**DM5**
23.	Internal exam	3	28-12-2023		**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.
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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
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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 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	**Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power.**
PSO 2	**Design and analyze electrical machines, modern drive and lighting systems.**
PSO 3	**Specify, design, implement and test analog and embedded signal processing electronic systems.**
PSO 4	**Design controllers for electrical and electronic systems to improve their performance.**

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Ms.G.Divya	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	**Dr.J.Siva Vara Prasad**
Signature				

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. GARIKAPATI DIVYA

Course Name & Code : IT WORKSHOP Lab & 23IT51
L-T-P Structure : 0-0-2 **Credits: 1**
Program/Sem/Sec : B.Tech. - EEE/I/B **A.Y.:** 2023-24
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 Assemble & disassemble the same. (Understand)
CO2	Experiment with installation of Operating System and Secure a computer fromCyber threats.(Apply)
CO3	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO4	Build dialogs and documents using ChatGPT. (Apply)
CO5	Improve individual / teamwork skills, communication and report writing skillswith ethical values

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO4	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO5	-	-	-	-	-	-	-	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
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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	25-9-2023		**DM5**	
2.	Task-2	3	25-9-2023		**DM5**	
3.	Task-3	3	9-10-2023		**DM5**	
4.	Task-4	3	9-10-2023		**DM5**	
5.	Task-5	3	16-10-2023		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	16-10-2023		**DM5**	
7.	Task-2	3	30-10-2023		**DM5**	
8.	Task-3	3	30-10-2023		**DM5**	
9.	Task-4	3	30-10-2023		**DM5**	
LaTex and WORD						
10.	Task-1	3	13-11-2023		**DM5**	
11.	Task-2	3	13-11-2023		**DM5**	
12.	Task-3	3	13-11-2023		**DM5**	
13.	Task-4	3	13-11-2023		**DM5**	
EXCEL						
14.	Task-1	3	20-11-2023		**DM5**	
15.	Task-2	3	20-11-2023		**DM5**	
LOOKUP/VLOOKUP						

16.	Task-1	3	27-11-2023		**DM5**	
POWER POINT						
17.	Task-1	3	4-12-2023		**DM5**	
18.	Task-2	3	4-12-2023		**DM5**	
19.	Task-3	3	4-12-2023		**DM5**	
AI TOOLS – ChatGPT						
20.	Task-1	3	11-12-2023		**DM5**	
21.	Task-2	3	11-12-2023		**DM5**	
22.	Task-3	3	11-12-2023		**DM5**	
23.	Internal exam	3	17-01-2024		**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.
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PO 4	**Conduct investigations of complex problems:** Use research-based knowledge andresearch 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 complexengineering activities with an understanding of the limitations
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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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power.**
PSO 2	**Design and analyze electrical machines, modern drive and lighting systems.**
PSO 3	**Specify, design, implement and test analog and embedded signal processing electronic systems.**
PSO 4	**Design controllers for electrical and electronic systems to improve theirperformance.**

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Ms.G.Divya	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	**Dr.J.Siva Vara Prasad**
Signature				

COURSEHANDOUT

PART-A

NameofCourseInstructor: Dr. L. Prabhu, Associate Professor,

Mr. Uma Maheswara Reddy,AssistantProfessor,

CourseName&Code **:**EngineeringGraphics–23ME01
L-T-PStructure **:**3-0-4 **Credits:**3
Program/Sem/Sec :B.Tech/ISem/ A-Section **A.Y.:**2023-24
PREREQUISITE **:**EngineeringPhysics,Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the students with various concepts like dimensioning, conventions and standards related to
- Engineering Drawing
- To impart knowledge on the projection of points, lines and plane surfaces
- To improve the visualization skills for better understanding of projection of solids
- To develop the imaginative skills of the students required to understand Section of solids and Developments of surfaces.
- To make the students understand the viewing perception of a solid object in Isometric and Perspective projections.

COURSEOUTCOMES(COs): Attheendofthecourse,studentwillbeableto

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

COURSEARTICULATIONMATRIX(CorrelationbetweenCOs,POs&PSOs):

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

Textbook:

1. N. D. Bhatt, Engineering Drawing, Charotar Publishing House, 2016.

Reference Books:

1. Engineering Drawing, K.L. Narayana and P. Kannaiah, Tata McGraw Hill, 2013.
2. Engineering Drawing, M.B.Shah and B.C. Rana, Pearson Education Inc,2009.
3. Engineering Drawing with an Introduction to AutoCAD, DhananjayJolhe, Tata McGraw Hill, 2017.

PART-B

COURSEDELIVERYPLAN(LESSONPLAN):

UNIT-I:INTRODUCTIONTOENGINEERINGGRAPHICS,LETTERING,SCALES,CURVES, ORTHOGRAPHIC PROJECTIONS

S. No.	Topicsto becovered	No. ofClasses Required	TentativeDateof Completion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
1	**UNITI:INTRODUCTION:** Introduction to EngineeringGraphics,CEOs,COs,PEOs &POs	1	20-09-2023		TLM2	
2	Engineering Graphicsand their significance, DrawingInstrumentsand theiruse, **Scales:** Plain scales, diagonal scales and vernier scales.	1	21-09-2023		TLM1/ TLM2	
3	**Curves:** Construction of ellipse, parabola and hyperbola by general method,	1	25-09-2023		TLM1	
4	Cycloid, Epicycloid, Hypocycloid	1	25-09-2023		TLM1	
5	Practice	1	25-09-2023		TLM3	
6	Involutes	1	27-09-2023		TLM1	
7	Practice	1	04-10-2023		TLM3	
8	**Orthographic Projections**: Reference Plane, reference lines or Plane	1	05-10-2023		TLM1	
9	Practice	3	09-10-2023		TLM3	
10	Projections of a point situated in any one of the four quadrants.	1	11-10-2023		TLM1	
No.ofclassesrequiredtocompleteUNIT-I:12(Lecture:07,Practice: 05)				**No. of classes taken:(includingPractice)**		

UNIT-II:PROJECTIONS OF STRAIGHT LINES & PROJECTIONS OF PLANES

S. No.	Topicsto becovered	No. ofClasses Required	TentativeDateof Completion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
11	Introduction to Projections, First and third angle projection methods	1	12-10-2023		TLM1	
12	Projections of straight lines parallel to both reference planes	1	16-10-2023		TLM1	
13	Practice	2	16-10-2023		TLM3	
14	Projections of straight lines perpendicular to	1	18-10-2023		TLM1	

	one reference plane and parallel to other reference plane					
15	Projections of straight lines inclined to one reference plane and parallel to the other reference plane	1	19-10-2023		TLM1	
16	**Projections of Planes:** Regular planes Perpendicular to both reference planes	1	23-10-2023		TLM1	
17	Practice	2	23-10-2023		TLM3	
18	parallel to one reference plane and inclined to the other reference plane;	1	25-10-2023		TLM1	
19	Plane inclined to both the reference planes	1	26-10-2023		TLM1	
20	Practice	3	30-10-20		TLM3	
21	Revision	1	01-11-20		TLM1	
22	Revision	1	02-11-20		TLM1	
No.ofclassesrequiredtocomplete UNIT-II:16(Lecture:09 Practice:07)				**No.ofclassestaken:(includingPractice)**		

UNIT-III:PROJECTIONS OF SOLIDS

S. No.	Topicsto becovered	No. ofClasses Required	TentativeDate ofCompletion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
23	**UNITIII:PROJECTIONSOFSOLIDS:** Introduction,Types of solids: Polyhedra and Solids of revolution	1	13-11-2023		TLM1	
24	Projections of solids in simple positions: Axis perpendicular to horizontal plane	2	13-11-2023		TLM3	
	Axis perpendicular to vertical plane and Axis parallel to both the reference planes	1	15-11-2023		TLM1	
26	Projection of Solids with axis inclined to one reference plane and parallel to another plane	1	16-11-2023		TLM1	
27	Practice	3	20-11-2023		TLM3	
28	Practice	1	22-11-2023		TLM3	
29	Revision	1	23-11-2023		TLM1	
No.ofclassesrequiredtocompleteUNIT-III:10 (Lecture: 06Practice: 04)				**No. of classes taken:(includingPractice)**		

UNIT-IV:SECTIONS OF SOLIDS & DEVELOPMENT OF SURFACES

S. No.	Topicsto becovered	No.ofClassesRequired	TentativeDate of Completion	ActualDateof Completion	TeachingLearningMethods	HOD SignWeekly
31.	Perpendicular and inclined section planes	1	29-11-2023		TLM1	
32.	Practice	1	30-11-2023		TLM3	
	Sectional views and True shape of section	1	04-12-2023		TLM1	

33.						
34.	Practice	2	04-12-2023		TLM3	
35.	Sections of solids in simple position only	1	06-12-2023		TLM1	
36.	**Development of Surfaces:** Methods of Development, Parallel line development	2	07-12-2023		TLM1	
37.	Radial line development, Development of a cube, prism, cylinder	1	11-12-2023		TLM2	
38.	Practice	2	11-12-2023		TLM3	
39.	Development of a pyramid and cone	1	13-12-2023		TLM1	
40.	Practice	1	13-12-2023		TLM3	
No.ofclassesrequiredtocomplete UNIT-IV:13(Lecture: 07 Practice: 06)				**No. of classes taken:(includingPractice)**		

UNIT-V: CONVERSION OF VIEWS & COMPUTER GRAPHICS

S. No.	Topicsto becovered	No. ofClasses Required	Tentative Dateof Completion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
41	Introduction to isometric& orthographic views	1	14-12-2023		TLM1	
42	Conversion of isometric views to orthographic views	1	18-12-2023		TLM1	
43	Practice	2	18-12-2023		TLM3	
44	Conversion of orthographic views to isometric views	1	20-12-2023		TLM1	
45	Practice	1	21-12-2023		TLM3	
46	Practice	1	27-12-2023		TLM3	
47	**Computer graphics:** Creating 2D&3D drawings of objects including PCB and Transformations using Auto CAD	1	29-12-2023		TLM2	
No. of classes required to complete UNIT-V: 08(Lecture:04Practice: 04)				**No.ofclassestaken:**		

TeachingLearningMethods			
TLM1	ChalkandTalk	**TLM4**	Demonstration(Lab/FieldVisit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)
TLM3	Tutorial	**TLM6**	GroupDiscussion/Project

PART-C

EVALUATIONPROCESS(R23Regulation):

EvaluationTask	Marks
I-DescriptiveExamination(Units-I,II)	M1=15
II-DescriptiveExamination(UNIT-III,IV&V)	M2=15
DaytoDayEvaluation	15
MidMarks=80% of Max(M1,M2)+20%of Min((M1,M2)+DaytoDayEvaluation	M=30
CumulativeInternalExamination(CIE):M	30
SemesterEndExamination(SEE)	70
TotalMarks=CIE+SEE	100

PART-D

PROGRAMMEOUTCOMES(POs):

EngineeringGraduateswillbeableto:

PO1	**Engineeringknowledge:** Applytheknowledgeofmathematics,science,engineeringfundamentals,andan engineering specializationtothesolutionofcomplexengineeringproblems.
PO2	**Problemanalysis:** Identify,formulate,reviewresearchliterature,andanalyzecomplexengineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics,naturalsciences,andengineeringsciences.
PO3	**Design/developmentofsolutions:** Designsolutionsforcomplexengineeringproblemsanddesignsystemcomponentsorprocessesthatmeet thespecified needswithappropriateconsiderationforthepublichealth andsafety,andthecultural,societal,and environmentalconsiderations.
PO4	**Conductinvestigationsofcomplexproblems**:Useresearch-basedknowledgeandresearchmethodsincludingdesign ofexperiments,analysisandinterpretationofdata,andsynthesisoftheinformationtoprovidevalidconclusions.
PO5	**Moderntoolusage:** Create,select,andapplyappropriatetechniques,resources,andmodernengineeringandITtoolsincludingpredictionandmodelingtocomplexengineeringactivitieswithanunderstandingofthelimitations.
PO6	**Theengineerandsociety:** Applyreasoninginformedbythecontextualknowledgetoassesssocietal,health,safety,legalandculturalissuesandtheconsequentresponsibilitiesrelevanttotheprofessionalengineeringpractice.
PO7	**Environmentandsustainability:** Understandtheimpactoftheprofessionalengineeringsolutionsinsocietalandenvironmentalcontexts,anddemonstratetheknowledgeof,andneedforsustainabledevelopment.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of theengineeringpractice.
PO9	**Individualandteamwork:** Functioneffectivelyasanindividual,andasamemberorleaderindiverseteams,andinmultidisciplinary settings.
PO10	**Communication:** Communicateeffectivelyon complexengineeringactivitieswiththeengineeringcommunityandwithsocietyatlarge,suchas,beingabletocomprehendandwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgiveandreceiveclearinstructions.
PO11	**Projectmanagementandfinance:** Demonstrateknowledgeandunderstanding ofthe engineeringandmanagementprinciplesand applythese to one's ownwork, as a memberandleaderina team,tomanageprojectsandinmultidisciplinaryenvironments.
PO12	**Life-longlearning:** Recognize the need for,and have the preparation andability to engage inindependentandlife-longlearninginthebroadestcontextoftechnologicalchange.

PROGRAMMESPECIFICOUTCOMES (PSOs):

PSO1	Toapplytheprinciplesofthermalsciencestodesignanddevelopvariousthermalsystems.
PSO2	To apply the principles of manufacturing technology, scientific management towards improvementof quality and optimization of engineering systems in the design, analysis and manufacturability ofproducts.
PSO3	Toapply thebasicprinciplesofmechanicalengineeringdesignforevaluationofperformanceofvarioussystemsrelatingtotransmissionofmotionandpower,conservationofenergyandotherprocessequipment.

Title	**CourseInstructor**	**CourseCoordinator**	**ModuleCoordinator**	**Headof theDepartment**
NameoftheFaculty	Dr. L. Prabhu		Dr.MBSSReddy	Dr.J Siva Vara Prasad
Signature				

LAKIREDDYBALIREDDY COLLEGEOFENGINEERING

(AUTONOMOUS)

AccreditedbyNAAC&NBA(UnderTier-I),ISO9001:2015CertifiedInstitution
ApprovedbyAICTE,NewDelhiandAffiliatedtoJNTUK,Kakinada

DEPARTMENTOF ELECTRICAL &ELECTRONICS
L.B.REDDYNAGAR,MYLAVARAM,KRISHNADIST.,A.P. 521230.

COURSEHANDOUT

PART-A

NameofCourseInstructor: Dr. L. Prabhu, Associate Professor,

Mr. Oliva,AssistantProfessor,

CourseName&Code	**:**EngineeringGraphics–23ME01	
L-T-PStructure	**:**3-0-4	**Credits:**3
Program/Sem/Sec	:B.Tech/ISem/ B-Section	**A.Y.:**2023-24
PREREQUISITE	**:**EngineeringPhysics,Mathematics	

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the students with various concepts like dimensioning, conventions and standards related to
- Engineering Drawing
- To impart knowledge on the projection of points, lines and plane surfaces
- To improve the visualization skills for better understanding of projection of solids
- To develop the imaginative skills of the students required to understand Section of solids and Developments of surfaces.
- To make the students understand the viewing perception of a solid object in Isometric and Perspective projections.

COURSEOUTCOMES(COs): Attheendofthecourse,studentwillbeableto

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

COURSEARTICULATIONMATRIX(CorrelationbetweenCOs,POs&PSOs):

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

Textbook:

1. N. D. Bhatt, Engineering Drawing, Charotar Publishing House, 2016.

Reference Books:

1. Engineering Drawing, K.L. Narayana and P. Kannaiah, Tata McGraw Hill, 2013.
2. Engineering Drawing, M.B.Shah and B.C. Rana, Pearson Education Inc,2009.
3. Engineering Drawing with an Introduction to AutoCAD, DhananjayJolhe, Tata McGraw Hill, 2017.

PART-B

COURSEDELIVERYPLAN(LESSONPLAN):

UNIT-I:INTRODUCTIONTOENGINEERINGGRAPHICS,LETTERING,SCALES,CURVES, ORTHOGRAPHIC PROJECTIONS

S. No.	Topicsto becovered	No. ofClasses Required	TentativeDateof Completion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
1.	**UNITI:INTRODUCTION:** Introduction to EngineeringGraphics,CEOs,COs,PEOs& POs	1	19-09-2023		TLM2	
2.	Engineering Graphicsand their significance, DrawingInstrumentsand theiruse, **Scales:** Plain scales, diagonal scales and vernier scales.	2	19-09-2023		TLM1/ TLM2	
3.	**Curves:** Construction of ellipse, parabola and hyperbola by general method	1	21-09-2023		TLM1	
4.	Cycloid, Epicycloid, Hypocycloid	1	22-09-2023		TLM1	
5.	Practice	3	26-09-2023		TLM3	
6.	Involutes	1	29-09-2023		TLM1	
7.	Practice	3	03-10-2023		TLM3	
8.	**Orthographic Projections**: Reference Plane, reference lines or Plane	1	05-10-2023		TLM1	
9.	Projections of a point situated in any one of the four quadrants.	1	06-10-2023		TLM1	
10.	Practice	3	10-10-2023		TLM3	
No.ofclassesrequiredtocompleteUNIT-I:17(Lecture:6,Practice: 9)				**No. of classes taken:(includingPractice)**		

UNIT-II:PROJECTIONS OF STRAIGHT LINES & PROJECTIONS OF PLANES

S. No.	Topicsto becovered	No. ofClasses Required	TentativeDateof Completion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
11	Introduction to Projections, First and third angle projection methods	1	12-10-2023		TLM1	
12	Projections of straight lines parallel to both reference planes	1	13-10-2023		TLM1	
13	Practice	2	17-10-2023		TLM3	

14	Projections of straight lines perpendicular to one reference plane and parallel to other reference plane	1	17-10-2023		TLM1	
15	Projections of straight lines inclined to one reference plane and parallel to the other reference plane	1	19-10-2023		TLM1	
16	**Projections of Planes:** Regular planes Perpendicular to both reference planes	1	20-10-2023		TLM1	
17	Practice	1	26-10-2023		TLM3	
18	parallel to one reference plane and inclined to the other reference plane; Plane inclined to both the reference planes	1	27-10-2023		TLM1	
19	Practice	3	31-10-2023		TLM3	
20	Revision	1	03-11-2023		TLM1	
21	Revision	1	03-11-2023		TLM1	
No.ofclassesrequiredtocomplete UNIT-II:14(Lecture:08 Practice:06)				**No.ofclassestaken:(includingPractice)**		

UNIT-III:PROJECTIONS OF SOLIDS

S. No.	Topicsto becovered	No. ofClasses Required	TentativeDate ofCompletion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
22	**UNITIII:PROJECTIONSOFSOLIDS:** Introduction,Types of solids: Polyhedra and Solids of revolution	1	14-11-2023		TLM1	
23	Projections of solids in simple positions: Axis perpendicular to horizontal plane	2	14-11-2023		TLM3	
	Axis perpendicular to vertical plane and Axis parallel to both the reference planes	1	16-11-2023		TLM1	
25	Projection of Solids with axis inclined to one reference plane and parallel to another plane	1	17-11-2023		TLM1	
26	Practice	3	21-11-2023		TLM3	
27	Practice	1	23-11-2023		TLM3	
28	Revision	1	24-11-2023		TLM3	
No.ofclassesrequiredtocompleteUNIT-III:10 (Lecture: 03Practice: 07)			**No. of classes taken:(includingPractice)**			

UNIT-IV:SECTIONS OF SOLIDS & DEVELOPMENT OF SURFACES

S. No.	Topicsto becovered	No.ofClassesRequired	TentativeDate of Completion	ActualDateof Completion	TeachingLearningMethods	HOD SignWeekly
29	Perpendicular and inclined section planes	1	28-11-2023		TLM1	
30	Practice	2	28-11-2023		TLM3	
31	Sectional views and True shape of section	1	30-11-2023		TLM1	
32	Practice	1	01-12-2023		TLM3	
33	Sections of solids in simple position only	1	05-12-2023		TLM1	
34	Practice	2	05-12-2023		TLM3	
35	**Development of Surfaces:** Methods of Development, Parallel line development	1	07-12-2023		TLM1	
36	Radial line development, Development of a cube, prism, cylinder	1	08-12-2023		TLM1	
37	Practice	3	12-12-2023		TLM3	
38	Development of a pyramid and cone	1	14-12-2023		TLM1	
39	Practice	1	15-12-2023		TLM3	
No.ofclassesrequiredtocomplete UNIT-IV:15(Lecture: 07 Practice: 08)				**No. of classes taken:(includingPractice)**		

UNIT-V: CONVERSION OF VIEWS & COMPUTER GRAPHICS

S. No.	Topicsto becovered	No. ofClasses Required	Tentative Dateof Completion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
40	Introduction to isometric& orthographic views	1	19-12-2023		TLM1	
41	Conversion of isometric views to orthographic views	2	19-12-2023		TLM1	
42	Practice	1	21-12-2023		TLM3	
43	Practice	1	22-12-2023		TLM3	
44	Conversion of orthographic views to isometric views	1	26-12-2023		TLM1	
45	Practice	2	26-12-2023		TLM3	
46	Practice	1	29-12-2023		TLM3	
47	**Computer graphics:** Creating 2D&3D	1	29-12-2023		TLM2	

	drawings of objects including PCB and Transformations using Auto CAD					
No. of classes required to complete UNIT-V: 10(Lecture:05Practice: 05)				**No.ofclassestaken:**		

TeachingLearningMethods			
TLM1	ChalkandTalk	**TLM4**	Demonstration(Lab/FieldVisit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrab ha/MOOCS)
TLM3	Tutorial	**TLM6**	GroupDiscussion/Project

PART-C

EVALUATIONPROCESS(R23Regulation):

EvaluationTask	**Marks**
I-DescriptiveExamination(Units-I,II)	M1=15
II-DescriptiveExamination(UNIT-III,IV&V)	M2=15
DaytoDayEvaluation	15
MidMarks=80% of Max(M1,M2)+20%of Min((M1,M2)+DaytoDayEvaluation	M=30
CumulativeInternalExamination(CIE):M	30
SemesterEndExamination(SEE)	70
TotalMarks=CIE+SEE	100

PART-D

PROGRAMMEOUTCOMES(POs):

EngineeringGraduateswillbeableto:

PO1	**Engineeringknowledge:** Applytheknowledgeofmathematics,science,engineeringfundamentals,andan engineering specializationtothesolutionofcomplexengineeringproblems.
PO2	**Problemanalysis:** Identify,formulate,reviewresearchliterature,andanalyzecomplexengineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics,naturalsciences,andengineeringsciences.
PO3	**Design/developmentofsolutions:** Designsolutionsforcomplexengineeringproblemsanddesignsystemcomponentsorprocessesthatmeet thespecified needswithappropriateconsiderationforthepublichealth andsafety,andthecultural,societal,and environmentalconsiderations.
PO4	**Conductinvestigationsofcomplexproblems**:Useresearch-basedknowledgeandresearchmethodsincludingdesign ofexperiments,analysisandinterpretationofdata,andsynthesisoftheinformationtoprovidevalidconclusions.
PO5	**Moderntoolusage:** Create,select,andapplyappropriatetechniques,resources,andmodernengineeringandITtoolsincludingpredictionandmodelingtocomplexengineeringactivitieswithan understandingofthelimitations.
PO6	**Theengineerandsociety:** Applyreasoninginformedbythecontextualknowledgetoassesssocietal,health,safety,legalandculturalissuesandtheconsequentresponsibilitiesrelevanttothepro fessionalengineeringpractice.
PO7	**Environmentandsustainability:** Understandtheimpactoftheprofessionalengineeringsolutionsinsocietalandenvironmentalcontexts,anddemonstratetheknowledgeof,andneedforsustainabledevelopment.

PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of theengineeringpractice.
PO9	**Individualandteamwork:**Functioneffectivelyasanindividual,andasamemberorleaderindiverseteams,andinmultidisciplinary settings.
PO10	**Communication:**Communicateeffectivelyon complexengineeringactivitieswiththeengineeringcommunityandwithsocietyatlarge,suchas,beingabletocomprehendandwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgiveandreceiveclearinstructions.
PO11	**Projectmanagementandfinance:**Demonstrateknowledgeandunderstanding ofthe engineeringandmanagementprinciplesand applythese to one's ownwork, as a memberandleaderina team,tomanageprojectsandinmultidisciplinaryenvironments.
PO12	**Life-longlearning:**Recognize the need for,and have the preparation andability to engage inindependentandlife-longlearninginthebroadestcontextoftechnologicalchange.

PROGRAMMESPECIFICOUTCOMES (PSOs):

PSO1	Toapplytheprinciplesofthermalsciencestodesignanddevelopvariousthermalsystems.
PSO2	To apply the principles of manufacturing technology, scientific management towards improvementof quality and optimization of engineering systems in the design, analysis and manufacturability ofproducts.
PSO3	Toapply thebasicprinciplesofmechanicalengineeringdesignforevaluationofperformanceofvarioussystemsrelatingtotransmissionofmotionandpower,conservationofenergyandotherprocessequipment.

Title	**CourseInstructor**	**CourseCoordinator**	**ModuleCoordinator**	**Headof theDepartment**
NameoftheFaculty	Dr. L.Prabhu		Dr.MBSSReddy	Dr.J. Siva Vara Prasad
Signature				

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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: D.chaithanya
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech(...EEE-A..)- I SEM
A.Y. : 2023-24

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. a. Vowels & Consonants

b. Neutralization / Accent rules

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

Note: Any Eight of the listed activates are to be conducted.

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
70.	Introduction to syllabus	03	20/9/2023		TLM4	
71.	Self Introduction & Introducing others	03	27/9/2023		TLM4	
72.	Vowels & Consonants	03	4/10/2023		TLM1, TLM5	
73.	Neutralization / Accent rules	03	11/10/2023		TLM1, TLM5	
74.	JAM-I(Short and Structured Talks)	03	18/10/2023		TLM4	
75.	Role Play-I(Formal and Informal)	03	25/10/2023		TLM4	
76.	e-mail Writing, Resume writing, Cover letter, SOP	03	1/11/2023 15/11/2023		TLM1, TLM5	
77.	Group Discussion	03	22/11/2023		TLM4, TLM6	
78.	Debate	03	29/11/2023		TLM4, TLM6	
79.	PPT & Poster Presentation	03	6/12/2023 13/12/2023		TLM2, TLM4	
80.	Mock Interviews	03	20/12/2023		TLM1, TLM6	
81.	Lab Internal Exam	03	27/12/2023			

No. of classes required to complete Syllabus: 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

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	**D.chaithanya**	**Dr. Padma**	**Dr. Padma**	**Dr. A. Ramireddy**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. R. Padma Venkat
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech- I SEM – EEE -B
A.Y. : 2023-24

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**
CO5.	-	-	-	2	-	-	-	-	3	3	-	2
CO6.	-	-	-	2	-	-	-	-	3	3	-	2
CO7.	-	-	-	2	-	-	-	-	3	3	-	2
CO8.	-	-	-	2	-	-	-	-	3	3	-	2
1 = Slight (Low)			**2= Moderate (Medium)**						**3 = Substantial (High)**			

List of Activities:

1. a. Vowels & Consonants
   b. Neutralization / Accent rules

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

Note: Any Eight of the listed activates are to be conducted.

Suggested Software:

3. Walden Infotech
4. 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.
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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
82.	Introduction to syllabus	03	23-09-23		TLM4	
83.	Self Introduction & Introducing others	03	30-09-23		TLM4	
84.	Vowels & Consonants	03	07-10-23		TLM1, TLM5	
85.	Neutralization / Accent rules	03	21-10-23		TLM1, TLM5	
86.	JAM-I(Short and Structured Talks)	03	28-10-23		TLM4	
87.	Role Play-I(Formal and Informal)	03	04-11-23		TLM4	
88.	e-mail Writing, Resume writing, Cover letter, SOP	03	18-11-23		TLM1, TLM5	

89.	Group Discussion	03	25-11-23		TLM4, TLM6	
90.	Debate	03	02-12-23		TLM4, TLM6	
91.	PPT & Poster Presentation	03	16-12-23		TLM2, TLM4	
92.	Mock Interviews	03	23-12-23		TLM1, TLM6	
93.	Lab Internal Exam	03	30-12-23			
No. of classes required to complete Syllabus: 36				**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

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	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**		**Dr. A. Ramireddy**
Signature				

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	:	**B.Tech., I-Sem., EEE-A**
ACADEMIC YEAR	:	**2023-24**
COURSE NAME & CODE	:	**ENGINEERING PHYSICS LAB**
L-T-P STRUCTURE	:	**0 – 0 – 2**
COURSE CREDITS	:	**1**
COURSE INSTRUCTOR	:	**N. T. SARMA / Dr. S. YUSUF**
COURSE COORDINATOR	:	

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	**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)**												

List of Experiments

1. Determination of radius of curvature of a given Plano - Convex lens by Newton's rings.
2. Determination of wavelengths of diffraction spectral lines in mercury spectrum using diffraction grating in normal incidence configuration.
3. Determination of dielectric constant using charging and discharging method.
4. Determination of wavelength of a laser light using diffraction grating.
5. Magnetic field along the axis of a current carrying circular coil by Stewart Gee's Method.
6. Determination of temperature coefficients of a thermistor.
7. Determination of acceleration due to gravity and radius of Gyration by using a compound pendulum.
8. Determination of Frequency of electrically maintained tuning fork by Melde's experiment.

Virtual Lab Experiments

1. Determination of rigidity modulus of the material of the given wire using Torsional pendulum.
2. Sonometer- Verification of laws of a stretched string.

References:

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

Web Resources

- www.vlab.co.in
- https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype

BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

EVALUATION PROCESS:

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work = **A**	1,2,3,4,5,6,7,8,9,10	A = 05
Internal test = **B**	1,2,3,4,5,6,7,8,9,10	B = 05
Evaluation of viva voce = **C**	1,2,3,4,5,6,7,8,9,10	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8,9,10	**15**
Semester End Examinations = D	1,2,3,4,5,6,7,8,9,10	**D = 35**
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8,9,10	**50**

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): EEE-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
1.	Introduction & Demonstration	3	22/09/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
2.	Experiment 1	3	29/09/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
3.	Experiment 2	3	06/10/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
4.	Experiment 3	3	13/10/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
5.	Experiment 4	3	20/10/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
6.	Experiment 5	3	27/10/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
7.	Experiment 6	3	03/11/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
8.	**MID-1 Exam**	3	10/11/23		---	---	---	
9.	Experiment 7	3	17/11/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	
10.	Experiment 8	3	24/11/23		**TLM4**	CO1, CO2, CO3, CO4 & CO5	T 1	

11.	Virtual Lab Experiment -1	3	01/12/23		**TLM-5**	CO1, CO2, CO3, CO4 & CO5	Web Resource	
12.	Virtual Lab Experiment -2	3	08/12/23		**TLM-5**	CO1, CO2, CO3, CO4 & CO5	Web Resource	
13.	Repetition	3	15/12/23		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T 1	
14.	**Internal Exam**	3	22/12/23		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	- - -	
15.	**Internal Exam**	3	29/12/23		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	- - -	
No. of classes required to complete lab		14			No. of classes taken: 14			

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, naturalsciences, 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 anunderstanding 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 forsustainabledevelopment.

(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.

Course Instructor	Course Coordinator	Module Coordinator	H.O.D
N. T. SARMA	**Dr. S. YUSUF**	**Dr. S. YUSUF**	**Dr. A. RAMIREDDY**

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COURSE HANDOUT

Part-A

PROGRAM : B.Tech., I-Sem.,(EEE) / B

ACADEMIC YEAR : 2023-2024

COURSE NAME & CODE : ENGINEERING PHYSICS LAB

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

COURSE CREDITS : 1

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

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 Cos & POs, PSOs):

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**
CO6.	**3**	**3**	**2**	**1**				**1**	1			**1**
CO7.	**3**	**3**	**2**	**1**				**1**	1			**1**
CO8.	**3**	**3**	**2**	**1**				**1**	1			**1**
CO9.	**3**	**3**	**2**	**1**				**1**	1			**1**
CO10.	**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- AI&DS

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	3	21-09-2023		**TLM4**	
2.	Demonstration	3	28-09-2023		**TLM4**	
3.	Experiment 1	3	12-10-2023		**TLM4**	
4.	Experiment 2	3	19-10-2023		**TLM4**	
5.	Experiment 3	3	26-10-2023		**TLM4**	
6.	Experiment 4	3	02-11-2023		**TLM4**	
7.	Experiment 5	3	16-11-2023		**TLM4**	
8.	Experiment 6	3	23-11-2023		**TLM4**	
9.	Experiment 7	3	30-11-2023		**TLM4**	
10.	Experiment 8	3	07-12-2023		**TLM4**	
11.	Experiment 9	3	14-12-2023		**TLM4**	
12.	Experiment 10	3	21-12-2023		**TLM4**	
13.	**Internal Exam**	3	28/11/2023		**TLM4**	
	No. of classes required to complete Syllabus:			39		

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

EVALUATION PROCESS:

Evaluation Task	**Marks**
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

1.To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.
2. To Function professionally in the rapidly changing world with advances in technology.
3. To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.
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.

P Vijaya Sirisha/ Dr N Aruna	Dr. S. Yusub	Dr. S. Yusub	Dr A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

Part - A

PROGRAM : B.Tech., I-Sem., EEE-A

ACADEMIC YEAR : 2023-24

COURSE NAME & CODE : ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

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

COURSE CREDITS : 1

COURSE INSTRUCTOR : **Mrs. T. HimaBindu, Mr.Ch.Rajesh, Mrs.G.Tabita, Mrs.D.Venkatalakshmi**

COURSE COORDINATOR : Mr.Ch.Rajesh

Course Objectives:
To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

Course Outcomes:
After the completion of the course students 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	

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

Part - B
COURSE DELIVERY PLAN (LESSON PLAN)
SECTION-B SCHEDULE

Day:Saturday (2,3,4 Hours)

	I Week	II Week	III Week	IV Week	V Week	VI Week	VII Week	VIII Week	IX Week	X Week	XI Week	XII Week	XIII Week	XIV Week
Tentative date	23/9/23	30/9/23	7/10/23	14/10/23	28/10/23	4/11/23	11/11/23	18/11/23	25/11/23	2/12/23	16/12/23	23/12/23	30/12/23	06/1/24
Actual date														
	Demo	**Exp 1**	**Exp 2**	**Exp 3**	**Exp 4**	**Exp 5**	**Exp 6**	**Exp 7**	**Exp 8**	**Exp 9**	**Exp 10**	**Exp 11**	**Exp 12 Revision**	**INTERNAL EXAM**

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	19-09-2023	11-11-2023	8W
I Mid Examinations	06-11-2023	11-11-2023	1 W
II Phase of Instructions	13-11-2023	06-01-2024	8 W
II Mid Examinations	01-01-2024	06-01-2024	1 W
Preparation and Practicals	08-01-2024	20-01-2024	2W
Semester End Examinations	22-01-2024	03-02-2024	2W

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	**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 1	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO 2	Design and analyze electrical machines, modern drive and lighting systems
PSO 3	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO 4	Design controllers for electrical and electronic systems to improve their performance.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mrs.T.HimaBindu**	**Mr.Ch.Rajesh**	**Dr.G.Nageswar rao**	**Dr.J.Siva vara prasad**
Signature				

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

Part - A

PROGRAM : B.Tech., I-Sem., EEE-B

ACADEMIC YEAR : 2023-24

COURSE NAME & CODE : ELECTRICAL & ELECTRONICS ENGINEERING WORKSHOP

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

COURSE CREDITS : 1

COURSE INSTRUCTOR : **Mrs. K.S.L.Lavanya ,Mrs.R.Padma,Mrs.T.Hima Bindu,Ms.D.Venkatalakshmi**

COURSE COORDINATOR : Mr.Ch.Rajesh

Course Objectives:
To impart knowledge on the fundamental laws & theorems of electrical circuits, functions of electrical machines and energy calculations.

Course Outcomes:
After the completion of the course students 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	

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

Part - B
COURSE DELIVERY PLAN (LESSON PLAN)
SECTION-B SCHEDULE

Day:Wednesday(2,3,4 Hours)

	I Week	II Week	III Week	IV Week	V Week	VI Week	VII Week	VIII Week	IX Week	X Week	XI Week	XII Week	XIII Week	XIV Week
Tentative date	20/9/23	27/9/23	4/10/23	11/10/23	18/10/23	25/10/23	1/11/23	15/11/23	22/11/23	29/11/23	6/12/23	13/12/23	20/12/23	27/12/23
Actual date														
	Demo	**Exp 1**	**Exp 2**	**Exp 3**	**Exp 4**	**Exp 5**	**Exp 6**	**Exp 7**	**Exp 8**	**Exp 9**	**Exp 10**	**Exp 11**	**Exp 12 Revision**	**INTERNAL EXAM**

Teaching Learning Methods					
TLM1	Chalk and Talk	**TLM4**	Problem Solving	**TLM7**	Seminars or GD
TLM2	PPT	**TLM5**	Programming	**TLM8**	Lab Demo
TLM3	Tutorial	**TLM6**	Assignment or Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	19-09-2023	11-11-2023	8W
I Mid Examinations	06-11-2023	11-11-2023	1 W
II Phase of Instructions	13-11-2023	06-01-2024	8 W
II Mid Examinations	01-01-2024	06-01-2024	1 W
Preparation and Practicals	08-01-2024	20-01-2024	2W
Semester End Examinations	22-01-2024	03-02-2024	2W

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	**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 1	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO 2	Design and analyze electrical machines, modern drive and lighting systems
PSO 3	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO 4	Design controllers for electrical and electronic systems to improve their performance.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mrs.K.S.L.Lavanya**	**Mr.Ch.Rajesh**	**Dr.G.Nageswar rao**	**Dr.J.Siva vara prasad**
Signature				