



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

COURSE HANDOUT

PART-A

Name of Course Instructor : B. Sreenivasa Reddy
Course Name & Code : Communicative English & 23FE50
L-T-P Structure : 2-0-0
Program/Sem/Sec : B. Tech, I Sem – ECE- A
A.Y. : 2023-24

Credits: 02

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	3 Weeks	31-08-2023 TO 16-09-2023		TLM1			
2.	Introduction to the course				TLM1			
3.	Course Outcomes, Program Outcomes				TLM2			

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	20-09-23 22-09-23		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	25-09-23		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	27-09-23		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	02	29-09-23 04-10-23		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	06-10-23		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms	01	09-10-23		TLM2 TLM5	CO1	T1,T2	
7.	Affixes, Root Words	01	11-10-23		TLM2 TLM5	CO1	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8.	Nature: The Brook by Alfred Tennyson	03	13-10-23 16-10-23 18-10-23		TLM1 TLM 6	CO2	T1,T2	
9.	Identifying Sequence of ideas, Linking ideas into a Paragraph	02	25-10-23 27-10-23		TLM2 TLM5	CO2	T1,T2	
10.	Structure of Paragraph – Paragraph Writing	01	30-10-23		TLM1 TLM6 TLM5	CO2	T1,T2	
11.	Cohesive Devices-linkers	01	01-11-23		TLM2 TLM6	CO2	T1,T2	
12.	Use of Articles and zero article, Prepositions	02	03-11-23 06-11-23		TLM2 TLM6	CO2	T1,T2	
13.	Homophones, Homographs, Homonyms	02	08-11-23 10-11-23		TLM2 TLM5	CO2	T1,T2	
No. of classes required to complete UNIT-II: 11				No. of classes taken:				

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Biography: Elon Musk	02	13-11-23 15-11-23		TLM1 TLM 6	CO3	T1,T2	
15.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	17-11-23		TLM2 TLM5	CO3	T1,T2	
16.	Summarizing, Note-making, Paraphrasing	01	20-11-23		TLM1 TLM6 TLM5	CO3	T1,T2	
17.	Verbs- Tenses, Subject-verb agreement	02	22-11-23 24-11-23		TLM2 TLM6	CO3	T1,T2	
18.	Compound words, Collocations	01	27-11-23		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 07							No. of classes taken:	

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Inspiration: The Toys of Peace- by Saki	02	29-11-23 01-12-23		TLM1 TLM 6	CO4	T1,T2	
20.	Study of graphic elements in text to display complicated data	02	04-12-23 06-12-23		TLM2 TLM5	CO4	T1,T2	
21.	Letter Writing : Official Letters, Resumes	02	08-12-23 11-12-23		TLM1 TLM6 TLM5	CO4	T1,T2	
22.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	03	13-12-23 15-12-23 18-12-23		TLM2 TLM6	CO4	T1,T2	
23.	Words often confused, Jargons	01	20-12-23		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 10						No. of classes taken:		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24.	Motivation: The Power of Interpersonal Communication	02	22-12-23 27-12-23		TLM1 TLM 6	CO5	T1,T2	
25.	Reading Comprehension	02	29-12-23 03-01-24		TLM2 TLM5	CO5	T1,T2	
26.	Structured Essays on specific topics	02	05-01-24 08-01-24		TLM1 TLM6 TLM5	CO5	T1,T2	
27.	Editing Texts –	01	10-01-24		TLM2	CO5	T1,T2	

	Correcting Common errors				TLM6			
28.	Technical Jargon	01	12-01-24		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 08						No. of classes taken:		

Content beyond the Syllabus

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Word Analogy	01	29-12-2023		TLM2 & 5	
No. of classes required to complete				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

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

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

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

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 HANDOUT (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
1.	Introduction to the Subject, Course Outcomes	1	18/09/2023		TLM2		
2.	Superposition of waves, Coherence, Conditions for Interference	1	20/09/2023		TLM1		
3.	Interference from thin films, colours in thin films	1	22/09/2023		TLM1		
4.	Newton’s rings	1	23/09/2023		TLM4		

5.	TUTORIAL-1	1	25/09/2023		TLM3		
6.	Introduction – Diffraction, Types	1	27/09/2023		TLM2		
7.	Single slit diffraction	1	30/09/2023		TLM4		
8.	Double slit	1	04/10/2023		TLM4		
9.	N Slits Diffraction grating	1	06/10/2023		TLM4		
10.	TUTORIAL-2	1	07/10/2023		TLM3		
11.	Dispersive power & Resolving power of Grating	1	09/10/2023		TLM1		
12.	Polarization introduction , types	1	11/10/2023		TLM1		
13.	Polarization by reflection, refraction	1	13/10/2023		TLM2		
14.	Double refraction, Nicol's prism	1	14/10/2023		TLM2		
15.	Half wave and quarter wave plate	1	16/10/2023		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 definitions	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	30/10/2023		TLM2		
8.	Bragg's law	1	01/11/2023		TLM1		
9.	X-ray Diffractometer	1	03/11/2023		TLM1		
10.	Laue's method	1	04/11/2023		TLM2		
					TLM1		
11.	powder method	1	07/11/2023		TLM2		
12.	problems	1	08/11/2023		TLM2		

13.	Revision	1	10/11/2023		TLM2		
No. of classes required to complete UNIT-II: 13				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	18/11/2023		TLM1		
2.	Electronic polarization	1	20/11/2023		TLM1		
3.	Ionic & Orientation polarization	1	22/11/2023		TLM1		
4.	Local field,	1	24/11/2023		TLM1		
5	Clausius Mosotti equation, complex dielectric constant	1	25/11/2023		TLM2		
6	Frequency dependence of polarization Dielectric loss and problems	1	27/11/2023		TLM1		
7	Introduction to Magnetic parameters origin of magnetic moment	1	29/11/2023		TLM1		
8	Classification of magnetic materials – Dia, para & Ferro	1	01/12/2023		TLM1		
9	Classification of magnetic materials – Dia, para & Ferro Anti ferro and ferri	1	02/12/2023		TLM2		
10	Domain concept of ferromagnetism and domain walls	1	04/12/2023		TLM2		
11	Hysteresis curve soft and hard magnetic materials	1	06/12/2023		TLM1		

No. of classes required to complete UNIT-II: 11	No. of classes taken:		
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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	08/12/2023		TLM1		
2.	Heisenberg uncertainty principle	1	09/12/2023		TLM1		
3.	Physical significance of wave function Schrodinger time dependent & independent wave equations	1	11/12/2023		TLM1		
4.	Particle in a box	1	13/12/2023		TLM2		
5.	Problems & Assignment/Quiz	1	15/12/2023		TLM1		
6.	Classical free electron theory- postulates, Success & Failures	1	16/12/2023		TLM2		
7.	Quantum free electron theory	1	18/12/2023		TLM2		
8.	electrical conductivity	1	20/12/2023		TLM2		
9.	Fermi-Dirac distribution function- Temperature dependence	1	22/12/2023		TLM2		
10.	Density of states Fermi energy	1	23/12/2023		TLM2		
No. of classes required to complete UNIT-III: 17				No. of classes taken:			

UNIT-IV :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	25/12/2023		TLM1		

2.	Density of Intrinsic and semiconductors	1	27/12/2023		TLM1		
3.	Electrical conductivity and fermi level	1	29/12/2023		TLM1		
4.	Density of Extrinsic semiconductors	1	30/12/2023		TLM2		
5.	Dependence of fermi energy on carrier concentration and fermi energy	1	03/01/2023		TLM2		
6.	Einstein equation		05/01/2023		TLM2		
7.	Drift and diffusion currents	1	06/01/2023		TLM1		
8.	Hall effect and applications	1	08/01/2023		TLM2		
9.	Problems	1	10/01/2023		TLM2		
10.	Revision	1	12/01/2023		TLM2		
No. of classes required to complete UNIT-IV: 10				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	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Instructor

Course Coordinator

Module Coordinator

HOD

P Vijaya Sirisha

Dr. S. Yusub

Dr. S. Yusub

Dr. A. Rami Reddy



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	: I B. Tech., I-Sem., ECE - A
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: Linear Algebra & Calculus
L-T-P STRUCTURE	: 3-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: K. N. V. Lakshmi
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", 44th 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	8	08-09-2023 TO 16-09-2023	08-09-2023 TO 16-09-2023	TLM1			
2.	Introduction to the course	1	20-09-2023		TLM2			
3.	Course Outcomes, Program Outcomes	1	21-09-2023		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	23-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	27-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	30-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	04-10-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	05-10-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	07-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	09-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	11-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	12-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	12-10-2023		TLM1	CO1	T1,T2	
17.	TUTORIAL 1	1	16-10-2023		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	18-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	19-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	19-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	25-10-2023		TLM1	CO2	T1,T2	

22.	Properties	1	26-10-2023		TLM1	CO2	T1,T2	
23.	Cayley-Hamilton Theorem	1	26-10-2023		TLM1	CO2	T1,T2	
24.	Finding Inverse and Powers of matrix	1	28-10-2023		TLM1	CO2	T1,T2	
25.	Diagonalization of a matrix	1	30-10-2023		TLM1	CO2	T1,T2	
26.	Diagonalization of a matrix	1	01-11-2023		TLM1	CO2	T1,T2	
27.	Quadratic Forms	1	02-11-2023		TLM1	CO2	T1,T2	
28.	Nature of Quadratic Forms	1	02-11-2023		TLM1	CO2	T1,T2	
29.	Reduction of Quadratic form to Canonical form	1	04-11-2023		TLM1	CO2	T1,T2	
30.	Orthogonal Transformation	1	06-11-2023		TLM1	CO2	T1,T2	
31.	TUTORIAL 2	1	08-11-2023		TLM3	CO2	T1,T2	
32.	Revision	1	09-11-2023					
No. of classes required to complete UNIT-II		15			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
33.	Introduction to Unit III	1	09-11-2023		TLM1	CO3	T1,T2	
34.	Mean Value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
35.	Rolle's theorem	1	22-11-2023		TLM1	CO3	T1,T2	
36.	Lagrange's mean value theorem	1	23-11-2023		TLM1	CO3	T1,T2	
37.	Lagrange's mean value theorem	1	23-11-2023		TLM1	CO3	T1,T2	
38.	Cauchy's mean value theorem	1	25-11-2023		TLM1	CO3	T1,T2	
39.	Cauchy's mean value theorem	1	27-11-2023		TLM1	CO3	T1,T2	
40.	Taylor's theorem	1	29-11-2023		TLM1	CO3	T1,T2	
41.	Taylor's theorem	1	30-11-2023		TLM1	CO3	T1,T2	
42.	Maclaurin's theorem	1	30-11-2023		TLM1	CO3	T1,T2	
43.	Problems and applications	1	02-12-2023		TLM1	CO3	T1,T2	
44.	TUTORIAL 3	1	04-12-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		12			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
45.	Introduction to Unit IV, Functions of several variables.	1	06-12-2023		TLM1	CO4	T1,T2	
46.	Continuity and Differentiability	1	07-12-2023		TLM1	CO4	T1,T2	
47.	Partial Derivatives	1	07-12-2023		TLM1	CO4	T1,T2	
48.	Total derivatives, Chain rule, Directional Derivative	1	11-12-2023		TLM1	CO4	T1,T2	
49.	Taylor's Series expansion	1	13-12-2023		TLM1	CO4	T1,T2	
50.	Maclaurin's series expansion	1	14-12-2023		TLM1	CO4	T1,T2	
51.	Jacobian	1	14-12-2023		TLM1	CO4	T1,T2	
52.	Functional Dependence	1	16-12-2023		TLM1	CO4	T1,T2	
53.	Maxima and Minima	1	18-12-2023		TLM1	CO4	T1,T2	
54.	Maxima and Minima	1	20-12-2023		TLM1	CO4	T1,T2	
55.	Lagrange Multiplier Method	1	21-12-2023		TLM1	CO4	T1,T2	
56.	TUTORIAL 4	1	21-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		12			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
57.	Introduction to Unit V	1	23-12-2023		TLM1	CO5	T1,T2	
58.	Double Integrals - Cartesian coordinates	1	27-12-2023		TLM1	CO5	T1,T2	
59.	Double Integrals- Polar coordinates	1	28-12-2023		TLM1	CO5	T1,T2	
60.	Triple Integrals - Cartesian coordinates	1	28-12-2023		TLM1	CO5	T1,T2	
61.	Triple Integrals - Spherical coordinates	1	30-12-2023		TLM1	CO5	T1,T2	
62.	Change of order of Integration	1	03-01-2024		TLM1	CO5	T1,T2	
63.	Change of order of Integration	1	04-01-2024		TLM1	CO5	T1,T2	
64.	Change of variables	1	04-01-2024		TLM1	CO5	T1,T2	
65.	Finding area by double Integral	1	06-01-2024		TLM1	CO5	T1,T2	
66.	Finding Volume by double and triple Integral	1	08-01-2024		TLM1	CO5	T1,T2	

67.	TUTORIAL 5	1	10-01-2024		TLM3	CO5	T1,T2	
68.	Problems	1	11-01-2024					
69.	Revision	1	11-01-2024					
No. of classes required to complete UNIT-V		13			No. of classes taken:			

Content beyond the Syllabus

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
70.	Other applications of double integral	1	30-12-2023		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 (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	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

K. N. V. Lakshmi	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD



Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified Institution

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COURSE HANDOUT

Name of Course Instructor: CH. MALLIKHARJUNARAO

Course Name & Code : BASIC ELECTRICAL & ELECTRONICS ENGINEERING

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

Credits: 3

Program/Sem/Sec : B.Tech/I/A

A.Y.: 2023-2024

PART A: BASIC ELECTRICAL ENGINEERING

COURSE OBJECTIVES (COs): 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

PART B: BASIC ELECTRONICS ENGINEERING

COURSE OBJECTIVES (COs):

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

COURSE OUTCOMES (COs): After the completion of the course students will be able to

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

C0s	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2	3									1			
C02	2	2													
C03	2	2				3					2	2			
C04	3	2										1		2	
C05	3	2										1		1	
C06	2	2	2											2	
1 - Low					2 -Medium					3 - High					

TEXTBOOKS: PART A: BASIC ELECTRICAL ENGINEERING

T1	1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
T2	2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, Dhanpat Rai & Co, 2013
T3	3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition

REFERENCE BOOKS: PART A: BASIC ELECTRICAL ENGINEERING

R1	1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Mc Graw Hill, 2019, Fourth Edition
R2	2. Principles of Power Systems, V.K. Mehtha, S.Chand Technical Publishers, 2020.
R3	3. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017
R4	4. Basic Electrical and Electronics Engineering, S. K. Bhattacharya, Person Publications, 2018, Second Edition

TEXTBOOKS: PART B: BASIC ELECTRONICS ENGINEERING

T1	1. R. L. Boylestad & Louis Nashlesky, Electronic Devices & Circuit Theory, Pearson Education, 2021.
T2	2. R. P. Jain, Modern Digital Electronics, 4th Edition, Tata Mc Graw Hill, 2009

REFERENCE BOOKS: PART B: BASIC ELECTRONICS ENGINEERING

R1	1. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
R2	2. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
R3	3. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson Education, 2009

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.	Electrical circuit elements (R, L & C)	1	19/9/2023		TLM1	
2.	Ohm's Law and its limitations, KCL & KVL	1	20/9/2023		TLM1	
3.	series, parallel, series-parallel circuits	1	22/9/2023		TLM1	
4.	Super Position theorem	1	23/9/2023		TLM1	
5.	Tutorial-1	1	25/9/2023		TLM3	
6.	Tutorial-2	1	26/9/2023		TLM3	
7.	Equation of AC Voltage and current, waveform, time period, frequency, amplitude, phase, phase difference	1	27/9/2023		TLM1	
8.	average value, RMS value	1	29/9/2023		TLM1	
9.	form factor, peak factor	1	30/9/2023		TLM1	
10.	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	1	3/10/2023		TLM1	
11.	Voltage and current relationship with phasor diagrams in R, L, and C circuits.	1	4/10/2023		TLM1	
12.	Concept of Impedance, Active		6/10/2023		TLM1	

	power					
13.	Concept of reactive power and apparent power, Concept of power factor		7/10/2023		TLM1	
14.	Tutorial-3	1	9/10/2023		TLM3	
No. of classes required to complete UNIT-I: 14				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
15.	Construction, principle and operation of (i) DC Motor	1	10/10/2023		TLM2	
16.	Construction, principle and operation of (ii) DC Generator	1	11/10/2023		TLM2	
17.	Single Phase Transformer	1	13/10/2023		TLM2	
18.	Three Phase Induction Motor	1	14/10/2023		TLM2	
19.	Alternator	1	16/10/2023		TLM2	
20.	Applications of Electrical machines	1	17/10/2023		TLM2	
21.	Construction and working principle of Permanent Magnet Moving coil (PMMC)	1	18/10/2023		TLM2	
22.	Moving Iron (MI) Instruments	1	25/10/2023		TLM2	
23.	Moving Iron (MI) Instruments		27/10/2023		TLM2	
24.	Wheat Stone bridge	1	28/10/2023		TLM1	
25.	Tutorial-1	1	30/10/2023		TLM3	
No. of classes required to complete UNIT-II: 11				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
26.	Conventional and non-conventional energy resources, Layout and operation of various Power Generation systems: Hydel power generation	1	31/10/2023		TLM1	
27.	Nuclear power generation	1	01/11/2023		TLM1	
28.	Solar power generation	1	03/11/2023		TLM1	
29.	Wind power generation.	1	04/11/2023		TLM1	
30.	Power rating of household appliances including air conditioners, PCs, Laptops, Printers, etc.	1	6/11/2023		TLM1	
31.	Definition of "unit" used for consumption of electrical energy, two-part electricity tariff,	1	7/11/2023		TLM1	
32.	Calculation of electricity bill for domestic consumers.		8/11/2023		TLM1	
33.	Working principle of Fuse and Miniature circuit breaker (MCB), merits and demerits	1	10/11/2023		TLM1	
34.	Personal safety measures: Electric	1	11/11/2023		TLM1	

	Shock, Earthing and its types, Safety Precautions to avoid shock					
No. of classes required to complete UNIT-III: 9				No. of classes taken:		

COURSE DELIVERY PLAN (LESSON PLAN): **PART B: BASIC ELECTRONICS ENGINEERING**

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
35.	Introduction - Evolution of electronics	1	20/11/2023		TLM1	
36.	Vacuum tubes to nano electronics	1	21/11/2023		TLM1	
37.	Vacuum tubes to nano electronics	1	22/11/2023		TLM1	
38.	Characteristics of PN Junction Diode	1	24/11/2023		TLM1	
39.	Zener Effect — Zener Diode and its Characteristics	1	25/11/2023		TLM1	
40.	Bipolar Junction Transistor -CB Configurations and Characteristics	1	27/11/2023		TLM1	
41.	Bipolar Junction Transistor- CE,Configurations and Characteristics	1	28/11/2023		TLM1	
42.	Bipolar Junction Transistor- CC Configurations and Characteristics	1	29/11/2023		TLM1	
43.	Elementary Treatment of Small Signal CE Amplifier.	1	1/12/2023		TLM1	
44.	Elementary Treatment of Small Signal CE Amplifier.	1	2/12/2023		TLM1	
45.	Tutorial-1	1	4/12/2023		TLM3	
46.	Tutorial-2	1	5/12/2023		TLM3	
47.	Tutorial-3	1	6/12/2023		TLM3	
No. of classes required to complete UNIT-IV: 13				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
48.	Rectifiers and power supplies: Block diagram description of a dc power supply	1	8/12/2023		TLM1	
49.	working of a full wave bridge rectifier	1	11/12/2023		TLM1	
50.	Analysis of Full wave rectifier	1	12/12/2023		TLM1	
51.	capacitor filter (no analysis),	1	13/12/2023		TLM1	
52.	working of simple zener voltage regulator	1	14/12/2023		TLM1	
53.	Amplifiers: Block diagram of Public Address system	1	15/12/2023		TLM1	

54.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response	1	16/12/2023		TLM1	
55.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response	1	18/12/2023		TLM1	
56.	Electronic Instrumentation: Block diagram of an electronic instrumentation system	1	19/12/2023		TLM1	
57.	Tutorial-1	1	20/12/2023		TLM3	
58.	Tutorial-2	1	22/12/2023		TLM3	
59.	Tutorial-3	1	23/12/2023		TLM3	
60.	Tutorial-4	1	26/12/2023		TLM3	
No. of classes required to complete UNIT-V: 13				No. of classes taken:11		

UNIT-VI:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
61	Overview of Number Systems	1	27/12/2023		TLM1	
62	Overview of Number Systems	1	29/12/2023		TLM1	
63	Logic gates including Universal Gates	1	30/12/2023		TLM1	
64	BCD codes, Excess-3 code,Gray Code	1	2/1/2024		TLM1	
65	Hamming code	1	3/1/2024		TLM1	
66	Boolean Algebra, Basic Theorems	1	5/1/2024		TLM1	
67	properties of Boolean Algebra	1	6/1/2024		TLM1	
68	Truth Tables and Functionality of Logic Gates – NOT, OR, AND, NOR, NAND, XOR and XNOR	1	8/1/2024		TLM1	
69	Simple combinational circuits– Half and Full Adders	1	9/1/2024		TLM1	
70	Introduction to sequential circuits, Flip flops	1	10/1/2024		TLM1	
71	Registers (Elementary Treatment only)	1	12/1/2023		TLM1	
72	Counters (Elementary Treatment only)	1	13/1/2023		TLM1	
No. of classes required to complete UNIT-VI: 12				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 (R17 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III)	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III)	M1=15
I-Quiz Examination (Units-I, II & UNIT-III)	Q1=10
Assignment-II (Unit-IV, V & VI)	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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	CH.Mallikharjuna Rao	Dr.T.Satyanarayana	Dr.G.Srinivasulu	Dr.Y.Amarbabu
Signature				

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, 3 rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, 2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.
R6	IT Essentials PC Hardware and Software Companion Guide, David Anfinson and Ken Quamme. –CISCO Press, Pearson Education, 3rd edition.
R7	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan– CISCO Press, Pearson Education, 3rd edition.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	22-9-2023		DM5	
2.	Task-2	3	22-9-2023		DM5	
3.	Task-3	3	29-9-2023		DM5	
4.	Task-4	3	06-10-2023		DM5	
5.	Task-5	3	06-10-2023		DM5	
Internet & World Wide Web						
6.	Task-1	3	13-10-2023		DM5	
7.	Task-2	3	13-10-2023		DM5	
8.	Task-3	3	20-10-2023		DM5	
9.	Task-4	3	27-10-2023		DM5	
LaTex and WORD						
10.	Task-1	3	03-11-2023		DM5	
11.	Task-2	3	03-11-2023		DM5	
12.	Task-3	3	10-11-2023		DM5	
13.	Task-4	3	10-11-2023		DM5	

EXCEL					
14.	Task-1	3	24-11-2023		DM5
15.	Task-2	3	24-11-2023		DM5
LOOKUP/VLOOKUP					
16.	Task-1	3	01-12-2023		DM5
POWER POINT					
17.	Task-1	3	08-12-2023		DM5
18.	Task-2	3	15-12-2023		DM5
19.	Task-3	3	22-12-2023		DM5
AI TOOLS – ChatGPT					
20.	Task-1	3	29-12-2023		DM5
21.	Task-2	3	05-01-2024		DM5
22.	Task-3	3	05-01-2024		DM5
23.	Internal exam	3	12-01-2024		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.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.P.Veera Swamy	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	Dr. Y. Amar Babu
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(An Autonomous Institution since 2010)

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

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

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. K. P. Ravindra Kumar, Professor,
Mr. K.V.Viswanath, Sr. Asst. Professor

Course Name & Code : Engineering Graphics & 23ME01

L-T-P Structure : 3-0-4

Program/Sem/Sec : B.Tech /I Sem

PREREQUISITE : Engineering Physics, Mathematics

Credits: 4

A.Y.: 2023-24

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

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

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

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

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

TEXTBOOKS:

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

REFERENCE BOOKS:

- R1** Narayana K L, Kannaiah P, Textbook on Engineering Drawing, 2nd Edition, SciTech publishers.
- R2** R.K.Dhawan, Engineering Drawing, S.Chand Company LTD.
- R3** Venugopal, Engineering Drawing and Graphics, New Age publishers
- R4** Dhananjay A. Jolhe, Engineering Drawing, Tata McGraw Hill Publishers
- R5** N.S.Parthasarathy, Vela Murali, Engineering Drawing, Oxford Higher Education

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: INTRODUCTION TO ENGINEERING GRAPHICS, LETTERING, LINES AND DIMENSIONING, CONICS, CYCLOIDS, INVOLUTES**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	UNIT I: INTRODUCTION: Introduction to Engineering Drawing, COs, CEOs, POs and PEOs	1	21-09-2023		TLM1	
2.	Principles of Engineering Graphics and their significance, Drawing Instruments, and their use- Conventions in Drawing	2	21-09-2023		TLM1	
3.	Lettering and Dimensioning – BIS conventions	1	21-09-2023		TLM1/ TLM2	
5.	Geometrical Constructions – Theory Class	1	25-09-2023		TLM1	
6.	Laboratory Practice	2	05-10-2023		TLM4	
7.	Engineering Curves: Conic Sections- Construction of ellipse –Theory class	2	05-10-2023		TLM1	
8.	Construction of Parabola, ellipse, hyperbola, and scales – General method	2	09-10-2023		TLM4	
9.	Laboratory Practice	3	12-10-2023		TLM4	
10.	Cycloids and Involute	2	16-10-2023		TLM1/ TLM2	
11.	Construction of Cycloids and Involute Projection of points and lines	3	19-10-2023		TLM4	
No. of classes required to complete UNIT-I: 19 (Lecture:9, Practice:10)				No. of classes taken: (including Practice)		

UNIT-II: ORTHOGRAPHIC PROJECTIONS OF LINES AND PLANES

UNIT-II: ORTHOGRAPHIC PROJECTIONS OF LINES AND PLANES						
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	Projection of Points: First and third angle projection methods, Projections of Points and projection of lines inclined to one plane	2	26-10-2023		TLM1/ TLM2	
13	Practice	2	26-10-2023		TLM4	
14	Projections of lines inclined to both the planes	2	30-10-2023		TLM1/ TLM2	
15	Practice	3	02-11-2023		TLM3/ TLM4	
16	Projection of planes	2	06-11-2023		TLM1/ TLM2	
17	Practice	3	09-11-2023		TLM4	
No. of classes required to complete UNIT-II: 14 (Lecture:6, Practice:9)				No. of classes taken: (including Practice)		

UNIT-III: PROJECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Projections of Solids: Types of solids: Polyhedra and Solids of revolution. Projections of solids in simple positions: Axis perpendicular to horizontal plane,	2	20-11-2023		TLM1/ TLM2	
19.	Practice	3	23-11-2023		TLM3/ TLM4	
20.	Projections of Solids: Axis perpendicular to vertical plane and Axis parallel to both the reference planes,	2	27-11-2022		TLM1/	

	Projection of Solids with axis inclined to one reference plane and parallel to another plane.				TLM2
21.	Practice	3	30-11-2023		TLM3/ TLM4
No. of classes required to complete UNIT-III: 10 (Lecture:4 Practice:6)				No. of classes taken: (including Practice)	

UNIT-IV: SECTIONS OF SOLIDS AND DEVELOPMENT OF SURFACES

S. No.	Topics to be covered	No. of Class Required	Tentative Date of Completion	Actual Date of Completion	Teaching Methods	HOD Sign Weekly
31.	Sections of solids: Perpendicular and inclined section planes, Sectional views, and True shape of section, Sections of solids in simple position only.	2	04-12-2023		TLM1/ TLM2	
32.	Practice	3	07-12-2023		TLM3/ TLM4	
33.	Development of Surfaces: Methods of Development: Parallel line development and radial line development	2	11-12-2023		TLM1/ TLM2	
34.	Practice	3	14-12-2023		TLM4	
35.	Development of Surfaces: Development of a cube, prism, cylinder, pyramid, and cone.	2	18-12-2023		TLM1/ TLM2	
36.	Practice	3	21-12-2023		TLM3/ TLM4	
No. of classes required to complete UNIT-IV: 15 (Lecture:6, Practice:9)				No. of classes taken: (including Practice)		

UNIT-V: CONVERSION OF VIEWS:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
39.	Conversion of isometric views to orthographic views;	2	28-12-2023		TLM1/ TLM2	
40.	Practice	2	28-12-2023		TLM3/ TLM 4	
43.	Conversion of orthographic views to isometric views	2	04-01-2024		TLM1/ TLM2	
44.	Practice	2	08-01-2024		TLM3/ TLM4	
45.	Revision and Content Beyond the syllabus Computer graphics: Creating 2D&3D drawings of objects including PCB and Transformations using Auto CAD	3	11-01-2024		TLM2/ TLM4	
No. of classes required to complete UNIT-V: 11 (Lecture:4 Practice:5 Revision:2)				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs): Engineering Graduates will be able to:

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and 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	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and teamwork: 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	Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
PSO 2	Design and Analyze Analog and Digital Electronic Circuits or systems and implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Title	Course Instructor	Course Coordinator	Head of the Department
Name of the Faculty	Dr. P.Ravindra Kumar	Dr.B.Sudheer Kumar	Dr. M B S S Reddy
Signature			



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 activities 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
1.	Introduction to syllabus	03	19-09-2023		TLM4	
2.	Self Introduction & Introducing others	03	26-09-2023		TLM4	
3.	Vowels & Consonants	03	03-10-2023		TLM1, TLM5	
4.	Neutralization / Accent rules	03	10-10-2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	17-10-2023		TLM4	
6.	Role Play-I(Formal and Informal)	06	31-10-2023 07-11-2023		TLM4	
7.	e-mail Writing, Resume	03	14-11-2023		TLM1, TLM5	

	writing, Cover letter, SOP					
8.	Group Discussion	06	21-11-2023 28-11-2023		TLM4, TLM6	
9.	Debate	06	05-12-2023 12-12-2023		TLM4, TLM6	
10.	PPT & Poster Presentation	06	19-12-2023 26-12-2023		TLM2, TLM4	
11.	Mock Interviews	03	02-01-2024		TLM1, TLM6	
12.	Lab Internal Exam	03	09-01-2024			
No. of classes required to complete Syllabus: 48				No. of classes taken:		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
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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.

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	B. Sreenivasa Reddy	Dr. R. Padma	Dr. A. Ramireddy	Dr. A. Ramireddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

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

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

COURSE HANDOUT

Part-A

PROGRAM	: B.Tech., I-Sem.,(ECE) / A
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/ N T Sharma
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 moduli 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
CO1.	3	3	2	1				1	1			1

CO2.	3	3	2	1				1	1			1
CO3.	3	3	2	1				1	1			1
CO4.	3	3	2	1				1	1			1
CO5.	3	3	2	1				1	1			1
1 = slight (Low)			2 = Moderate (Medium)			3 = Substantial (High)						

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

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

BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section- ECE

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	19-09-2023		TLM4	
2.	Demonstration	3	26-09-2023		TLM4	
3.	Experiment 1	3	03-10-2023		TLM4	
4.	Experiment 2	3	10-10-2023		TLM4	
5.	Experiment 3	3	17-10-2023		TLM4	
6.	Experiment 4	3	31-10-2023		TLM4	
7.	Experiment 5	3	07-11-2023		TLM4	
8.	Experiment 6	3	21-11-2023		TLM4	
9.	Experiment 7	3	28-11-2023		TLM4	
10.	Experiment 8	3	05-12-2023		TLM4	
11.	Experiment 9	3	12-12-2023		TLM4	
12.	Experiment 10	3	19-12-2023		TLM4	
13.	Revision	3	26-12-2023		TLM4	
14.	Internal Exam	3	02-01-2024			
15.	Internal Exam	3	09-01-2024			
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). Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

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

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

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

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the 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 / N T Sharma	Dr. S. Yusub	Dr. S. Yusub	Dr A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

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

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.A.Narendra Babu,Mr. CH.Mallikharjuna Rao,Mrs.B.Rajeswari,
Mr.P.James Vijay,Mr.P.Venkateswara Rao,Mr.V.V.ramakrishna

Course Name & Code : Electrical & Electronics Engineering Workshop (Code:ES)

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

Program/Sem/Sec : B.Tech., ECE., I-Sem., Section- A A.Y : 2023-24

PREREQUISITE: NIL

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

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

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

C01	Compute voltage, current and power in an electrical circuit. (Apply)
C02	Compute medium resistance using Wheat stone bridge. (Apply)
C03	Discover critical field resistance and critical speed of DC shunt generators. (Apply)
C04	Estimate reactive power and power factor in electrical loads. (Understand)
C05	Plot the characteristics of semiconductor devices. (Apply)
C06	Demonstrate the working of various logic gates using ICs. (Understand)

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

C0s	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
C01	3	2						2	3	2		1			
C02	2	2		2				2	2	2					
C03	2	2	2	2				2	2	2					
C04	2	2		3				2	3	2		1			
C05	3	2			2			2	2	2	1	1		1	
C06	3	3			2			2	3	3		1		2	
1 - Low					2 -Medium					3 - High					

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-I

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	23/9/2023		TLM4	
2.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator.	3	30/9/2023		TLM4	
3.	Implementation of half wave and full wave rectifiers	3	7/10/2023		TLM4	
4.	Plot Input & Output characteristics of BJT in CE and CB configurations	3	14/10/2023		TLM4	
5.	Frequency response of CE amplifier.	3	21/10/2023		TLM4	
6.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	28/10/2023		TLM4	
7.	Verification of KCL and KVL	3	4/11/2023		TLM4	
8.	Verification of Superposition theorem	3	11/11/2023		TLM4	
9.	Measurement of Resistance using Wheat stone bridge	3	25/11/2023		TLM4	
10.	Magnetization Characteristics of DC shunt Generator	3	2/12/2023		TLM4	
11.	Measurement of Power and Power factor using Single-phase wattmeter	3	16/12/2023		TLM4	
12.	Calculation of Electrical Energy for Domestic Premises	3	23/12/2023		TLM4	
13.	Make up Lab	3	30/12/2023		TLM4	
14.	Internal Lab Examination	3	06/1/2024		TLM4	
No. of classes required to complete Lab : 36				No. of classes taken:		

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-II

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Verification of KCL and KVL	3	23/9/2023		TLM4	
2.	Verification of Superposition theorem	3	30/9/2023		TLM4	
3.	Measurement of Resistance using Wheat stone bridge	3	7/10/2023		TLM4	
4.	Magnetization Characteristics of DC shunt Generator	3	14/10/2023		TLM4	
5.	Measurement of Power and Power factor using Single-phase wattmeter	3	21/10/2023		TLM4	
6.	Calculation of Electrical Energy for Domestic Premises	3	28/10/2023		TLM4	
7.	Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	4/11/2023		TLM4	
8.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator.	3	11/11/2023		TLM4	
9.	Implementation of half wave and full wave rectifiers	3	25/11/2023		TLM4	
10.	Plot Input & Output characteristics of BJT in CE and CB configurations	3	2/12/2023		TLM4	
11.	Frequency response of CE amplifier.	3	16/12/2023		TLM4	
12.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	23/12/2023		TLM4	
13.	Make up Lab	3	30/12/2023		TLM4	
14.	Internal Lab Examination	3	6/1/2024		TLM4	
No. of classes required to complete Lab: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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

	work, as a member and leader in a team, to manage projects and in multidisciplinary environments
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
CH.MallikharjunaRao	Dr.A.Narendrababu	Dr.G.Srinivasulu	Dr. Y. Amar Babu

NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

(Common to All branches of Engineering)

Course Objectives: The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the students will be able to

CO1: Understand the importance of discipline, character and service motto. (Understand)

CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques. (Apply)

CO3: Explore human relationships by analyzing social problems. (Understand)

CO4: Determine to extend their help for the fellow beings and downtrodden people (Apply)

CO5: Develop leadership skills and civic responsibilities. (Apply)

UNIT I: Orientation General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

Activities:

- i) Conducting –ice breaking sessions-expectations from the course-knowing personal talents and skills
- ii) **Conducting orientations programs for the students –future plans-activities-releasing road map etc.**
- iii) **Displaying success stories-motivational biopics- award winning movies on societal issues etc.**
- iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.

UNIT II Nature & Care Activities:

- i) Best out of waste competition.
- ii) Poster and signs making competition to spread environmental awareness.
- iii) Recycling and environmental pollution article writing competition.
- iv) Organising Zero-waste day.
- v) v) Digital Environmental awareness activity via various social media platforms.
- vi) Virtual demonstration of different eco-friendly approaches for sustainable living.
- vii) Write a summary on any book related to environmental issues.

UNIT III Community Service Activities:

- i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village, identification of problems- helping them to solve via media- authority's experts-etc. 88
- ii) Conducting awareness programs on Health-related issues such as General Health, Mental health, Spiritual Health, HIV/AIDS,
- iii) Conducting consumer Awareness. Explaining various legal provisions etc.

- iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
- v) Any other programmes in collaboration with local charities, NGOs etc.

Reference Books:

1. Nirmalya Kumar Sinha & Surajit Majumder, A Text Book of National Service Scheme Vol;I, Vidya Kutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. Red Book - National Cadet Corps – Standing Instructions Vol I & II, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., “Introduction to Environmental Engineering”, McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. “Introduction to Environmental Engineering and Science”, Pearson Education, New Delhi. 2/e 2007
5. Ram Ahuja. Social Problems in India, Rawat Publications, New Delhi.

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

S.No.	Day/ Dates	No. of Classes Required	Topic / Club	Activity Name
1.	03.10.23 (Tue)	2	Prakruthi Club ECE-C,CIVIL	
2.	04.10.23(Wed)	2	NSS EEE-A	
3.	05.10.23(Thur)	2	Kruthi Club ECE-B	
4.	06.10.23(Fri)	2	Kruthi Club ASE	
5.	07.10.23 (Sat)	2	NSS ME,EEE-B	
6.	09.10.23(Mon)	2	Prakruthi Club ECE-A	
7.	10.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
8.	11.10.23(Wed)	2	NSS EEE-A	
9.	12.10.23(Thur)	2	Prakruthi Club ECE-B	
10.	13.10.23(Fri)	2	Kruthi Club ASE	
11.	14.10.23 (Sat)	2	NSS ME,EEE-B	
12.	16.10.23(Mon)	2	Kruthi Club ECE-A	
13.	17.10.23(Tue)	2	NSS ECE-C,CIVIL	
14.	18.10.23(Wed)	2	Prakruthi Club	

			EEE-A	
15.	19.10.23(Thur)	2	Prakruthi Club ECE-B	
16.	20.10.23(Fri)	2	Kruthi Club ASE	
17.	21.10.23(Sat)	2	NSS ME,EEE-B	
18.	24.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
19.	25.10.23(Wed)	2	NSS EEE-A	
20.	26.10.23(Thur)	2	Kruthi Club ECE-B	
21.	27.10.23 (Fri)	2	Prakruthi Club ASE	
22.	28.10.23(Sat)	2	NSS ME,EEE-B	
23.	30.10.23(Mon)	2	NSS ECE-A	
24.	31.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
25.	01.11.23(Wed)	2	NSS EEE-A	
26.	02.11.23 (Thur)	2	Prakruthi Club ECE-B	
27.	03.11.23(Fri)	2	Kruthi Club ASE	
28.	04.11.23 (Sat)	2	Kruthi Club ME,EEE-B	
29.	06.11.23(Mon)	2	Prakruthi Club ECE-A	
30.	07.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
31.	08.11.23(Wed)	2	Prakruthi Club EEE-A	
32.	09.11.23 (Thur)	2	Kruthi Club ECE-B	
33.	10.11.23(Fri)	2	NSS ASE	
34.	11.11.23 (Sat)	2	NSS ME,EEE-B	
35.	20.11.23(Mon)	2	Kruthi Club ECE-A	
36.	21.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
37.	22.11.23(Wed)	2	NSS EEE-A	
38.	23.11.23 (Thur)	2	Kruthi Club ECE-B	
39.	24.11.23(Fri)	2	Kruthi Club ASE	
40.	25.11.23(Sat)	2	Kruthi Club ME,EEE-B	

41.	27.11.23(Mon)	2	NSS ECE-A	
42.	28.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
43.	30.11.23(Thur)	2	Prakruthi Club ECE-B	
44.	01.12.23(Fri)	2	Kruthi Club ASE	
45.	02.12.23(Sat)	2	NSS ME,EEE-B	
46.	04.12.23(Mon)	2	Prakruthi Club ECE-A	
47.	05.12.23(Tue)	2	NSS ECE-C,CIVIL	
48.	06.12.23(Wed)	2	Prakruthi Club EEE-A	
49.	07.12.23(Thur)	2	Kruthi Club ECE-B	
50.	08.12.23(Fri)	2	Kruthi Club ASE	
51.	09.12.23(Sat)	2	NSS ME,EEE-B	
52.	11.12.23(Mon)	2	Kruthi Club ECE-A	
53.	12.12.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
54.	13.12.23(Wed)	2	Prakruthi Club EEE-A	
55.	14.12.23(Thur)	2	Kruthi Club ECE-B	
56.	15.12.23(Fri)	2	Kruthi Club ASE	
57.	16.12.23(Sat)	2	NSS ME,EEE-B	
58.	18.12.23(Mon)	2	NSS ECE-A	
59.	19.12.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
60.	20.12.23(Wed)	2	Prakruthi Club EEE-A	
61.	21.12.23(Thur)	2	Kruthi Club ECE-B	
62.	22.12.23(Fri)	2	Kruthi Club ASE	
63.	23.12.23(Sat)	2	NSS ME,EEE-B	
64.	26.12.23(Tue)	2	Prakruthi Club ECE-B	
65.	27.12.23(Wed)	2	Prakruthi Club EEE-A	
66.	28.12.23(Thur)	2	Kruthi Club ECE-B	
67.	29.12.23(Fri)	2	Kruthi Club ASE	

68.	30.12.23(Sat)	2	NSS ME,EEE-B	
69.	02.01.24(Tue)	2	Prakruthi Club ECE-C,CIVIL	
70.	03.01.24(Wed)	2	Prakruthi Club EEE-A	
71.	04.01.24(Thur)	2	Kruthi Club ECE-B	
72.	05.01.24(Fri)	2	Kruthi Club ASE	
73.	06.01.24(Sat)	2	NSS ME,EEE-B	

Department Faculty:

ASE- Mr. Ashutosh Shukla (T775)—Friday

CE-Mr J.Eeswara Ram—Tuesday

EEE- Mr. T Hima Bindu(A) / Mr.A.V. Ravi Kumar (B)—Wednesday/ Saturday

ECE- Mr. B. Rajeswari (B)/ Mr.Ch. Mallikarjuna Rao (A&C)- Thurs /Mon/Tues

ME-Mr. K. Lakshmi Prasad (T686)-Saturday

Course Coordinators:

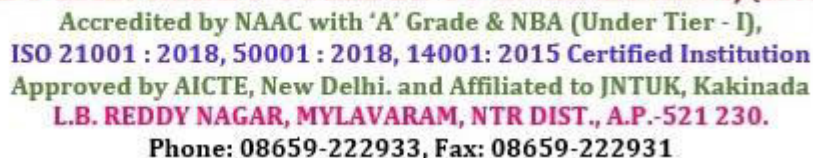
1. Dr. B Siva Hari Prasad/Mr. S. Uma Maheswara Reddy----

2. Dr V. Bhagya Lakshmi/Dr. Shaheda Niloufer ----

3. Mr. B. Kalyan Kumar ----

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
 - A student can select 6 activities of his/her choice with a minimum of 01 activities per unit.
- Each activity shall be evaluated by the concerned teacher for 15 marks, totaling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.



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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	3 Weeks	31-08-2023 TO 16-09-2023		TLM1			
2.	Introduction to the course				TLM1			
3.	Course Outcomes, Program Outcomes				TLM2			

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	19-9-2023& 20-9-2023		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	22-9-2023		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	26-9-2023		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	02	27-9-2023& 29-9-2023		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures,	01	03-10-2023		TLM2 TLM6	CO1	T1,T2	
6.	Forming questions	01	04-10-2023					
7.	Synonyms, Antonyms	01	06-10-2023		TLM2 TLM5	CO1	T1,T2	
8.	Affixes, Root Words	01	10-10-2023		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 10						No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
9.	Nature: The Brook by Alfred Tennyson	02	11-10-202& 13-10-2023		TLM1 TLM 6	CO2	T1,T2	
10.	Identifying Sequence of ideas	01	17-10-2023		TLM2 TLM5	CO2	T1,T2	
11.	Linking ideas into a Paragraph	01	18-10-2023		TLM2 TLM5	CO2	T1,T2	
12.	Structure of Paragraph – Paragraph Writing	01	25-10-2023		TLM1 TLM6 TLM5	CO2	T1,T2	
13.	Cohesive Devices-linkers	01	27-10-2023		TLM2 TLM6	CO2	T1,T2	
14.	Use of Articles and zero article	03	31-10-2023, 01& 07-11-2023		TLM2 TLM6	CO2	T1,T2	

15.	Prepositions	01	08-11-2023		TLM2, TLM6	CO2	T1,T2	
16.	Homophones, Homographs, Homonyms	01	10-11-2023		TLM2 TLM5	CO2	T1,T2	
No. of classes required to complete UNIT-II: 11				No. of classes taken:				

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Biography: Elon Musk	02	21&22-11-2023		TLM1 TLM 6	CO3	T1,T2	
18.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	24-11-2023		TLM2 TLM5	CO3	T1,T2	
19.	Summarizing, Note-making, Paraphrasing	02	28-11-2023& 29-11-2023		TLM1 TLM6 TLM5	CO3	T1,T2	
20.	Verbs- Tenses, Subject-verb agreement	03	01-12-2023& 05-12-2023&		TLM2 TLM6	CO3	T1,T2	
21.	Compound words, Collocations	01	06-12-2023		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Inspiration: The Toys of Peace- by Saki	02	08&12-11-2023		TLM1 TLM 6	CO4	T1,T2	
23.	Study of graphic elements in text to display complicated data	01	13-12-2023		TLM2 TLM5	CO4	T1,T2	
24.	Letter Writing : Official Letters, Resumes	02	03-12-2023		TLM1 TLM6 TLM5	CO4	T1,T2	
25.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	15-12-2023& 19-12-2023		TLM2 TLM6	CO4	T1,T2	
26.	Words often confused, Jargons	01	20-12-2023		TLM2 TLM5	CO4	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
27.	Motivation: The Power of Interpersonal Communication	02	22-12-2023 & 26-12-2023		TLM1 TLM 6	CO5	T1,T2	
28.	Reading Comprehension	01	27-12-2023		TLM2 TLM5	CO5	T1,T2	
29.	Structured Essays on specific topics	01	30-12-2023		TLM1 TLM6 TLM5	CO5	T1,T2	
30.	Correcting Common errors	02	02&03-01-2024		TLM2 TLM6	CO5	T1,T2	
31.	Editing Texts	01	05-01-2024		TLM2 TLM6	CO5	T1,T2	
32.	Technical Jargon	01	09& 10-01-2024		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 08							No. of classes taken:	

Content beyond the Syllabus

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Word Analogy	01	12-01-2024		TLM2 & 5	
No. of classes required to complete				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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	Anuradha Matta	Dr R Padma	Dr. A. Ramireddy	Dr. A. Ramireddy
Signature				



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : B. Tech., I-Sem., ECE-B
ACADEMIC YEAR : 2023-2024
COURSE NAME & CODE : Engineering Physics-23FE04
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : **Dr. S. YUSUB**
COURSE COORDINATOR : **Dr. S. YUSUB**

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

Course Outcomes:

CO1: Analyze the intensity variation of light due to interference, diffraction and Polarization (Apply-L3).

CO2: Understand the basics of crystals and their structures (Understand-L2).

CO3: Summarize various types of polarization of dielectrics and classify the magnetic materials (Understand-L2)

CO4: Explain fundamentals of quantum mechanics and free electron theory of metals (Understand-L2).

CO5: Identify the type of semiconductor using Hall Effect (Apply-L3).

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

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

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

BoS APPROVED TEXT BOOKS:

TEXT BOOKS

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

REFERENCES

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

Web Resource: [//www.loc.gov/rr/scitech/selected-internet/physics.html](http://www.loc.gov/rr/scitech/selected-internet/physics.html)

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): ECE-B

UNIT-I : Interference and diffraction

UNIT I: Interference and diffraction								
S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Course Outcomes INTERFERENCE: Introduction	1	19-09-2023		TLM1	CO1	T1	
2.	Principle of superposition	1	20-09-2023		TLM1	CO1	T1	
3.	Interference of light, Interference in thin films by reflection reflection & applications	1	21-09-2023		TLM2	CO1	T1	
4.	colors in thin films	1	22-09-2023		TLM1	CO1	T1	
5.	Newton’s rings	1	26-09-2023		TLM1	CO1	T1	
6.	Dispersion of wavelength and refractive index.	1	27-09-2023		TLM1	CO1	T1	
7.	DIFFRACTION: Introduction,	1	29-09-2023		TLM1	CO1	T1	
8.	Fresnel and Fraunhofer diffractions	1	03-10-2023		TLM2	CO1	T1	
No. of classes required to complete UNIT-I		8			No. of classes taken:			

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
9.	Fraunhofer diffraction due to single slit,	1	04-10-2023		TLM1	CO1	T1	
10.	double slit & N slits (Qualitative)	1	05-10-2023		TLM1	CO1	T1	
11.	Diffraction Grating, Dispersive power	1	06-10-2023		TLM2	CO1	T1	
12.	Resolving power of Grating(Qualitative)	1	10-10-2023		TLM1	CO1	T1	
13.	Polarization : Introduction	1	11-10-2023		TLM1	CO1	T1	
14.	Types of polarization	1	12-10-2023		TLM1	CO1	T1	
15.	Polarization by reflection	1	13-10-2023		TLM1	CO1	T1	
16.	refraction & double refraction	1	17-10-2023		TLM2	CO1	T1	
17.	Nicol's prism	1	18-10-2023		TLM1	CO1	T1	
18.	half wave and quarter wave plates	1	19-10-2023		TLM1	CO1	T1	
No. of classes required to complete UNIT-II		10	No. of classes taken:					

UNIT – II: Crystallography & X– ray Diffraction

S. No .	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19	Crystallography, Space lattice; Basis, Unit cell	1	25-10-2023		TLM1	CO2	T1	
20	Lattice parameters, Bravais Lattices	1	26-10-2023		TLM2	CO2	T1	
21	Crystal Systems (3D)- Coordination number, Packing fraction of -SC	1	27-10-2023		TLM1	CO2	T1	
22	BCC, FCC	1	31-10-2023		TLM1	CO2	T1	
23	Indices, separation between (hkl) planes.	1	01-11-2023		TLM2	CO2	T1	
24	X–ray diffraction: Bragg's law; X–ray Diffractometer,	1	02-11-2023		TLM1	CO2	T1	
25	Structure determination by powder methods.	1	03-11-2023		TLM1	CO2	T1	

26	Revision	1	04-11-2023		TLM2	CO1, CO2		
27	Revision	1	07-11-2023		TLM2	CO1, CO2,		
28	Revision	1	08-11-2023		TLM2	CO1, CO2,		
29	Revision	1	09-11-2023		TLM2	CO1, CO2,		
30	Revision	1	10-11-2023		TLM2	CO1, CO2,		
31	I MID	1.5	13-11-2023			CO1, CO2,		
32	I MID	1.5	14-11-2023			CO1, CO2,		
33	I MID	1.5	15-11-2023			CO1, CO2,		
34	I MID	1.5	16-11-2023			CO1, CO2,		
35	I MID	1.5	17-11-2023			CO1, CO2,		
36	I MID	1.5	18-11-2023			CO1, CO2,		
No. of classes required to complete UNIT-II		16			No. of classes taken: 15			

UNIT – III : DIELECTRIC & MAGNETIC MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
37.	DIELECTRIC MATERIALS: Introduction	1	14-11-2023		TLM1	CO3	T1	
38.	Dielectric polarization- Dielectric polarizability, Susceptibility, Dielectric constant & Displacement Vector	1	15-11-2023		TLM2	CO3	T1	

39.	Relation between the electric vectors	1	16-11-2023		TLM1	CO3	T1	
40.	Types of polarizations- Electronic (Quantitative), ionic (Quantitative) & orientation polarizations (Qualitative)	1	17-11-2023		TLM2	CO3	T1	
41.	Lorentz internal field	1	21-11-2023		TLM1	CO3	T1	
42.	Claussius-Mosotti equation	1	22-11-2023		TLM2	CO3	T1	
43.	ex dielectric constant – frequency dependence of polarization loss.	1	23-11-2023		TLM1	CO3	T1	
44.	MAGNETIC MATERIALS : Introduction:	1	24-11-2023		TLM2	CO3	T1	
45.	Magnetic dipole moment – Magnetization- Magnetic susceptibility & permeability	1	28-11-2023		TLM2	CO3	T1	
46.	Atomic origin of magnetism	1	29-11-2023		TLM2	CO3	T1	
47.	Classification of magnetic materials- Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	30-11-2023		TLM1	CO3	T1	
48.	Domain concept for Ferromagnetism & Domain walls	1	01-12-2023		TLM2	CO3	T1	
49.	Hysteresis – soft and hard magnetic materials	1	05-12-2023		TLM2	CO3	T1	
No. of classes required to complete UNIT-IV		14			No. of classes taken: 14			

UNIT – IV: QUANTUM MECHANICS & FREE ELECTRON THEORY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
50.	QUANTUM MECHANICS: Dual nature of matter- Heisenberg's	1	06-12-2023		TLM1	CO4	T1	

	Uncertainty Principle							
51.	significance & properties of wave function	1	07-12-2023		TLM2	CO4	T1	
52.	Schrodinger's time independent and dependent wave equations	1	08-12-2023		TLM2	CO4	T1	
53.	in a one –dimensional infinite well.	1	12-12-2023		TLM1	CO4	T1	
54.	FREE ELECTRON THEORY: Classical free electron theory (Qualitative with discussion of merits and demerits)	1	13-12-2023		TLM2	CO4	T1	
55.	Quantum free electron theory	1	14-12-2023		TLM1	CO4	T1	
56.	electrical conductivity based on quantum free electron theory	1	15-12-2023		TLM2	CO4	T1	
57.	Fermi -Dirac distribution	1	19-12-2023		TLM2	CO4	T1	
58.	Density of states – Fermi energy	1	20-12-2023		TLM1	CO4	T1	
V: SEMI CONDUCTORS								
59.	SEMI CONDUCTORS: Formation of energy bands	1	21-12-2023		TLM2	CO5	T1	
60.	classification of crystalline solids- Intrinsic semiconductors	1	22-12-2023		TLM1	CO5	T1	
61.	Density of charge carriers- Electrical conductivity- Fermi level -Extrinsic semiconductors	1	26-12-2023		TLM1	CO5	T1	
62.	Density of charge carriers	1	27-12-2023		TLM1	CO5	T1	

63.	dependence of Fermi energy on carrier concentration and temperature	1	28-12-2023		TLM1	CO5	T1	
64.	Drift and Diffusion Currents	1	29-12-2023		TLM1	CO5	T1	
65.	Einstein's equation	1	02-01-2024		TLM2	CO5	T1	
66.	Effect & its applications.	1	03-01-2024		TLM1	CO5	T1	
No. of classes required to complete UNIT-V		7			No. of classes taken:			

Contents beyond the Syllabus

Contents beyond the Syllabus								
S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
67.	SEM	1	26-12-2023		TLM1		R1	
68.	Conventional energy sources	1	27-12-2023		TLM1		R1	
75	Mid II	1	01-01-2024			CO3, CO4, CO5		
76	Mid II	1	02-01-2024			CO3, CO4, CO5		
77	Mid II	1	03-01-2024			CO3, CO4, CO5		
78	Mid II	1	04-01-2024			CO3, CO4, CO5		
79	Mid II	1	05-01-2024			CO3, CO4, CO5		
80	Mid II	1	06-01-2024			CO3, CO4, CO5		
81	Preparation and Practicals	08-01-2024 to 20-01-2024						
82	Semester end examinations	22-01-2024 to 03-02-2024						

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
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Part - C

EVALUATION PROCESS:

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

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Graduates of Information Technology programme will be:

- PEO 1: Pursue a successful career in the area of Information Technology or its allied fields.
 PEO 2: Exhibit sound knowledge in the fundamentals of Information Technology and apply practical experience with programming techniques to solve real world problems.
 PEO 3: Able to demonstrate self-learning, life-long learning and work in teams on multidisciplinary projects.
 PEO 4: Able to understand the professional code of ethics and demonstrate ethical behaviour, effective communication, team work and leadership skills in their job.

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the Information Technology will have the ability to

1. Organize, Analyze and Interpret the data to extract meaningful conclusions.
2. Design, Implement and Evaluate a computer-based system to meet desired needs.
3. Develop IT application services with the help of different current engineering tools.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. S. YUSUB	Dr. S. YUSUB	Dr. S. YUSUB	Dr. A. RAMI REDDY



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	: I B. Tech., I-Sem., ECE-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.BHANU LAKSHMI
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", 44th 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	8	08-09-2023 TO 16-09-2023	08-09-2023 TO 16-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM2			
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	23-09-2023		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	30-09-2023		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	07-10-2023		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	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	14-10-2023		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	28-10-2023		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	04-11-2023		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			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
31.	Introduction to Unit III	1	06-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	07-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	08-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	09-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange'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.	Cauchy's mean value theorem	1	22-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem with remainders	1	23-11-2023		TLM1	CO3	T1,T2	
39.	Taylor's theorem	1	25-11-2023		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	29-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		12			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	30-11-2023		TLM1	CO4	T1,T2	
44.	Functions of several variables	1	02-12-2023		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, Chain rule, Directional Derivative	1	06-12-2023		TLM1	CO4	T1,T2	

48.	Taylor's Series expansion	1	07-12-2023		TLM1	CO4	T1,T2	
49.	Maclaurin's series expansion	1	11-12-2023		TLM1	CO4	T1,T2	
50.	Jacobian	1	12-12-2023		TLM1	CO4	T1,T2	
51.	Functional Dependence	1	13-12-2023		TLM1	CO4	T1,T2	
52.	Maxima and Minima	1	14-12-2023		TLM1	CO4	T1,T2	
53.	Maxima and Minima	1	16-12-2023		TLM1	CO4	T1,T2	
54.	Lagrange Multiplier Method	1	18-12-2023		TLM1	CO4	T1,T2	
55.	Lagrange Multiplier Method	1	19-12-2023		TLM1	CO4	T1,T2	
56.	TUTORIAL 4	1	23-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		14			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
57.	Introduction to Unit-V	1	20-12-2023		TLM1	CO5	T1,T2	
58.	Double Integrals - Cartesian coordinates	1	21-12-2023		TLM1	CO5	T1,T2	
59.	Double Integrals - Cartesian coordinates	1	26-12-2023		TLM1	CO5	T1,T2	
60.	Double Integrals- Polar co ordinates	1	27-12-2023		TLM1	CO5	T1,T2	
61.	Triple Integrals - Cartesian coordinates	1	28-12-2023		TLM1	CO5	T1,T2	
62.	Triple Integrals - Spherical coordinates	1	30-12-2023		TLM1	CO5	T1,T2	
63.	Change of order of Integration	1	02-01-2024		TLM1	CO5	T1,T2	
64.	Change of order of Integration	1	03-01-2024		TLM1	CO5	T1,T2	
65.	Change of variables	1	04-01-2024		TLM1	CO5	T1,T2	
66.	Finding area by double Integral	1	06-01-2024		TLM1	CO5	T1,T2	
67.	Finding Volume by double and triple Integral	1	08-01-2024		TLM1	CO5	T1,T2	
68.	Revision	1	09-01-2024		TLM1	CO5	T1,T2	
69.	TUTORIAL 5	1	10-01-2024		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
70.	Other applications of double integral	1	11-01-2024		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	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr.K.BHANULAKSHMI	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD

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, 3 rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, 2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.
R6	IT Essentials PC Hardware and Software Companion Guide, David Anfinson and Ken Quamme. –CISCO Press, Pearson Education, 3rd edition.
R7	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan– CISCO Press, Pearson Education, 3rd edition.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	25-9-2023		DM5	
2.	Task-2	3	9-10-2023		DM5	
3.	Task-3	3	16-10-2023		DM5	
4.	Task-4	3	30-10-2023		DM5	
5.	Task-5	3	06-11-2023		DM5	
Internet & World Wide Web						
6.	Task-1	3	06-11-2023		DM5	
7.	Task-2	3	13-11-2023		DM5	
8.	Task-3	3	13-11-2023		DM5	
9.	Task-4	3	20-11-2023		DM5	
LaTeX and WORD						
10.	Task-1	3	20-11-2023		DM5	
11.	Task-2	3	27-11-2023		DM5	
12.	Task-3	3	27-11-2023		DM5	
13.	Task-4	3	04-12-2023		DM5	

EXCEL					
14.	Task-1	3	04-12-2023		DM5
15.	Task-2	3	04-12-2023		DM5
LOOKUP/VLOOKUP					
16.	Task-1	3	11-12-2023		DM5
POWER POINT					
17.	Task-1	3	11-12-2023		DM5
18.	Task-2	3	18-12-2023		DM5
19.	Task-3	3	18-12-2023		DM5
AI TOOLS – ChatGPT					
20.	Task-1	3	01-01-2024		DM5
21.	Task-2	3	01-01-2024		DM5
22.	Task-3	3	08-01-2024		DM5
23.	Internal exam	3	22-01-2024		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.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.P. Soma Raju	Mr.P. Nagababu	Dr. D. Venkata Subbaiah	Dr. Y. Amar Babu
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

DEPARTMENT OF MECHANICAL ENGINEERING

L.B. REDDY NAGAR, MYLAVARAM, KRISHNADIST., A.P. 521230.

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. P. Vijay Kumar, Professor

Mr. A. Nageswara Rao, Sr. Assistant Professor

Mr. S. Umamaheswara Reddy, Assistant Professor,

Course Name & Code : Engineering Graphics-23ME01

L-T-P Structure : 1-0-4

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

PREREQUISITE : Engineering Physics, Mathematics

Credits: 3

A.Y.: 2023-24

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

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

C01	Identify the geometrical objects considering BIS standards. (Remember-L1)
C02	Comprehend the basics of orthographic projections and deduce orthographic projections of a point and a line at different orientations. (Understand-L2)
C03	Represent graphically the geometrical planes at different positions and orientations. (Understand-L2)
C04	Analyze and draw solid objects at different positions and orientations. (Apply-L3)
C05	Visualize isometric and orthographic views of geometrical objects and convert one form to another. (Understand-L2)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	3	3	3	2	3							3		1	3
C02	3	3	1	2	1							3		1	3
C03	3	3	3	2	1							3		1	3
C04	3	2	3	2	3							3		1	3
C05	2	3	3	2	1							3		1	3
1-Low			2-Medium			3-High									

TEXTBOOKS:

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

REFERENCE BOOKS:

R1 Narayana KL, Kannaiah P, Textbook on Engineering Drawing, 2nd Edition, Sci Tech publishers.

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

R3 Venugopal, Engineering Drawing and Graphics, New Age publishers

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-

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

S. No.	Topicsto becovered	No. ofClass es Required	TentativeD ateof Completion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWee kly
1.	UNIT:I:INTRODUCTION: Introduction to EngineeringDrawing,COs,CEOs,PO sandPEOs	1	21-09-2023		TLM2	
2.	Principles of Engineering Graphicsand their significance, DrawingInstrumentsand theiruse- ConventionsinDrawing	1	23-09-2023		TLM2	
3.	LetteringandDimensioning–BIS conventions	1	23-09-2023		TLM1	
4.	Practice	2	23-09-2023		TLM3	
5.	GeometricalConstructions	1	30-09-2023		TLM1	
6.	Practice	2	30-09-2023		TLM3	
7.	EngineeringCurves:ConicSections- Constructionofellipse	1	30-09-2023		TLM1	
8.	Practice	1	05-10-2023		TLM3	
9.	ConstructionofParabola and Hyperbola	1	07-10-2023		TLM1	
10.	Practice	2	07-10-2023		TLM3	
11.	Constructionofcycloid	1	12-10-2023		TLM1	
12.	Practice	1	14-10-2023		TLM3	
13.	Epicycloidandhypocycloid, Involute	1	14-10-2023		TLM1	
14.	Practice	2	14-10-2023		TLM3	
No.ofclassesrequiredtocompleteUNIT-I:19(Lecture:9Practice:10)				No. of classes taken:(includingPract ice)		

UNIT-II: ORTHOGRAPHIC PROJECTIONS OF POINTS AND LINES

S. No.	Topic to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Introduction to orthographic Projections, First and third angle projection methods, Projections of Points	2	21-10-2023		TLM1	

16.	Practice	2	21-10-2023		TLM3	
17.	Projectionsofstraightlines:parallel to both the reference planes	1	28-10-2023		TLM1	
18.	Projectionsofstraightlines:Projections oflinesperpendicular to one reference plane and parallel to other reference plane	1	28-10-2023		TLM1	
19.	Practice	2	28-10-2023		TLM3	
20.	Projectionsoflineswheninclinedtoone reference plane and parallel to other reference plane	1	02-11-2023		TLM1	
21.	Projectionsoflineswheninclinedtoboth theplanes	2	04-11-2023		TLM1	
22.	Practice	2	04-11-2023		TLM3	
23.	Introduction,planes perpendicular to one plane and parallel to other referenceplane.	2	09-11-2023		TLM1	
24.	practice	1	11-11-2023		TLM3	
25.	planes perpendicular to one plane and inclined to other referenceplane.	1	11-11-2023		TLM1	
26.	practice	2	11-11-2023		TLM3	
27.	Introduction,planes inclined to both the referenceplanes.	1	23-11-2023		TLM1	
No.ofclassesrequiredtocomplete UNIT-II:22(Lecture:11 Practice:11)				No.ofclassestaken:(includingPractice)		

UNIT-III:PROJECTIONSOF SOLIDS

S. No.	Topicsto becovered	No. ofClasses Required	TentativeDate ofCompletion	Actual Dateof Completion	Teaching Learning Methods	HOD SignWeekly
28.	Projectionofsolids:Introduction, Solidsin simplepositions	1	23-11-2023		TLM1	
29.	Practice	1	25-11-2023		TLM3	
30.	Projectionofsolids:Axisperpendicular to horizontal plane&Axisperpendicular to vertical plane	1	25-11-2023		TLM1	
31.	Practice	2	25-11-2023		TLM3	
32.	Projectionofsolids:Axisparallel toboth the reference planes	1	30-11-2023		TLM1	
33.	Practice	1	02-12-2023		TLM3	
34.	Projectionofsolids:Axisparallel too n e reference plane and	1	02-12-2023		TLM1	

	inclined to other reference plane					
35.	Practice	2	02-12-2023		TLM3	
No. of classes required to complete UNIT-III:10 (Lecture:4 Practice:6)				No. of classes taken:(including Practice)		

UNIT-IV: SECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
36	Introduction to section planes and sections of solids & Solids in simple positions	1	07-12-2023		TLM1	
37	practice	1	09-12-2023		TLM3	
38	Perpendicular to one reference plane and parallel to other reference plane	1	09-12-2023		TLM1	
39	practice	2	09-12-2023		TLM3	
40	Inclined to one reference plane and perpendicular to other plane	1	14-12-2023		TLM1	
41	practice	2	16-12-2023		TLM3	
42	Sectional views of solids and true shapes	1	16-12-2023		TLM1	
43	practice	1	16-12-2023		TLM3	
44	Introduction to Methods of development of surfaces -	1	21-12-2023		TLM1	
45	Parallel line development	1	23-12-2023		TLM1	
46	practice	1	23-12-2023		TLM3	
47	Radial line development	1	23-12-2023		TLM1	
48	practice	1	23-12-2023		TLM3	
49	Radial line development	1	28-12-2023		TLM3	
50	practice	1	28-12-2023		TLM3	
No. of classes required to complete UNIT-IV:14 (Lecture:6 Practice:8)				No. of classes taken:(including Practice)		

UNIT-V: CONVERSION

OF PROJECTIONS FROM ORTHOGRAPHIC PROJECTION TO ISOMETRIC VIEW AND VICEVERSA

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
51.	Introduction to Isometric Views	1	30-12-2023		TLM2	
52.	Practice	1	30-12-2023		TLM3	

53.	Theory of isometric projection, isometric views, isometric axes, scale, lines & planes	2	30-12-2023		TLM2	
54.	Practice	1	30-12-2023		TLM3	
55.	Isometric view of prism, pyramid, cylinder & cone, non-isometric lines - method to generate an isometric drawing	2	04-01-2024		TLM1	
56.	Practice	2	06-01-2024		TLM3	
57.	Conversion of Orthographic Projection to Isometric Views of objects	1	06-01-2024		TLM1	
58.	Practice	1	06-01-2024		TLM3	
59.	Conversion of Orthographic Projection to Isometric Views of objects	1	06-01-2024		TLM1	
60.	Practice	2	06-01-2024		TLM 3	
61.	Practice	1	11-01-2024		TLM 3	
62.	Creating 2D and 3D drawings of objects using AutoCAD	1	13-01-2024		TLM 3	
63.	PCB using AutoCAD	1	13-01-2024		TLM 3	
64.	Transformations using AutoCAD	1	13-01-2024		TLM 3	
65.	Revision	1	13-01-2024		TLM 1	
No. of classes required to complete UNIT-V: 19 (Lecture: 9 Practice: 10)				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

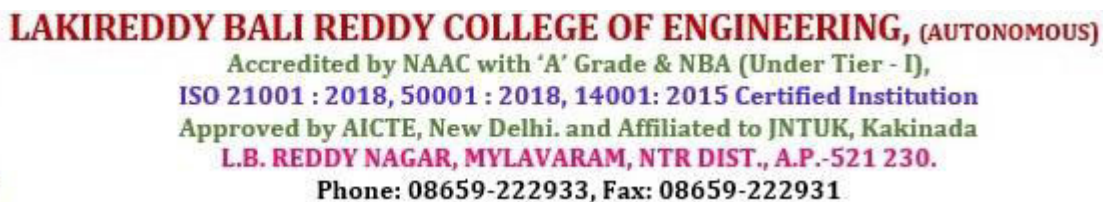
P01	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
P03	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, safety, and the cultural, societal, and environmental considerations.
P04	Conduct investigation 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.
P05	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.
P06	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.
P07	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.
P08	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
P09	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	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.
P011	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.
P012	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. P. Vijay Kumar	Dr. K. Dilip Kumar	Dr. MBSS Reddy	Dr. MBSS Reddy
Signature				



PART-A

A.Y. : 2023-24

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:

- 1a. 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 activities 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.
Hewings, Martin, *Cambridge Academic English (B2)*, CUP, 2012.
J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English*, (2nd Ed.,) Kindle, 2013.

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	21-9-2023		TLM4	
2.	Self-Introduction & Introducing others	03	28-9-2023		TLM4	
3.	Vowels & Consonants	03	05-10-2023		TLM1, TLM5	
4.	Neutralization /Accent rules	03	12-10-2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	19-10-2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	26-10-2023		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	02-11--2023		TLM1, TLM5	
8.	Group Discussion	03	19-11-2023		TLM4, TLM6	
9.	Group Discussion	03	23-11-2023		TLM4, TLM6	
10.	Debate	03	07-12-2023		TLM4, TLM6	
11.	Poster Presentation	03	14-12-2023		TLM2, TLM4	
12.	PPT	03	21-12-2023		TLM2, TLM4	
13.	Mock Interviews	03	28-12-2023		TLM2, TLM4	

14.	Lab Internal Exam	03	06-01-2024			
No. of classes required to complete Syllabus: 42				No. of classes taken:		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

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

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Anuradha Matta	Dr. R Padma	Dr. A. Ramireddy	Dr. A. Ramireddy

Signature				
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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

PROGRAM	: B. Tech., I-Sem., ECE-B
ACADEMIC YEAR	: 2023-2024
COURSE NAME & CODE	: ENGINEERING PHYSICS LAB & 23FE53
L-T-P STRUCTURE	: 0-0-2
COURSE CREDITS	: 1
COURSE INSTRUCTOR	: Dr. S. YUSUB
COURSE COORDINATOR	: Dr. S. YUSUB

Course Objectives:

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

Course Outcomes:

CO1: Analyze the wave properties of light using optical instruments (Apply-L3).

CO2: Estimate the elastic moduli of various materials and acceleration due to gravity (Apply-L3).

CO3: Demonstrate the vibrations in stretched strings (Understand-L2).

CO4: Evaluate dielectric constant and magnetic field of circular coil carrying current (Apply-L3).

CO5: Examine the characteristics of semiconductor devices (Apply-L3).

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

Part-B

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

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction	3	20-09-2023		TLM4	1,2,3,4	T1	
2.	Demonstration	3	27-09-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
3.	Experiment 1	3	04-10-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
4.	Experiment 2	3	11-10-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
5.	Experiment 3	3	18-10-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
6.	Experiment 4	3	25-10-2023		TLM4	CO1, CO2, CO3, CO4	T1	
7.	Experiment 5	3	01-11-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
8.	Demonstration	3	08-11-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
9.	Experiment 6	3	15-11-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
10.	Experiment 7	3	22-11-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
11.	Experiment 8	3	29-11-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
12.	Experiment 9	3	06-12-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	

13.	Experiment 10	3	13-12-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
14.	Revision	3	20-12-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
15.	Internal Exam	3	27-12-2023		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
No. of classes required to complete UNIT-I		48			No. of classes taken:			

EVALUATION PROCESS:

Evaluation Task	Expt. no's	Marks
Day to Day work = A	1,2,3,4,5,6,7,8	A=5
Internal test = B	1,2,3,4,5,6,7,8	B=5
Evaluation of viva voce = C	1,2,3,4,5,6,7,8	C = 5
Evaluation of attendance Marks = D	1,2,3,4,5,6,7,8	D = 0
Cumulative Internal Examination : A + B + C + D = 15	1,2,3,4,5,6,7,8	15
Semester End Examinations = E	1,2,3,4,5,6,7,8	E = 35
Total Marks: A + B + C + D + E = 50	1,2,3,4,5,6,7,8	50

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

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

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

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

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the ECE will have the ability to

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

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

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. S. YUSUB / Mrs. P.V. Shirisha	Dr. S. YUSUB	Dr. S. YUSUB	Dr A. RAMI REDDY

NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

(Common to All branches of Engineering)

Course Objectives: The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the students will be able to

CO1: Understand the importance of discipline, character and service motto. (Understand)

CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques. (Apply)

CO3: Explore human relationships by analyzing social problems. (Understand)

CO4: Determine to extend their help for the fellow beings and downtrodden people (Apply)

CO5: Develop leadership skills and civic responsibilities. (Apply)

UNIT I: Orientation General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

Activities:

- i) Conducting –ice breaking sessions-expectations from the course-knowing personal talents and skills
- ii) **Conducting orientations programs for the students –future plans-activities-releasing road map etc.**
- iii) **Displaying success stories-motivational biopics- award winning movies on societal issues etc.**
- iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.

UNIT II Nature & Care Activities:

- i) Best out of waste competition.
- ii) Poster and signs making competition to spread environmental awareness.
- iii) Recycling and environmental pollution article writing competition.
- iv) Organising Zero-waste day.
- v) v) Digital Environmental awareness activity via various social media platforms.
- vi) Virtual demonstration of different eco-friendly approaches for sustainable living.
- vii) Write a summary on any book related to environmental issues.

UNIT III Community Service Activities:

- i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village, identification of problems- helping them to solve via media- authority's experts-etc. 88
- ii) Conducting awareness programs on Health-related issues such as General Health, Mental health, Spiritual Health, HIV/AIDS,
- iii) Conducting consumer Awareness. Explaining various legal provisions etc.

- iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
- v) Any other programmes in collaboration with local charities, NGOs etc.

Reference Books:

1. Nirmalya Kumar Sinha & Surajit Majumder, A Text Book of National Service Scheme Vol;I, Vidya Kutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. Red Book - National Cadet Corps – Standing Instructions Vol I & II, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., “Introduction to Environmental Engineering”, McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. “Introduction to Environmental Engineering and Science”, Pearson Education, New Delhi. 2/e 2007
5. Ram Ahuja. Social Problems in India, Rawat Publications, New Delhi.

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

S.No.	Day/ Dates	No. of Classes Required	Topic / Club	Activity Name
1.	03.10.23 (Tue)	2	Prakruthi Club ECE-C,CIVIL	
2.	04.10.23(Wed)	2	NSS EEE-A	
3.	05.10.23(Thur)	2	Kruthi Club ECE-B	
4.	06.10.23(Fri)	2	Kruthi Club ASE	
5.	07.10.23 (Sat)	2	NSS ME,EEE-B	
6.	09.10.23(Mon)	2	Prakruthi Club ECE-A	
7.	10.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
8.	11.10.23(Wed)	2	NSS EEE-A	
9.	12.10.23(Thur)	2	Prakruthi Club ECE-B	
10.	13.10.23(Fri)	2	Kruthi Club ASE	
11.	14.10.23 (Sat)	2	NSS ME,EEE-B	
12.	16.10.23(Mon)	2	Kruthi Club ECE-A	
13.	17.10.23(Tue)	2	NSS ECE-C,CIVIL	
14.	18.10.23(Wed)	2	Prakruthi Club	

			EEE-A	
15.	19.10.23(Thur)	2	Prakruthi Club ECE-B	
16.	20.10.23(Fri)	2	Kruthi Club ASE	
17.	21.10.23(Sat)	2	NSS ME,EEE-B	
18.	24.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
19.	25.10.23(Wed)	2	NSS EEE-A	
20.	26.10.23(Thur)	2	Kruthi Club ECE-B	
21.	27.10.23 (Fri)	2	Prakruthi Club ASE	
22.	28.10.23(Sat)	2	NSS ME,EEE-B	
23.	30.10.23(Mon)	2	NSS ECE-A	
24.	31.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
25.	01.11.23(Wed)	2	NSS EEE-A	
26.	02.11.23 (Thur)	2	Prakruthi Club ECE-B	
27.	03.11.23(Fri)	2	Kruthi Club ASE	
28.	04.11.23 (Sat)	2	Kruthi Club ME,EEE-B	
29.	06.11.23(Mon)	2	Prakruthi Club ECE-A	
30.	07.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
31.	08.11.23(Wed)	2	Prakruthi Club EEE-A	
32.	09.11.23 (Thur)	2	Kruthi Club ECE-B	
33.	10.11.23(Fri)	2	NSS ASE	
34.	11.11.23 (Sat)	2	NSS ME,EEE-B	
35.	20.11.23(Mon)	2	Kruthi Club ECE-A	
36.	21.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
37.	22.11.23(Wed)	2	NSS EEE-A	
38.	23.11.23 (Thur)	2	Kruthi Club ECE-B	
39.	24.11.23(Fri)	2	Kruthi Club ASE	
40.	25.11.23(Sat)	2	Kruthi Club ME,EEE-B	

41.	27.11.23(Mon)	2	NSS ECE-A	
42.	28.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
43.	30.11.23(Thur)	2	Prakruthi Club ECE-B	
44.	01.12.23(Fri)	2	Kruthi Club ASE	
45.	02.12.23(Sat)	2	NSS ME,EEE-B	
46.	04.12.23(Mon)	2	Prakruthi Club ECE-A	
47.	05.12.23(Tue)	2	NSS ECE-C,CIVIL	
48.	06.12.23(Wed)	2	Prakruthi Club EEE-A	
49.	07.12.23(Thur)	2	Kruthi Club ECE-B	
50.	08.12.23(Fri)	2	Kruthi Club ASE	
51.	09.12.23(Sat)	2	NSS ME,EEE-B	
52.	11.12.23(Mon)	2	Kruthi Club ECE-A	
53.	12.12.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
54.	13.12.23(Wed)	2	Prakruthi Club EEE-A	
55.	14.12.23(Thur)	2	Kruthi Club ECE-B	
56.	15.12.23(Fri)	2	Kruthi Club ASE	
57.	16.12.23(Sat)	2	NSS ME,EEE-B	
58.	18.12.23(Mon)	2	NSS ECE-A	
59.	19.12.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
60.	20.12.23(Wed)	2	Prakruthi Club EEE-A	
61.	21.12.23(Thur)	2	Kruthi Club ECE-B	
62.	22.12.23(Fri)	2	Kruthi Club ASE	
63.	23.12.23(Sat)	2	NSS ME,EEE-B	
64.	26.12.23(Tue)	2	Prakruthi Club ECE-B	
65.	27.12.23(Wed)	2	Prakruthi Club EEE-A	
66.	28.12.23(Thur)	2	Kruthi Club ECE-B	
67.	29.12.23(Fri)	2	Kruthi Club ASE	

68.	30.12.23(Sat)	2	NSS ME,EEE-B	
69.	02.01.24(Tue)	2	Prakruthi Club ECE-C,CIVIL	
70.	03.01.24(Wed)	2	Prakruthi Club EEE-A	
71.	04.01.24(Thur)	2	Kruthi Club ECE-B	
72.	05.01.24(Fri)	2	Kruthi Club ASE	
73.	06.01.24(Sat)	2	NSS ME,EEE-B	

Department Faculty:

ASE- Mr. Ashutosh Shukla (T775)—Friday

CE-Mr J.Eeswara Ram—Tuesday

EEE- Mr. T Hima Bindu(A) / Mr.A.V. Ravi Kumar (B)—Wednesday/ Saturday

ECE- Mr. B. Rajeswari (B)/ Mr.Ch. Mallikarjuna Rao (A&C)- Thurs /Mon/Tues

ME-Mr. K. Lakshmi Prasad (T686)-Saturday

Course Coordinators:

1. Dr. B Siva Hari Prasad/Mr. S. Uma Maheswara Reddy----

2. Dr V. Bhagya Lakshmi/Dr. Shaheda Niloufer ----

3. Mr. B. Kalyan Kumar ----

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activities per unit.
- Each activity shall be evaluated by the concerned teacher for 15 marks, totaling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.



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

COURSE HANDOUT

PART-A

Name of Course Instructor : K. Sridevi
Course Name & Code : Communicative English & 23FE50
L-T-P Structure : 2-0-0
Program/Sem/Sec : B. Tech, I Sem – ECE-C
A.Y. : 2023-24

Credits: 02

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	3 Weeks	31-08-2023 TO 16-09-2023		TLM1			
2.	Introduction to the course				TLM1			
3.	Course Outcomes, Program Outcomes				TLM2			

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	21-09-2023 23-09-2023		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	25-09-2023		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	30-09-2023 05-10-2023		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	01	07-10-2023 09-10-2023		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	12-10-2023		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms	01	14-10-2023		TLM2 TLM5	CO1	T1,T2	
7.	Affixes, Root Words	01	16-10-2023 19-10-2023		TLM2 TLM5	CO1	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8.	Nature: The Brook by Alfred Tennyson	02	26-10-2023 28-10-2023		TLM1 TLM 6	CO2	T1,T2	
9.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	30-10-2023		TLM2 TLM5	CO2	T1,T2	
10.	Structure of Paragraph – Paragraph Writing	01	02-11-2023		TLM1 TLM6 TLM5	CO2	T1,T2	
11.	Cohesive Devices-linkers	01	04-11-2023		TLM2 TLM6	CO2	T1,T2	
12.	Use of Articles and zero article, Prepositions	02	06-11-2023 09-11-2023		TLM2 TLM6	CO2	T1,T2	
13.	Homophones, Homographs, Homonyms	01	11-11-2023		TLM2 TLM5	CO2	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Biography: Elon Musk	02	20-11-2023 23-11-2023		TLM1 TLM 6	CO3	T1,T2	
15.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	25-11-2023		TLM2 TLM5	CO3	T1,T2	
16.	Summarizing, Note-making, Paraphrasing	01	27-11-2023		TLM1 TLM6 TLM5	CO3	T1,T2	
17.	Verbs- Tenses, Subject-verb agreement	02	30-11-2023 02-12-2023		TLM2 TLM6	CO3	T1,T2	
18.	Compound words, Collocations	01	04-12-2023		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 07							No. of classes taken:	

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Inspiration: The Toys of Peace- by Saki	02	07-12-2023 09-12-2023		TLM1 TLM 6	CO4	T1,T2	
20.	Study of graphic elements in text to display complicated data	01	11-12-2023		TLM2 TLM5	CO4	T1,T2	
21.	Letter Writing : Official Letters, Resumes	01	14-12-2023		TLM1 TLM6 TLM5	CO4	T1,T2	
22.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	16-12-2023 18-12-2023		TLM2 TLM6	CO4	T1,T2	
23.	Words often confused, Jargons	01	21-12-2023		TLM2 TLM5	CO4	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24.	Motivation: The Power of Interpersonal Communication	02	23-12-2023 28-12-2023		TLM1 TLM 6	CO5	T1,T2	
25.	Reading Comprehension	01	30-12-2023		TLM2 TLM5	CO5	T1,T2	
26.	Structured Essays on specific topics	01	04-01-2024		TLM1 TLM6 TLM5	CO5	T1,T2	
27.	Editing Texts – Correcting Common	01	06-01-2024		TLM2 TLM6	CO5	T1,T2	

	errors							
28.	Technical Jargon	01	08-01-2024		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 05						No. of classes taken:		

Content beyond the Syllabus

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Word Analogy	01	11-01-2024		TLM2 &5	
No. of classes required to complete				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental

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

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM	: B.Tech., I-Sem., ECE-C
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: ENGINEERING PHYSICS
L-T-P STRUCTURE	: 3-1-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Dr.N.Aruna
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 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 of variation of light due to interference, diffraction and polarization (L3)
CO 2	Understand the basics of crystals and their structures (L2)
CO 3	Summarize various types of polarization of dielectrics and classify the magnetic materials(L2)
CO 4	Explain the fundamentals of quantum mechanics and free electron theory of metals(L2)
CO5	Identify the type of semiconductor using Hall Effect (L3)

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

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

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 HANDOUT (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
1.	Introduction to the Subject, Course Outcomes	1	19/09/2023		TLM2		
2.	Superposition of waves, Coherence, Conditions for Interference	1	20/09/2023		TLM1		
3.	Interference from thin films, colours in thin films	1	21/09/2023		TLM1		
4.	Newton's rings	1	25/09/2023		TLM4		

5.	TUTORIAL-1	1	26/09/2023		TLM3		
6.	Introduction – Diffraction, Types	1	27/09/2023		TLM2		
7.	Single slit diffraction	1	03/10/2023		TLM4		
8.	Double slit	1	04/10/2023		TLM4		
9.	N Slits Diffraction grating	1	05/10/2023		TLM4		
10.	TUTORIAL-2	1	09/10/2023		TLM3		
11.	Dispersive power & Resolving power of Grating	1	09/10/2023		TLM1		
12.	Polarization introduction , types	1	10/10/2023		TLM1		
13.	Polarization by reflection, refraction	1	11/10/2023		TLM2		
14.	Double refraction, Nicol's prism	1	12/10/2023		TLM2		
15.	Half wave and quarter wave plate	1	16/10/2023		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 definitions	1	17/10/2023		TLM2		
2.	Bravais Lattices	1	18/10/2023		TLM1		
3.	Crystal Systems	1	19/10/2023		TLM1		
4.	Packing fraction of SC, BCC	1	25/10/2023		TLM2		
5.	FCC	1	26/10/2023		TLM2		
6.	Tutorial -2		30/10/2023		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	02/11/2023		TLM1		
10.	Laue's method	1	02/11/2023		TLM2		
11.							
12.	powder method		07/11/2023		TLM1		
13.	problems		08/11/2023		TLM1		
14.	Assignment		10/11/2023		TLM1		
No. of classes required to complete UNIT-II: 14				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	20/11/2023		TLM1		
2.	Electronic polarization	1	21/11/2023		TLM1		
3.	Ionic & Orientation polarization	1	22/11/2023		TLM1		
4.	Local field,	1	23/11/2023		TLM1		
5	Clausius Mosotti equation, complex dielectric constant	1	27/11/2023		TLM2		
6	Frequency dependence of polarization Dielectric loss and problems	1	28/11/2023		TLM1		
7	Introduction to Magnetic parameters origin of magnetic moment	1	29/11/2023		TLM1		
8	Classification of magnetic materials – Dia, para & Ferro	1	30/11/2023		TLM1		
9	Classification of magnetic materials – Dia, para & Ferro Anti ferro and ferri	1	04/12/2023		TLM2		
10	Domain concept of ferromagnetism and domain walls	1	05/12/2023		TLM2		
11	Hysteresis curve soft and hard magnetic materials	1	06/12/2023		TLM1		
No. of classes required to complete UNIT-II: 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	07/12/2023		TLM1		
2.	Heisenberg uncertainty principle	1	11/12/2023		TLM1		
3.	Physical significance of wave function Schrodinger time dependent & independent wave equations	1	12/12/2023		TLM1		
4.	Particle in a box	1	13/12/2023		TLM2		
5.	Problems &Assignment/Quiz	1	14/12/2023		TLM1		
6.	Classical free electron theory- postulates, Success & Failures	1	18/12/2023		TLM2		
7.	Quantum free electron theory	1	19/12/2023		TLM2		
8.	electrical conductivity	1	20/12/2023		TLM2		
9.	Fermi-Dirac distribution function- Temperature dependence	1	21/12/2023		TLM2		
10.	Density of states Fermi energy	1	26/12/2023		TLM2		
No. of classes required to complete UNIT-III: 17				No. of classes taken:			

UNIT-IV :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	27/12/2023		TLM1		
2.	Density of Intrinsic and semiconductors	1	28/12/2023		TLM1		

3.	Electrical conductivity and fermi level	1	02/01/2024		TLM1		
4.	Density of Extrinsic semiconductors	1	03/01/2024		TLM2		
5.	Dependence of fermi energy on carrier concentration and fermi energy	1	04/01/2024		TLM2		
6.	Einstein equation Drift and diffusion currents	1	08/01/2024		TLM1		
7.	Hall effect and applications	1	09/01/2024		TLM2		
8.	Revision		10/01/2024		TLM2		
9.	Revision		11/01/2024		TLM2		
No. of classes required to complete UNIT-IV: 9				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
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	fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Instructor

Dr.N.Aruna

Course Coordinator

Dr. S. Yusub

Module Coordinator

Dr. S. Yusub

HOD

Dr. A. Rami Reddy



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	: I B. Tech., I-Sem., ECE C
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: Linear Algebra & Calculus
L-T-P STRUCTURE	: 3-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Dr. D. Vijay Kumar
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", 44th 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	19-09-2023		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	26-09-2023		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	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	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	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	28-10-2023		TLM1	CO2	T1,T2	
26.	Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	

27.	Nature of Quadratic Forms	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Reduction of Quadratic form to Canonical form	1	31-10-2023		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 (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
31.	Introduction to Unit III	1	06-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	07-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	07-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	09-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	10-11-2023		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 with remainders	1	21-11-2023		TLM1	CO3	T1,T2	
39.	Taylor's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
40.	Maclaurin's theorem with remainders	1	24-11-2023		TLM1	CO3	T1,T2	
41.	Maclaurin's theorem	1	27-11-2023		TLM1	CO3	T1,T2	
42.	Problems and applications	1	28-11-2023		TLM1	CO3	T1,T2	
43.	TUTORIAL 3	1	01-12-2023		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
44.	Introduction to Unit IV	1	28-11-2023		TLM1	CO4	T1,T2	
45.	Functions of several variables	1	30-11-2023		TLM1	CO4	T1,T2	
46.	Continuity and Differentiability	1	04-12-2023		TLM1	CO4	T1,T2	
47.	Partial Derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
48.	Total derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
49.	Chain rule, Directional Derivative	1	07-12-2023		TLM1	CO4	T1,T2	
50.	Taylor's Series expansion	1	08-12-2023		TLM1	CO4	T1,T2	
51.	Maclaurin's series expansion	1	11-12-2023		TLM1	CO4	T1,T2	

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

Dr. D.VIJAY KUMAR	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)

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, NTR DIST., A.P.-521 230.

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. T. Satyanarayana

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

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

Credits: 3

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

A.Y.: 2023-24

Regulations: R23

PREREQUISITE: Physics

Course Objectives (COs)

Basic Electrical Engineering:

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

Basic Electronics Engineering

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

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

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

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

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

TEXTBOOKS:

1. Basic Electrical Engineering, D. C. Kulshreshtha, Tata McGraw Hill, 2019, First Edition
2. Power System Engineering, P.V. Gupta, M.L. Soni, U.S. Bhatnagar and A. Chakrabarti, Dhanpat Rai & Co, 2013
3. Fundamentals of Electrical Engineering, Rajendra Prasad, PHI publishers, 2014, Third Edition

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

REFERENCE BOOKS:

1. Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Mc Graw Hill, 2019, Fourth Edition
2. Principles of Power Systems, V.K. Mehtha, S.Chand Technical Publishers, 2020
3. Basic Electrical Engineering, T. K. Nagsarkar and M. S. Sukhija, Oxford University Press, 2017
4. Basic Electrical and Electronics Engineering, S. K. Bhattacharya, Person Publications, 2018, Second Edition.
5. R. S. Sedha, A Textbook of Electronic Devices and Circuits, S. Chand & Co, 2010.
6. Santiram Kal, Basic Electronics- Devices, Circuits and IT Fundamentals, Prentice Hall, India, 2002.
7. R. T. Paynter, Introductory Electronic Devices & Circuits – Conventional Flow Version, Pearson Education, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

PART A: BASIC ELECTRICAL ENGINEERING

UNIT-I: DC & AC Circuits

UNIT-I: DC & AC Circuits						
Sl.	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	20-09-2023		TLM1	
3.	Ohm's Law and its limitations	1	22-09-2023		TLM1	
4.	KCL & KVL	1	23-09-2023		TLM2	
5.	Series, Parallel, series-parallel circuits	1	25-09-2023		TLM1	
6.	Superposition theorem	1	26-09-2023		TLM1	
7.	AC Circuits: A.C. Fundamentals:	1	27-09-2023		TLM1	
8.	Equation of AC Voltage and current, waveform	1	29-09-2023		TLM1	
9.	Time period, frequency, amplitude, phase, phase difference, average value, RMS value	1	30-09-2023		TLM1	
10.	Form factor, peak factor, Voltage and current relationship with phasor diagrams in R, L, and C circuits	1	03-10-2023		TLM1	
11.	Concept of Impedance, Active power, reactive power and apparent power	1	04-10-2023		TLM2	
12.	Concept of power factor (Simple Numerical problems).	1	06-10-2023		TLM1	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: Machines and Measuring Instruments

Sl.	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	07-10-2023		TLM1	

14.	Construction, principle and operation of DC Generator	1	09-09-2023		TLM2	
15.	Construction, principle and operation of Single-Phase Transformer	1	10-10-2023		TLM2	
16.	Construction, principle and operation of Three Phase Induction Motor	1	11-10-2023		TLM2	
17.	Construction, principle and operation of Alternator		13-10-2023		TLM2	
18.	Applications of electrical machines	1	16-10-2023		TLM1	
19.	Measuring Instruments: Construction and working principle of Permanent Magnet Moving Coil (PMMC)	1	17-10-2023		TLM2	
20.	Moving Iron (MI) Instruments-Attraction Type	1	18-10-2023		TLM2	
21.	Moving Iron (MI) Instruments-Repulsion Type	1	20-10-2023		TLM2	
22.	Wheat Stone Bridge.	1	21-10-2023		TLM1	
23.	Applications of Electrical Machines	1	23-10-2023		TLM2	
24.	Applications of Electrical Machines	1	24-10-2023		TLM2	
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

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

Sl.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
25.	Energy Resources: Conventional and non-conventional energy resources	1	25-10-2023		TLM1	
26.	Layout and operation of various Power Generation systems: Hydel power generation	1	27-10-2023		TLM1	
27.	Layout and operation of nuclear power generation	1	28-10-2023		TLM1	
28.	Layout and operation of Solar power generation	1	30-10-2023		TLM1	
29.	Layout and operation of Wind power generation.	1	31-10-2023		TLM1	
30.	Layout and operation of Wind power generation.	1	01-11-2023		TLM1	
31.	Electricity bill: Power rating of household appliances including air conditioners PCs, Laptops, Printers, etc	1	03-11-2023		TLM1	
32.	Definition of "unit" used for consumption of electrical energy, two-part electricity tariff	1	04-11-2023		TLM1	
33.	Calculation of electricity bill for domestic	1	06-11-2023		TLM1	

	consumers					
34.	Equipment Safety Measures: Working principle of Fuse and Miniature Circuit Breaker (MCB), merits and demerits.	1	07-11-2023		TLM1	
35.	Personal Safety Measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.	1	08-11-2023		TLM1	
36.	Revision of Unit-III	1	10-11-2023		TLM1	
No. of classes required to complete UNIT-III: 12				No. of classes taken:		

I Mid Examinations: 13-11-2023 to 18-11-2023

PART B: BASIC ELECTRONICS ENGINEERING

UNIT-I: Semiconductor Devices

Sl.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37.	Introduction – Course Outcomes	1	20-11-2023		TLM1	
38.	Evolution of electronics, Vacuum tubes to nano electronics	1	21-11-2023		TLM1	
39.	Characteristics of PN Junction Diode	1	22-11-2023		TLM1	
40.	Zener Effect — Zener Diode and its Characteristics	1	24-11-2023		TLM1	
41.	Zener Effect — Zener Diode and its Characteristics	1	25-11-2023		TLM1	
42.	Bipolar Junction Transistor	1	27-11-2023		TLM1	
43.	Bipolar Junction Transistor	1	28-11-2023		TLM1	
44.	CB Configurations and Characteristics	1	29-11-2023		TLM2	
45.	CE Configurations and Characteristics.	1	01-12-2023		TLM2	
46.	CC Configurations and Characteristics.	1	02-12-2023		TLM2	
47.	Elementary Treatment of Small Signal CE Amplifier.	1	04-12-2023		TLM1	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: Basic Electronic Circuits and Instrumentation

Sl.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
48.	Rectifiers and power supplies: Block diagram description of a DC power supply	1	05-12-2023		TLM1	
49.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	06-12-2023		TLM1	
50.	Working of full wave bridge rectifier, capacitor filter (no analysis)	1	08-12-2023		TLM1	
51.	Working of simple Zener voltage regulator.	1	11-12-2023		TLM1	
52.	Working of simple Zener	1	12-12-2023		TLM2	

	voltage regulator.					
53.	Amplifiers: Block diagram of Public Address system	1	13-12-2023		TLM1	
54.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	15-12-2023		TLM2	
55.	Circuit diagram and working of common emitter (RC coupled) amplifier with its frequency response.	1	16-12-2023		TLM1	
56.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	18-12-2023		TLM2	
57.	Electronic Instrumentation: Block diagram of an electronic instrumentation system.	1	19-12-2023		TLM1	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: Digital Electronics

Sl.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
58.	Overview of Number Systems	1	20-12-2023		TLM1	
59.	Logic gates including Universal Gates	1	22-12-2023		TLM2	
60.	BCD codes	1	23-12-2023		TLM1	
61.	Excess-3 code, gray code	1	26-12-2023		TLM2	
62.	Hamming code	1	27-12-2023		TLM1	
63.	Boolean Algebra	1	29-12-2023		TLM1	
64.	Basic Theorems and properties of Boolean Algebra	1	30-12-2023		TLM1	
65.	Truth Tables and Functionality of Logic Gates NOT, OR, AND, NOR, NAND, XOR and XNOR	1	02-01-2024		TLM1	
66.	Truth Tables and Functionality of Logic Gates NOT, OR, AND, NOR, NAND, XOR and XNOR	1	03-01-2024		TLM1	
67.	Simple combinational circuits	1	05-01-2024		TLM1	
68.	Half and Full Adders	1	06-01-2024		TLM2	
69.	Introduction to sequential circuits	1	08-01-2024		TLM1	
70.	Flip flops	1	09-01-2024		TLM2	
71.	Registers and counters	1	10-01-2024		TLM2	
72.	Revision of Unit-I, II & III	1	12-01-2024		TLM1	
No. of classes required to complete UNIT-III: 15				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/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):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	19-09-2023	11-11-2023	8W
I Mid Examinations	13-11-2023	18-11-2023	1W
II Phase of Instructions	20-11-2023	13-01-2024	8W
II Mid Examinations	15-01-2024	20-01-2024	1W
Preparation and Practicals	22-01-2024	27-01-2024	1W
Semester End Examinations	29-01-2024	10-02-2024	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	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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.

Course Instructor
Dr. T. Satyanarayana

Course Coordinator
Dr. T. Satyanarayana

Module Coordinator
Dr. G. Srinivasulu

Head of the Department
Dr. Y. Amar Babu



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

Department of Electronics and Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor: **Mr. PEDAPUDI NAGABABU**

Course Name & Code : **IT WORKSHOP Lab & 23IT51**

L-T-P Structure : 0-0-2

Credits: **1**

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

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

C01	Identify the components of a PC and Assemble & disassemble the same. (Understand)
C02	Experiment with installation of Operating System and Secure a computer from Cyber threats.(Apply)
C03	Develop presentation /documentation using Office tools and LaTeX (Apply)
C04	Build dialogs and documents using ChatGPT. (Apply)
C05	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
C01	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C02	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C03	3	-	-	-	2	-	-	-	-	-	-	-	2	-	-
C04	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C05	-	-	-	-	-	-	-	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, 3 rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, 2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.
R6	IT Essentials PC Hardware and Software Companion Guide, David Anfinson and Ken Quamme. – CISCO Press, Pearson Education, 3rd edition.
R7	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan – CISCO Press, Pearson Education, 3rd edition.

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	13-09-2023		DM5	
2.	Task-2	3	20-09-2023		DM5	
3.	Task-3	3	20-09-2023		DM5	
4.	Task-4	3	27-09-2023		DM5	
5.	Task-5	3	04-10-2023		DM5	
Internet & World Wide Web						
6.	Task-1	3	11-10-2023		DM5	
7.	Task-2	3	18-10-2023		DM5	
8.	Task-3	3	18-10-2023		DM5	
9.	Task-4	3	25-10-2023		DM5	
LaTex and WORD						
10.	Task-1	3	01-11-2023		DM5	
11.	Task-2	3	08-11-2023		DM5	
12.	Task-3	3	08-11-2023		DM5	
13.	Task-4	3	22-11-2023		DM5	

EXCEL					
14.	Task-1	3	22-11-2023		DM5
15.	Task-2	3	29-11-2023		DM5
LOOKUP/VLOOKUP					
16.	Task-1	3	06-12-2023		DM5
POWER POINT					
17.	Task-1	3	13-12-2023		DM5
18.	Task-2	3	20-12-2023		DM5
19.	Task-3	3	20-12-2023		DM5
AI TOOLS – ChatGPT					
20.	Task-1	3	27-12-2023		DM5
21.	Task-2	3	03-01-2024		DM5
22.	Task-3	3	10-01-2024		DM5
23.	Internal exam	3	24-01-2024		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.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.P.Nagababu	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	Dr. Y. AMAR BABU
Signature				



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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.K.Dilip Kumar, Professor

Dr.B.Sudheer Kumar, Sr.Assistant Professor (A)

Dr.L.Prabhu, Associate Professor (A)

Course Name & Code : Engineering Graphics – 20ME01

L-T-P Structure : 2-0-2

Credits: 3

Program/Sem/Sec : B.Tech/I Sem/ECE -C-Section

A.Y.: 2023-24

PREREQUISITE : Engineering Physics, Mathematics

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

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

C01	Identify the geometrical objects considering BIS standards. (Remember-L1)
C02	Comprehend the basics of orthographic projections and deduce orthographic projections of a point and a line at different orientations. (Understand-L2)
C03	Represent graphically the geometrical planes at different positions and orientations. (Understand-L2)
C04	Analyze and draw solid objects at different positions and orientations. (Apply- L3)
C05	Visualize isometric and orthographic views of geometrical objects and convert one form to another. (Understand-L2)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	3	3	3	2	3							3		1	3
C02	3	3	1	2	1							3		1	3
C03	3	3	3	2	1							3		1	3
C04	3	2	3	2	3							3		1	3
C05	2	3	3	2	1							3		1	3
1 - Low			2 -Medium			3 - High									

TEXTBOOKS:

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

REFERENCE BOOKS:

- R1** Narayana K L, Kannaiah P, Textbook on Engineering Drawing, 2nd Edition, SciTech publishers.
- R2** R.K.Dhawan, Engineering Drawing, S.Chand Company LTD.
- R3** Venugopal, Engineering Drawing and Graphics, New Age publishers
- R4** Dhananjay A. Jolhe, Engineering Drawing, Tata McGraw Hill Publishers
- R5** N.S.Parthasarathy, Vela Murali, Engineering Drawing, Oxford Higher Education

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Induction Programme, Orientation Classes	7	31-08-2023 To 16-09-2023	-	TLM2, 4, 5	
2.	Induction Programme, Orientation Classes	7				
3.	Induction Programme, Orientation Classes	7				
4.	UNIT I: INTRODUCTION: Introduction to Engineering Drawing, COs, CEOs, POs and PEOs, Principles of Engineering Graphics and their significance, Drawing Instruments and their use-Conventions in Drawing, Practice	1	19-09-2023		TLM3	
5.	Lettering and Dimensioning – BIS conventions, Geometrical Constructions, Practice, Engineering Curves: Conic Sections- Ellipse, Parabola, Hyperbola General methods	4	22-09-2023		TLM1	
6.	Practice	1	26-09-2023		TLM3	
7.	Introduction to Engineering Curves, conics	4	29-09-2023		TLM1	
8.	Cycloid, Epicycloid and Practice, Hypocycloid; Involute	1	03-10-2023		TLM3	
9.	Practice	4	06-10-2023		TLM1	
10.	Introduction to Orthographic Projections, First and third angle projection methods, Practice	1	10-10-2023		TLM3	
11.	Projections of Points Projections of a point situated in any one of the four quadrants	4	13-10-2023		TLM1	
No. of classes required to complete UNIT-I: 20				No. of classes taken:		

UNIT-II: ORTHOGRAPHIC PROJECTIONS OF STRAIGHTLINES

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.	Projections of straight lines of different orientations when line is parallel to one and inclined to the other,	1	17-10-2023		TLM3	
13.	Practice ,	4	20-10-2023		TLM1	
14.	Projections of lines when inclined to both the planes	1	24-10-2023		TLM3	
15.	PROJECTIONS OF PLANES: Introduction to Projection of Planes	4	27-10-2023		TLM1	
16.	Practice Planes parallel to one of the reference planes,	1	31-10-2023		TLM1, 3	
17.	Inclined to one reference plane and perpendicular to other, Practice, Plane inclined to both reference planes	4	03-11-2023		TLM1	
18.	Plane inclined to both reference planes	1	07-11-2023		TLM1, 3	
19.	Plane inclined to both reference planes	4	10-11-2023		TLM1	
20.	I Mid Examinations		13-11-2023 - to 18-11-2023			
No. of classes required to complete UNIT-II: 20				No. of classes taken: (including Practice)		

UNIT-III: PROJECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	Types of solids: Polyhedra and solids of revolution. Projections of solids in simple positions	1	20-11-2023		TLM1	

22.	Axis perpendicular to horizontal plane, Axis perpendicular to vertical plane	4	24-11-2023		TLM3	
23.	Axis parallel to both the reference planes	1	28-11-2023		TLM1	
24.	Projection of solids with axis inclined to one reference plane and parallel to another plane Practice	4	01-12-2023		TLM1	
25.	Practice	1	05-12-2023		TLM3	
No. of classes required to complete UNIT-III: 11			No. of classes taken:			

UNIT-IV: SECTIONS OF SOLIDS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	SECTIONS OF SOLIDS: Perpendicular and inclined section planes,	4	08-12-2023		TLM1, 3	
27.	Sectional views and True shape of section	1	12-12-2023		TLM1	
28.	Sections of solids in simple position only	4	15-12-2023		TLM3	
29.	Development of Surfaces: Methods of Development:	1	19-12-2023		TLM1	
30.	Parallel line development and radial line development	4	22-12-2023		TLM3	
31.	Development of a cube, prism,cylinder, Pyramid and cone	1	26-12-2023		TLM1	
No. of classes required to complete UNIT-IV: 15				No. of classes taken: (including Practice)		

UNIT-V: ISOMETRIC VIEWS: TRANSFORMATION OF PROJECTIONS FROM ORTHOGRAPHIC PROJECTIONS TO ISOMETRIC VIEW and VICE VERSA

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	UNIT V: ISOMETRIC VIEWS – Introduction to Isometric Views, Practice	4	29-12-2023		TLM1, 3	
33.	Theory of isometric projection, isometric views, isometric axes, scale, lines & planes, Practice	1	02-01-2024		TLM1	
34.	Isometric view of prism, pyramid, cylinder & cone, non-isometric lines-methods to generate an isometric drawing, Practice	4	05-01-2024		TLM3	
35.	TRANSFORMATION OF PROJECTIONS: Introduction	1	09-01-2024		TLM1	
36.	Conversion of Isometric Views to Orthographic Projections of composite objects, Practice	4	12-01-2024		TLM1, 3	
37.	II Mid Examinations		15-11-2024 - to 20-01-2024			
No. of classes required to complete UNIT-V: 14				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
I-Descriptive Examination (Units-I, II)	M1=15
II- Descriptive Examination (UNIT-III , IV & V)	M2=15
Day to Day Evaluation	15
Mid Marks =80% of Max (M1,M2)+ 20% of Min ((M1, M2) + Day to Day Evaluation	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To apply the principles of thermal sciences to design and develop various thermal systems.
PSO 2	To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
PSO 3	To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. K.Dilip Kumar	Dr. K.Dilip Kumar	Dr.P.Ravindra Kumar	Dr. M.B.S.S.Reddy
Signature				



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Phone: 08659-222933, Fax: 08659-222931

COURSE HANDOUT

PART-A

Name of Course Instructor: K. Sridevi

Course Name & Code : CE LAB, 23FE51

L-T-P Structure : 0-0-2

Credits: 01

Program/Sem/Sec : B. Tech- I SEM- ECE-C

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 activities 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
1.	Introduction to syllabus	03	23-09-2023		TLM4	
2.	Self Introduction & Introducing others	03	30-09-2023		TLM4	
3.	Vowels & Consonants	03	7-10-2023		TLM1, TLM5	
4.	Neutralization / Accent rules	03	14-10-2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	28-10-2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	04-11-2023		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	11-11-2023		TLM1, TLM5	
8.	Group Discussion	03	25-11-2023		TLM4, TLM6	

9.	Debate	03	02-12-2023		TLM4, TLM6	
10.	PPT & Poster Presentation	03	09-12-2023 16-12-2023		TLM2, TLM4	
11.	Mock Interviews	03	23-12-2023 30-12-2023		TLM1, TLM6	
12.	Lab Internal Exam	03	06-01-2024			
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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

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

	community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Ms. K. Sridevi	Dr. R. Padma	Dr. A. Ramireddy	Dr. A. Ramireddy
Signature				



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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

COURSE HANDOUT

Part-A

PROGRAM	: B.Tech., I-Sem., ECE-C
ACADEMIC YEAR	: 2023-2024
COURSE NAME & CODE	: ENGINEERING PHYSICS LAB
L-T-P STRUCTURE	: 0-0-3
COURSE CREDITS	: 1
COURSE INSTRUCTOR	: Dr.N.Aruna/ P.Vijaya Sirisha
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 moduli 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

CO1.	3	3	2	1				1	1			1
CO2.	3	3	2	1				1	1			1
CO3.	3	3	2	1				1	1			1
CO4.	3	3	2	1				1	1			1
CO5.	3	3	2	1				1	1			1
1 = slight (Low) 2 = Moderate (Medium) 3 = Substantial (High)												

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

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

BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section- 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	25-09-2023		TLM4	
2.	Demonstration	3	09-10-2023		TLM4	
3.	Experiment 1	3	16-10-2023		TLM4	
4.	Experiment 2	3	30-10-2023		TLM4	
5.	Experiment 3	3	06-11-2023		TLM4	
6.	Experiment 4	3	13-10-2023		TLM4	
7.	Experiment 5	3	20-11-2023		TLM4	
8.	Experiment 6	3	27-11-2023		TLM4	
9.	Experiment 7	3	04-12-2023		TLM4	
10.	Experiment 8	3	04-12-2023		TLM4	
11.	Experiment 9	3	11-12-2023		TLM4	
12.	Experiment 10	3	11-12-2023		TLM4	
13.	Internal Exam	3	18-12-2023			
14.	Internal Exam	3	08-01-2024			
	No. of classes required to complete Syllabus:			42		

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

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

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

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

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the 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.

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



Phone: 08659-222933, Fax: 08659-222931

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PART-B

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-I

S.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to BEEE Lab (Function Generators, CRO, RPS, Breadboard etc), Course Objectives and Outcomes.	3	21-09-2023		TLM4	
2.	Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	05-10-2023		TLM4	
3.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator.	3	12-10-2023		TLM4	
4.	Implementation of half wave and full wave rectifiers	3	19-10-2023		TLM4	
5.	Plot Input & Output characteristics of BJT in CE and CB configurations	3	26-10-2023		TLM4	
6.	Frequency response of CE amplifier.	3	02-11-2023		TLM4	
7.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	09-11-2023		TLM4	
8.	Make up Lab	3	16-11-2023		TLM4	
9.	Internal Lab Examination (Electronics)	3	23-11-2023		TLM4	
10.	Verification of KCL and KVL	3	30-11-2023		TLM4	
11.	Verification of Superposition Theorem	3	07-12-2023		TLM4	
12.	Measurement of Resistance using Wheat stone bridge	3	14-12-2023		TLM4	
13.	Magnetization Characteristics of DC Shunt Generator	3	21-12-2023		TLM4	
14.	Measurement of Power and Power factor using Single-phase wattmeter	3	28-12-2023		TLM4	
15.	Calculation of Electrical Energy for Domestic Premises	3	04-01-2024		TLM4	
16.	Internal Lab Examination (Electricals)	3	11-01-2024		TLM4	
No. of classes required: 48				No. of classes taken:		

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-II

S.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to BEEE Lab (Function Generators, CRO, RPS, Breadboard etc), Course Objectives and Outcomes.	3	21-09-2023		TLM4	
2.	Plot V-I characteristics of PN Junction diode A) Forward bias B) Reverse bias.	3	05-10-2023		TLM4	
3.	Plot V – I characteristics of Zener Diode and its application as voltage Regulator.	3	12-10-2023		TLM4	
4.	Implementation of half wave and full wave rectifiers	3	19-10-2023		TLM4	
5.	Plot Input & Output characteristics of BJT in CE and CB configurations	3	26-10-2023		TLM4	
6.	Frequency response of CE amplifier.	3	02-11-2023		TLM4	
7.	Verification of Truth Table of AND, OR, NOT, NAND, NOR, Ex-OR, Ex-NOR gates using ICs	3	09-11-2023		TLM4	
8.	Make up Lab	3	16-11-2023		TLM4	
9.	Internal Lab Examination (Electronics)	3	23-11-2023		TLM4	
10.	Verification of KCL and KVL	3	30-11-2023		TLM4	
11.	Verification of Superposition Theorem	3	07-12-2023		TLM4	
12.	Measurement of Resistance using Wheat stone bridge	3	14-12-2023		TLM4	
13.	Magnetization Characteristics of DC Shunt Generator	3	21-12-2023		TLM4	
14.	Measurement of Power and Power factor using Single-phase wattmeter	3	28-12-2023		TLM4	
15.	Calculation of Electrical Energy for Domestic Premises	3	04-01-2024		TLM4	
16.	Internal Lab Examination (Electricals)	3	11-01-2024		TLM4	
No. of classes required: 48				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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.

Course Instructor

Dr. T. Satyanarayana

Course Coordinator

Dr. A. Narendra Babu

Module Coordinator

Dr. G. Srinivasulu

Head of the Department

Dr. Y. Amar Babu

NSS/NCC/SCOUTS & GUIDES/COMMUNITY SERVICE

(Common to All branches of Engineering)

Course Objectives: The objective of introducing this course is to impart discipline, character, fraternity, teamwork, social consciousness among the students and engaging them in selfless service.

Course Outcomes: After completion of the course the students will be able to

CO1: Understand the importance of discipline, character and service motto. (Understand)

CO2: Solve some societal issues by applying acquired knowledge, facts, and techniques. (Apply)

CO3: Explore human relationships by analyzing social problems. (Understand)

CO4: Determine to extend their help for the fellow beings and downtrodden people (Apply)

CO5: Develop leadership skills and civic responsibilities. (Apply)

UNIT I: Orientation General Orientation on NSS/NCC/ Scouts & Guides/Community Service activities, career guidance.

Activities:

- i) Conducting –ice breaking sessions-expectations from the course-knowing personal talents and skills
- ii) **Conducting orientations programs for the students –future plans-activities-releasing road map etc.**
- iii) **Displaying success stories-motivational biopics- award winning movies on societal issues etc.**
- iv) Conducting talent show in singing patriotic songs-paintings- any other contribution.

UNIT II Nature & Care Activities:

- i) Best out of waste competition.
- ii) Poster and signs making competition to spread environmental awareness.
- iii) Recycling and environmental pollution article writing competition.
- iv) Organising Zero-waste day.
- v) v) Digital Environmental awareness activity via various social media platforms.
- vi) Virtual demonstration of different eco-friendly approaches for sustainable living. vii) Write a summary on any book related to environmental issues.

UNIT III Community Service Activities:

- i) Conducting One Day Special Camp in a village contacting village-area leaders- Survey in the village, identification of problems- helping them to solve via media- authority's experts-etc. 88
- ii) Conducting awareness programs on Health-related issues such as General Health, Mental health, Spiritual Health, HIV/AIDS,
- iii) Conducting consumer Awareness. Explaining various legal provisions etc.

- iv) Women Empowerment Programmes- Sexual Abuse, Adolescent Health and Population Education.
- v) Any other programmes in collaboration with local charities, NGOs etc.

Reference Books:

1. Nirmalya Kumar Sinha & Surajit Majumder, A Text Book of National Service Scheme Vol;I, Vidya Kutir Publication, 2021 (ISBN 978-81-952368-8-6)
2. Red Book - National Cadet Corps – Standing Instructions Vol I & II, Directorate General of NCC, Ministry of Defence, New Delhi
3. Davis M. L. and Cornwell D. A., “Introduction to Environmental Engineering”, McGraw Hill, New York 4/e 2008
4. Masters G. M., Joseph K. and Nagendran R. “Introduction to Environmental Engineering and Science”, Pearson Education, New Delhi. 2/e 2007
5. Ram Ahuja. Social Problems in India, Rawat Publications, New Delhi.

General Guidelines:

1. Institutes must assign slots in the Timetable for the activities.
2. Institutes are required to provide instructor to mentor the students.

S.No.	Day/ Dates	No. of Classes Required	Topic / Club	Activity Name
1.	03.10.23 (Tue)	2	Prakruthi Club ECE-C,CIVIL	
2.	04.10.23(Wed)	2	NSS EEE-A	
3.	05.10.23(Thur)	2	Kruthi Club ECE-B	
4.	06.10.23(Fri)	2	Kruthi Club ASE	
5.	07.10.23 (Sat)	2	NSS ME,EEE-B	
6.	09.10.23(Mon)	2	Prakruthi Club ECE-A	
7.	10.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
8.	11.10.23(Wed)	2	NSS EEE-A	
9.	12.10.23(Thur)	2	Prakruthi Club ECE-B	
10.	13.10.23(Fri)	2	Kruthi Club ASE	
11.	14.10.23 (Sat)	2	NSS ME,EEE-B	
12.	16.10.23(Mon)	2	Kruthi Club ECE-A	
13.	17.10.23(Tue)	2	NSS ECE-C,CIVIL	
14.	18.10.23(Wed)	2	Prakruthi Club	

			EEE-A	
15.	19.10.23(Thur)	2	Prakruthi Club ECE-B	
16.	20.10.23(Fri)	2	Kruthi Club ASE	
17.	21.10.23(Sat)	2	NSS ME,EEE-B	
18.	24.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
19.	25.10.23(Wed)	2	NSS EEE-A	
20.	26.10.23(Thur)	2	Kruthi Club ECE-B	
21.	27.10.23 (Fri)	2	Prakruthi Club ASE	
22.	28.10.23(Sat)	2	NSS ME,EEE-B	
23.	30.10.23(Mon)	2	NSS ECE-A	
24.	31.10.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
25.	01.11.23(Wed)	2	NSS EEE-A	
26.	02.11.23 (Thur)	2	Prakruthi Club ECE-B	
27.	03.11.23(Fri)	2	Kruthi Club ASE	
28.	04.11.23 (Sat)	2	Kruthi Club ME,EEE-B	
29.	06.11.23(Mon)	2	Prakruthi Club ECE-A	
30.	07.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
31.	08.11.23(Wed)	2	Prakruthi Club EEE-A	
32.	09.11.23 (Thur)	2	Kruthi Club ECE-B	
33.	10.11.23(Fri)	2	NSS ASE	
34.	11.11.23 (Sat)	2	NSS ME,EEE-B	
35.	20.11.23(Mon)	2	Kruthi Club ECE-A	
36.	21.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
37.	22.11.23(Wed)	2	NSS EEE-A	
38.	23.11.23 (Thur)	2	Kruthi Club ECE-B	
39.	24.11.23(Fri)	2	Kruthi Club ASE	
40.	25.11.23(Sat)	2	Kruthi Club ME,EEE-B	

41.	27.11.23(Mon)	2	NSS ECE-A	
42.	28.11.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
43.	30.11.23(Thur)	2	Prakruthi Club ECE-B	
44.	01.12.23(Fri)	2	Kruthi Club ASE	
45.	02.12.23(Sat)	2	NSS ME,EEE-B	
46.	04.12.23(Mon)	2	Prakruthi Club ECE-A	
47.	05.12.23(Tue)	2	NSS ECE-C,CIVIL	
48.	06.12.23(Wed)	2	Prakruthi Club EEE-A	
49.	07.12.23(Thur)	2	Kruthi Club ECE-B	
50.	08.12.23(Fri)	2	Kruthi Club ASE	
51.	09.12.23(Sat)	2	NSS ME,EEE-B	
52.	11.12.23(Mon)	2	Kruthi Club ECE-A	
53.	12.12.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
54.	13.12.23(Wed)	2	Prakruthi Club EEE-A	
55.	14.12.23(Thur)	2	Kruthi Club ECE-B	
56.	15.12.23(Fri)	2	Kruthi Club ASE	
57.	16.12.23(Sat)	2	NSS ME,EEE-B	
58.	18.12.23(Mon)	2	NSS ECE-A	
59.	19.12.23(Tue)	2	Prakruthi Club ECE-C,CIVIL	
60.	20.12.23(Wed)	2	Prakruthi Club EEE-A	
61.	21.12.23(Thur)	2	Kruthi Club ECE-B	
62.	22.12.23(Fri)	2	Kruthi Club ASE	
63.	23.12.23(Sat)	2	NSS ME,EEE-B	
64.	26.12.23(Tue)	2	Prakruthi Club ECE-B	
65.	27.12.23(Wed)	2	Prakruthi Club EEE-A	
66.	28.12.23(Thur)	2	Kruthi Club ECE-B	
67.	29.12.23(Fri)	2	Kruthi Club ASE	

68.	30.12.23(Sat)	2	NSS ME,EEE-B	
69.	02.01.24(Tue)	2	Prakruthi Club ECE-C,CIVIL	
70.	03.01.24(Wed)	2	Prakruthi Club EEE-A	
71.	04.01.24(Thur)	2	Kruthi Club ECE-B	
72.	05.01.24(Fri)	2	Kruthi Club ASE	
73.	06.01.24(Sat)	2	NSS ME,EEE-B	

Department Faculty:

ASE- Mr. Ashutosh Shukla (T775)—Friday

CE-Mr J.Eeswara Ram—Tuesday

EEE- Mr. T Hima Bindu(A) / Mr.A.V. Ravi Kumar (B)—Wednesday/ Saturday

ECE- Mr. B. Rajeswari (B)/ Mr.Ch. Mallikarjuna Rao (A&C)- Thurs /Mon/Tues

ME-Mr. K. Lakshmi Prasad (T686)-Saturday

Course Coordinators:

1. Dr. B Siva Hari Prasad/Mr. S. Uma Maheswara Reddy----

2. Dr V. Bhagya Lakshmi/Dr. Shaheda Niloufer ----

3. Mr. B. Kalyan Kumar ----

Evaluation Guidelines:

- Evaluated for a total of 100 marks.
- A student can select 6 activities of his/her choice with a minimum of 01 activities per unit.
- Each activity shall be evaluated by the concerned teacher for 15 marks, totaling to 90 marks.
- A student shall be evaluated by the concerned teacher for 10 marks by conducting viva voce on the subject.