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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

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

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	19-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23-08-2025 26-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	28-08-2025 30-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	02-09-2025 04-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	06-09-2025 09-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	11-09-2025 13-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 12						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	02	16-09-2025 18-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	23-09-2025 25-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	27-09-2025 07-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	01	09-10-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	02	11-10-2025 14-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	02	16-10-2025 18-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 11						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	Text Book followed	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	28-10-2025 30-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	04-11-2025 06-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	08-11-2025 11-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	13-11-2025 15-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	18-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	20-11-2025 22-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	25-11-2025 27-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	29-11-2025 02-12-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	04-12-2025 06-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	09-12-2025		TLM2 TLM5	CO4	T1,T2	

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

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	01	11-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	13-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	16-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	18-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	20-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 05						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Word Analogy**	01	23-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	27-12-2025		TLM2 &5	
3.	**Technical vocabulary**		27-12-2025		TLM2 &5	
No. of classes required to complete UNIT-V:				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

FRESHMANENGINEERINGDEPARTMENT

COURSEHANDOUT

PART-A

PROGRAM	**: I B. Tech., I-Sem., EEE- A**
ACADEMICYEAR	**: 2025-26**
COURSENAME &CODE	**: ENGINEERING PHYSICS - 23FE04**
L-T-PSTRUCTURE	**: 4-0-0**
COURSECREDITS	**: 3**
COURSEINSTRUCTOR	**: Dr. N. Aruna**
PRE-REQUISITE	**: Basic Knowledge of Physics**

Course Objectives:

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

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

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

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

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

TEXT BOOKS

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

REFERENCES

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

WEBRESOURCES

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

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

PART-B

COURSEDELIVERYPLAN(LESSONPLAN):

UNIT-I:INTERFERENCE, DIFFRACTION& POLARIZATION

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Introduction to the Subject, Course Outcomes	1	18-08-2025		**TLM-2**		
2	Principle of superposition, Interference of light	1	20-08-2025		**TLM-3**		
3	Interference in thin films by reflection & applications	1	20-08-2025		**TLM-2**		
4	Colors in thin films, Newton's rings	1	21-08-2025		**TLM-1**		
5	Determination of wavelength and refractive index	1	25-08-2025		**TLM-4**		
6	Problems& Assignment/Quiz	1	28-08-2025		**TLM-1**		
7	Introduction, Fresnel and	1	01-09-2025		**TLM-3**		

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

UNIT-II:CRYSTALLOGRAPHY & X– RAY DIFFRACTION

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Space lattice; Basis, Unit cell & Lattice parameters	1	17-09-2025		**TLM-2**		
2	Bravais Lattices	1	18-09-2025		**TLM-2**		
3	Crystal Systems(3D)	1	22-09-2025		**TLM-2**		
4	Coordination number – Packing fraction of –SC, BCC	1	24-09-2025		**TLM-1**		
5	Coordination number – Packing fraction of FCC	1	24-09-2025		**TLM-1**		
6	Tutorial	1	25-09-2025		**TLM-3**		
7	Miller indices& Properties Separation	1	06-10-2025		**TLM-1**		

	between successive (hkl) planes						
8	Bragg's law; X–ray Diffractometer	1	08-10-2025		**TLM-2**		
9	Crystal Structure determination by Laue's method	1	08-10-2025		**TLM-2**		
10	Tutorial	1	09-10-2025		**TLM-3**		
11	Crystal Structure determination by Powder method	1	13-10-2025		**TLM-3**		
12	Problems& Assignment/Quiz	1	15-10-2025		**TLM-3**		
13	Revision	1	15-10-2025		**TLM-3**		
14	Revision	1	16-10-2025		**TLM-3**		
No.of classes required to complete UNIT-II: 14				No.of classes taken:			

UNIT-III :DIELECTRIC & MAGNETIC MATERIALS

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

S.No	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Dielectric polarization Dielectric polarizability, Susceptibility	1	27-10-2025		**TLM-2**		
2	Dielectric constant & Displacement Vector, Relation between the electric vectors	1	29-10-2025		**TLM-3**		
3	Types of polarizations-Electronic polarization	1	29-10-2025		**TLM-1**		
4	Types of polarizations- ionic & orientation polarizations (Qualitative)	1	30-10-2025		**TLM-1**		
5	Lorentz internal field	1	03-11-2025		**TLM-2**		
6	Claussius-Mosotti equation, Complex dielectric constant	1	05-11-2025		**TLM-1**		

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

UNIT-IV :QUANTUM MECHANICS & FREE ELECTRON THEORY

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Dual nature of matter,De-Broglie's Hypothesis	1	20-11-2025		**TLM-3**		
2	Heisenberg's Uncertainty Principle	1	24-11-2025		**TLM-2**		
3	Significance & properties of wave function	1	26-11-2025		**TLM-2**		
4	Schrodinger's time independent and dependent wave equations	1	26-11-2025		**TLM-1**		
5	Tutorial	1	27-11-2025		**TLM-3**		
6	Particle in a one – dimensional infinite potential well	1	01-12-2025		**TLM-3**		
7	Classical free electron theory-	1	03-12-2025		**TLM-2**		

	merits and demerits, Quantum free electron theory						
8	Electrical conductivity based on quantum free electron theory	1	03-12-2025		**TLM-1**		
9	Tutorial	1	04-12-2025		**TLM-5**		
10	Fermi -Dirac distribution and temperature dependence	1	08-12-2025		**TLM-1**		
11	Density of states, Fermi energy	1	10-12-2025		**TLM-3**		
No.of classes required to complete UNIT-IV:11				No.of classes taken:			

UNIT-V: SEMICONDUCTOR PHYSICS

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1	Formation of energy bands, Classification of crystalline solids	1	10-12-2025		**TLM-6**		
2	Intrinsic semiconductors, Density of charge carriers	1	11-12-2025		**TLM-3**		
3	Electrical conductivity, Fermi level	1	15-12-2025		**TLM-2**		
4	Extrinsic semiconductors, Density of charge carriers	1	17-12-2025		**TLM-1**		
5	Dependence of Fermi energy on carrier concentration &temperature	1	18-12-2025		**TLM-2**		
6	Drift and Diffusion Currents, Einstein's equation	1	17-12-2025		**TLM-1**		
7	Tutorial	1	18-12-2025		**TLM-3**		
8.	Hall Effect & its applications	1	22-12-2025		**TLM-2**		
No.of classes required to complete UNIT-V:08				No.of classes taken:			

PART-C

EVALUATION PROCESS(R-23Regulation)

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

PART-D

PROGRAMMEOUTCOMES(POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals,andanengineeringspecializationtothesolutionofcomplex engineeringproblems.
PO 2	**Problem analysis**:Identify,formulate,reviewer search literature,and analyze complexengineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics,natural sciences,and engineering sciences.
PO 3	**Design/development of solutions**:Design solutions for complex engineering problems and design system components or processes that meet the specified needswithappropriateconsiderationforthepublichealthandsafety,and the cultural, societal,and environmental considerations.
PO 4	**Conductivestigations of complex problems**:Use research-based knowledge and Research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**:Create,select,and apply appropriate techniques,resources,and Modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**:Apply reasoning informed by the contextual knowledge to assesssocietal, health,safety,legal and cultural is sues and the consequent responsibilitiesrelevanttotheprofessionalengineeringpractice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts,and demonstrate the Knowledge of,and need for sustainable development.

PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and Responsibilities and norms of the engineering practice.
PO 9	**Individualandteamwork**:Functioneffectivelyasanindividual,andasamember orleaderindiverseteams,andinmultidisciplinarysettings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as,being able to comprehend and write effective reports and design documentation,make effective presentations,and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as amember and lead erina team,to manageprojectsandinmultidisciplinary environments.
PO 12	**Life-long learning**:Recognizetheneedforandhavethepreparationandabilityto engageinindependentandlife-longlearninginthebroadestcontextoftechnologicalchange.

CourseInstructor	Course Coordinator	ModuleCoordinator	HOD
Dr. N. Aruna	**Dr.S.Yusub**	**Dr.S.Yusub**	**Dr.T.Satyanarayana**

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ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., EEE-A
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : B.TANDAVA KRISHNA
COURSE COORDINATOR : Dr. A. Rami Reddy
PRE-REQUISITES : Basics of Matrices, Differentiation, Integration

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

COURSE OUTCOMES (COs)

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

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

BOS APPROVED REFERENCE BOOKS:

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	04-08-2025 To 14-08-2025	04-08-2025 To 14-08-2025	TLM1			
2.	Introduction to the course	1	18-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	18-08-2025		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	18-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	19-08-2025		TLM1	CO1	T1,T2	
6.	**TUTORIAL I**	1	20-08-2025		TLM3	CO1	T1,T2	
7.	Echelon form	1	21-08-2025		TLM1	CO1	T1,T2	
8.	Normal form	1	22-08-2025		TLM1	CO1	T1,T2	
9.	Cauchy-Binet formulae	1	25-08-2025		TLM1	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	26-08-2025		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	28-08-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	29-08-2025		TLM1	CO1	T1,T2	
13.	Homogeneous System of Equations	1	01-09-2025		TLM1	CO1	T1,T2	
14.	Non-Homogeneous System of Equations	1	02-09-2025		TLM1	CO1	T1,T2	
15.	**TUTORIAL II**	1	03-09-2025		TLM3	CO1	T1,T2	
16.	Gauss Elimination Method	1	04-09-2025		TLM1	CO1	T1,T2	
17.	Jacobi Iteration Method	1	08-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	09-09-2025		TLM1	CO1	T1,T2	
19.	**TUTORIAL III**	1	10-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	11-09-2025		TLM3	CO1	T1,T2	
21.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		20			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	15-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	16-09-2025		TLM1	CO2	T1,T2	
24.	**TUTORIAL IV**	1	17-09-2025		TLM3	CO2	T1,T2	
25.	Eigen values, Eigen vectors	1	18-09-2025		TLM1	CO2	T1,T2	
26.	Properties	1	19-09-2025		TLM1	CO2	T1,T2	
27.	Properties	1	22-09-2025		TLM1	CO2	T1,T2	

28.	Cayley-Hamilton Theorem	1	23-09-2025		TLM1	CO2	T1,T2	
29.	**TUTORIAL V**	1	24-09-2025		TLM3	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	25-09-2025		TLM1	CO2	T1,T2	
31.	Diagonalization of a matrix	1	26-09-2025		TLM1	CO2	T1,T2	
32.	Diagonalization of a matrix	1	06-10-2025		TLM1	CO2	T1,T2	
33.	Quadratic Forms	1	07-10-2025		TLM1	CO2	T1,T2	
34.	**TUTORIAL VI**	1	08-10-2025		TLM3	CO2	T1,T2	
35.	Nature of Quadratic Forms	1	09-10-2025		TLM1	CO2	T1,T2	
36.	Reduction of Quadratic form to Canonical form	1	10-10-2025		TLM1	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	13-10-2025		TLM1	CO2	T1,T2	
38.	Orthogonal Transformation	1	14-10-2025		TLM1	CO2	T1,T2	
39.	**TUTORIAL VII**	1	15-10-2025		TLM3	CO2	T1,T2	
40.	Orthogonal Transformation	1	16-10-2025		TLM1	CO2	T1,T2	
41.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		17			No. of classes taken:			

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

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
42.	Introduction to Unit III	1	27-10-2025		TLM1	CO3	T1,T2	
43.	Mean Value theorem	1	28-10-2025		TLM1	CO3	T1,T2	
44.	**TUTORIAL VIII**	1	29-10-2025		TLM3	CO3	T1,T2	
45.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
46.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
47.	Lagrange's mean value theorem	1	03-11-2025		TLM1	CO3	T1,T2	
48.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
49.	**TUTORIAL IX**	1	05-11-2025		TLM3	CO3	T1,T2	
50.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
51.	Cauchy's mean value theorem	1	07-11-2025		TLM1	CO3	T1,T2	
52.	Taylor's theorem	1	10-11-2025		TLM1	CO3	T1,T2	
53.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
54.	**TUTORIAL X**	1	12-11-2025		TLM3	CO3	T1,T2	
55.	Maclaurin's theorem	1	13-11-2025		TLM1	CO3	T1,T2	
56.	Maclaurin's theorem	1	14-11-2025		TLM1	CO3	T1,T2	
57.	Problems and applications	1	17-11-2025		TLM1	CO3	T1,T2	
58.	Problems and applications	1	18-11-2025		TLM1	CO3	T1,T2	
59.	**TUTORIAL XI**	1	19-11-2025		TLM3	CO3	T1,T2	

No. of classes required to complete UNIT-III	16	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
60.	Introduction to Unit IV	1	20-11-2025		TLM1	CO4	T1,T2	
61.	Functions of several variables, Continuity and Differentiability	1	21-11-2025		TLM1	CO4	T1,T2	
62.	Partial Derivatives	1	24-11-2025		TLM1	CO4	T1,T2	
63.	Total derivatives, Chain rule	1	25-11-205		TLM1	CO4	T1,T2	
64.	**TUTORIAL XII**	1	26-11-2025		TLM3	CO4	T1,T2	
65.	Directional Derivative	1	27-11-2025		TLM1	CO4	T1,T2	
66.	Taylor's Series expansion	1	28-11-2025		TLM1	CO4	T1,T2	
67.	Maclaurin's series expansion	1	01-12-2025		TLM1	CO4	T1,T2	
68.	Jacobian	1	02-12-2025		TLM1	CO4	T1,T2	
69.	**TUTORIAL XIII**	1	03-12-2025		TLM3	CO4	T1,T2	
70.	Jacobian	1	04-12-2025		TLM1	CO4	T1,T2	
71.	Functional Dependence	1	05-12-2025		TLM1	CO4	T1,T2	
72.	Maxima and Minima	1	08-12-2025		TLM1	CO4	T1,T2	
73.	Lagrange Multiplier Method	1	09-12-2025		TLM1	CO4	T1,T2	
74.	**TUTORIAL XIV**	1	10-12-2025		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
75.	Introduction to Unit-V	1	11-12-2025		TLM1	CO5	T1,T2	
76.	Double Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
77.	Double Integrals - Cartesian coordinates	1	15-12-2025		TLM1	CO5	T1,T2	
78.	Triple Integrals - Cartesian coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
79.	**TUTORIAL XV**	1	17-12-2025		TLM3	CO5	T1,T2	
80.	Triple Integrals - Spherical coordinates	1	18-12-2025		TLM1	CO5	T1,T2	
81.	Change of order of Integration	1	19-12-2025		TLM1	CO5	T1,T2	
82.	Change of order of Integration	1	22-12-2025		TLM1	CO5	T1,T2	
83.	Change of variables	1	23-12-2025		TLM1	CO5	T1,T2	
84.	**TUTORIAL XVI**	1	24-12-2025		TLM3	CO5	T1,T2	

85.	Finding area by double Integral	1	26-12-2025		TLM1	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
86.	Other applications of double integral	1	26-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 31-12-2025)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

B.TANDAVA KRISHNA	**Dr.K.Bhanu Lakshmi**	**Dr. A. RAMI REDDY**	**Dr.T.Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. J.V.Pavan Chand
Course Name & Code : BASIC ELECTRICAL & ELECTRONICS ENGINEERING – 23EE01
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I/EEE-A **A.Y.:** 2025-26

PREREQUISITE: Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): To expose to the field of electrical & electronics engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.

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

CO1	Extract electrical variables of AC & DC circuits using fundamental laws. (Understand)
CO2	Understand the operation of electrical machines and measuring instruments. (Understand)
CO3	Classify various energy resources, safety measures and interpret electricity bill generation in electrical systems. (Understand)
CO4	Interpret the characteristics of various semiconductor devices (Knowledge)
CO5	Infer the operation of rectifiers, amplifiers. (Understand)
CO6	Contrast various logic gates, sequential and combinational logic circuits. (Understand)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	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:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

PART A: BASIC ELECTRICAL ENGINEERING

UNIT-I: DC & AC Circuits

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to subject and course outcomes	1	18-08-2025		TLM1	
2.	**DC Circuits:** Electrical circuit elements (R, L and C)	1	20-08-2025		TLM1	
3.	Ohm's Law and its limitations	1	22-08-2025		TLM1	
4.	KCL & KVL	1	23-08-2025		TLM1	
5.	series, parallel, series-parallel circuits	1	25-08-2025		TLM1	
6.	Super Position theorem	1	29-08-2025		TLM1	
7.	**AC Circuits:** A.C. Fundamentals:	1	30-08-2025		TLM1	
8.	Equation of AC Voltage and current, waveform	1	01-09-2025		TLM1	
9.	Time period, frequency, amplitude, phase, phase difference, average value, RMS value	1	03-09-2025		TLM1	
10.	Form factor, peak factor, Voltage and current relationship with phasor diagrams in R, L, and C circuits	1	06-09-2025		TLM1	
11.	Concept of Impedance, Active power, reactive power and apparent power	1	08-09-2025		TLM1	
12.	Concept of power factor (Simple Numerical problems).	1	10-09-2025		TLM1	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Machines and Measuring Instruments

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	**Machines:** Construction, principle and operation of DC Motor	1	12-09-2025		TLM1	
14.	Construction, principle and operation of DC Generator	1	13-09-2025		TLM1	
15.	Construction, principle and operation of Three Phase Induction Motor	1	15-09-2025		TLM1	
16.	Construction, principle and operation of Alternator	1	17-09-2025		TLM1	
17.	Applications of electrical machines	1	19-09-2025		TLM1	
18.	**Measuring Instruments:** Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments	2	20-09-2025 22-09-2025		TLM1	
19.	Wheat Stone bridge.	1	24-09-2025		TLM1	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		

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

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

20.	**Energy Resources:** : Conventional and non-conventional energy resources	1	26-09-2025		TLM1	
21.	Layout and operation of various Power Generation systems: Hydel power generation	1	27-09-2025		TLM1	
22.	Layout and operation of Nuclear power generation	1	06-10-2025		TLM1	
23.	Layout and operation of Solar power generation	1	08-10-2025		TLM1	
24.	Layout and operation of Wind power generation.	1	10-10-2025		TLM1	
25.	**Electricity bill:** : Power rating of household appliances including air conditioners PCs, Laptops, Printers, etc	1	11-10-2025		TLM1	
26.	Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers	1	13-10-2025		TLM1	
27.	**Equipment Safety Measures:** Working principle of Fuse and Miniature circuit breaker(MCB), merits and demerits	1	15-10-2025		TLM1	
28.	Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.	1	17-10-2025		TLM1	
29.	Revision	1	18-10-2025		**TLM1**	
No. of classes required to complete UNIT-III: 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 & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	**From**	**To**	**Weeks**
I Phase of Instructions	18-08-2025	18-10-2025	
I Mid Examinations	20-10-2025	25-10-2025	
II Phase of Instructions	27-10-2025	27-12-2025	
II Mid Examinations	29-12-2025	03-01-2025	
Preparation and Practical's	05-01-2025	10-10-2025	

Semester End Examinations	19-01-2025	31-01-2025	

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr.J.V.Pavan Chand**	**Mr.J.V.Pavan Chand**	**Dr. G. Nageswararao**	**Dr. P.Shobha Rani**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. J.Nagaraju
Course Name & Code : IT WORKSHOP Lab & 23IT51
L-T-P Structure : 0-0-2 **Credits: 1**
Program/Sem/Sec : B.Tech. – 1SEM/EEE- A Sec **A.Y.:** 2025-26
PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

CO1	Identify the components of a PC and Assemble & disassemble the same. (Understand)
CO2	Experiment with installation of Operating System and Secure a computer from Cyber threats. (Apply)
CO3	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO4	Build dialogs and documents using ChatGPT. (Apply)
CO5	Improve individual / teamwork skills, communication and report writing skills with ethical values

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

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

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

1 - Low **2 –**Medium **3 –** High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	22-08-2025		**DM5**	
2.	Task-2	3	29-08-2025		**DM5**	
3.	Task-3	3	12-09-2025		**DM5**	
4.	Task-4	3	19-09-2025		**DM5**	
5.	Task-5	3	26-09-2025		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	10-10-2025		**DM5**	
7.	Task-2	3	17-10-2025		**DM5**	
8.	Task-3	3	24-10-2025		**DM5**	
9.	Task-4	3	31-10-2025		**DM5**	
Latex and WORD						
10.	Task-1	3	07-11-2025		**DM5**	
11.	Task-2	3	14-11-2025		**DM5**	
12.	Task-3	3	21-11-2025		**DM5**	
13.	Task-4	3	28-11-2025		**DM5**	
EXCEL						
14.	Task-1	3	05-12-2025		**DM5**	

15.	Task-2	3	12-12-2025		**DM5**	
LOOKUP/VLOOKUP						
16.	Task-1	3	19-12-2025		**DM5**	
POWER POINT						
17.	Task-1	3	26-12-2025		**DM5**	
18.	Task-2	3	02-01-2025		**DM5**	
19.	Task-3	3	09-01-2025		**DM5**	
AI TOOLS – ChatGPT						
20.	Task-1	3	23-01-2025		**DM5**	
21.	Task-2	3	30-01-2025		**DM5**	
22.	Task-3	3	06-02-2025		**DM5**	
23.	Internal exam	3	20-02-2025		**DM5**	

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

PART-C

EVALUATION PROCESS (R23 Regulations): According to Academic Regulations of R23 Distribution and Weightage of Marks for Laboratory Courses is as follows

Continuous Internal Evaluation (CIE): The Continuous Internal Evaluation (CIE) is based on the following parameters:

Parameter	**Marks**
Day to Day work	15
Record	15
Internal Test	
Total	**30**

Semester End Examinations (SEE): The Semester End examinations (SEE) for laboratory courses shall be jointly conducted by internal and external examiners with 3 hours' duration and evaluated for 35 marks. The performance of the student shall be evaluated as per the parameters indicated below:

Parameter	**Marks**
Procedure/Algorithm	20
Experimentation/Program execution	30
Result/Inference	
Viva voce	20
Total	**70**

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
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. J. Nagaraju	Mr. N. Srikanth	Mrs. K. Vinayasree Bhai	Dr. P. Bhagath
Signature				

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.V.Viswanadh,
Dr. S.Rami Reddy,
Mr. D.Mallikarjuna Rao

Course Name & Code : Engineering Graphics – 20ME01
L-T-P Structure : 2-0-3 **Credits:** 3
Program/Sem/Sec : B.Tech/I Sem/A-Section **A.Y.:** 2025-26
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

CO1	Identify the geometrical objects considering BIS standards. **(Remember-L1)**
CO2	Comprehend the basics of orthographic projections and deduce orthographic projections of a point and a line at different orientations. **(Understand-L2)**
CO3	Represent graphically the geometrical planes at different positions and orientations. **(Understand-L2)**
CO4	Analyze and draw solid objects at different positions and orientations. **(Apply- L3)**
CO5	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	PSO1	PSO2	PSO3
CO1	3	3	3	2	3						3		1	3
CO2	3	3	1	2	1						3		1	3
CO3	3	3	3	2	1						3		1	3
CO4	3	2	3	2	3						3		1	3
CO5	2	3	3	2	1						3		1	3

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, ORTHOGRAPHIC PROJECTIONS OF POINTS

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, Principles of Engineering Graphics and their significance, Drawing Instruments and their Use-Conventions in Drawing, Practice, Lettering and Dimensioning – BIS conventions.	2	20-08-2025		TLM1	
2.	Geometrical Constructions, Practice	3	21-08-2025		TLM1	
3.	Engineering Curves: Conic Sections- Ellipse, Parabola, Hyperbola General Methods Construction of Ellipse & Parabola-Practice	3	28-08-2025		TLM1	
4.	Construction of Hyperbola	2	03-09-2025		TLM1	
5.	Introduction to Engineering Curves, conics Cycloid, Epicycloid and Practice	3	04-09-2025		TLM1	
6.	Hypocycloid and Practice;	2	10-09-2025		TLM1	
7.	Involute Curves-Practice	3	11-09-2025		TLM1	
8.	**ORTHOGRAPHIC PROJECTIONS** Introduction to Orthographic Projections, First and third angle projection methods Projections of Points-Practice	2	17-09-2025		TLM1	
9.	Practice	3	18-09-2025		TLM1	
No. of classes required to complete UNIT-I: 23				**No. of classes taken:**		

UNIT-II: ORTHOGRAPHIC PROJECTIONS OF POINTS AND LINES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
10.	**UNIT II: Projections of straight lines** Projections of straight lines of different orientations when line is parallel to one and inclined to the other, Practice	2	24-09-2025		TLM1, 3	
11.	Projections of lines when inclined to both the planes	3	25-09-2025		TLM1	
12.	Projections of lines when inclined to both the planes	2	08-10-2025		TLM1	
13.	**PROJECTIONS OF PLANES:** Introduction to Projection of Planes Planes parallel to one of the reference planes, Practice	3	09-10-2025		TLM1	
14.	Inclined to one reference plane and perpendicular to other	2	15-10-2025		TLM1	
15.	Inclined to one reference plane and perpendicular to other, Practice	3	16-10-2025		TLM1	
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

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 –** Introduction to Projections of Solids, Practice	2	29-10-2025		TLM1, 3	
19.	Projection of solids in simple positions, resting on HP	3	30-10-2025		TLM1, 3	
20.	Projection of solids in simple positions, resting on VP	2	05-11-2025		TLM1	
21.	Practice	3	06-11-2025		TLM3	
22.	Axis inclined to one of the reference planes and parallel to the other, Practice	2	12-11-2025		TLM1	
23.	Axis inclined to one of the reference planes and parallel to the other, Practice	3	13-11-2025		TLM3	
No. of classes required to complete UNIT-III: 15				**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
24.	Perpendicular and inclined section planes	2	19-11-2025		TLM1, 3	

25.	Sectional views and true shape of section	3	20-11-2025		TLM1,3	
26.	Sections of solids in simple position	2	26-11-2025		TLM1	
27.	DEVELOPMENT OF SURFACES: Methods of development: Parallel line development	3	27-11-2025		TLM3	
28.	Radial line development	2	03-12-2025		TLM1	
29.	Development of a cube, prism, cylinder, pyramid and cone.	3	04-12-2025		TLM1,3	
No. of classes required to complete UNIT-IV: 15				**No. of classes taken:**		

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
30.	**UNIT V: ISOMETRIC VIEWS –** Introduction to Isometric Views, Practice Theory of isometric projection, isometric views, isometric axes, scale, lines & planes, Practice Isometric view of prism, pyramid, cylinder & cone, non-isometric lines-methods to generate an isometric drawing, Practice	2	10-12-2025		TLM1, 3	
31.	**TRANSFORMATION OF PROJECTIONS:** Introduction Conversion of Isometric Views to Orthographic Projections of composite objects, Practice	3	11-12-2025		TLM1,3	
32.	Conversion of Isometric Views to Orthographic Projections of composite objects, Practice	2	17-12-2025		TLM3	
33.	Conversion of Orthographic Projections to Isometric Views of composite objects, Practice	3	18-12-2025		TLM1,3	
34.	Conversion of Orthographic Projections to Isometric Views of composite objects, Practice	2	24-12-2025		TLM1, 3	
No. of classes required to complete UNIT-V: 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 (R20 Regulation):

Evaluation Task	Marks
I-Descriptive Examination (Units-I, II (Half of the Syllabus))	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 knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
PO 2	**Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
PO 3	**Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
PO 4	**Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
PO 5	**Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO 6	**The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
PO 7	**Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO 8	**Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO 9	**Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
PO 10	**Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO 11	**Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

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	Mr. K. V, Viswanadh	Mr. J. Subba Reddy	Mr. J. Subba Reddy	Dr. M.B.S.S. Reddy
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. B. Sreenivasa Reddy
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech .....I .EEE-A.....
A.Y. : 2025-26

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

List of Activities:

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

Suggested Software:

1.Walden Infotech
2.Young India Films

Reference Books:

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

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	19-08-2025		TLM4	
2.	Vowels & Consonants	06	26-08-2025 02-09-2025		TLM1 TLM5	
3.	Neutralization	03	09-09-2025		TLM1, TLM5	
4.	Accent rules	03	16-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	23-09-2025 07-10-2025		TLM4	

6.	Role Play-I (Formal and Informal)	06	14-10-2025 28-10-2025		TLM4	
7.	e-mail Writing,	03	04-11-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	11-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	18-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	25-11-2025		TLM4, TLM6	
11.	PPT Presentation	03	02-12-2025		TLM2, TLM4	
12.	Poster Presentation	03	09-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	16-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	23-12-2025			
No. of classes required to complete Syllabus:				**No. of classes taken:**		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

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

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. B. Sreenivasa Reddy**			**Dr. T.Satyanarayana**
Signature				

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	:	**B. Tech., I-Sem., EEE-A**
ACADEMICYEAR	:	**2025-26**
COURSENAME &CODE	:	**ENGINEERING PHYSICS LAB - 23FE53**
L-T-PSTRUCTURE	:	**0 – 0 – 3**
COURSECREDITS	:	**1**
COURSEINSTRUCTOR	:	**Dr. N. Aruna & Mrs. P.V. Sirisha**
COURSECOORDINATOR	:	**Dr. S. Yusub**
Pre-requisites	:	**Nil**

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

Course Outcomes:

CO1: Analyze the wave properties of light using optical instruments (Apply-L3).
CO2: Estimate the elastic 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)**												

List of Experiments

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

References:

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

BOSAPPROVEDTEXTBOOKS:

1. Lab Manual Prepared by the LBRCE.

EVALUATIONPROCESS:

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

Part-B

COURSEDELIVERYPLAN (LESSONPLAN): EEE-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	Introduction & Demonstration	3	18-08-2025		**TLM-4**	CO1, CO2,CO3, CO4 & CO5	T1	
2.	Experiment1	3	25-08-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
3.	Experiment2	3	01-09-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
4.	Experiment3	3	08-09-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
5.	Experiment 3	3	15-09-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
6.	Experiment 4	3	22-10-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
7.	Experiment5	3	06-10-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
8.	Experiment 6	3	13-10-2025		**---**	**---**	**---**	
9.	Experiment 7	3	27-10-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
10.	Experiment8	3	03-11-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
11.	Experiment 8	3	17-11-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
12.	Experiment 9	3	24-11-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
13.	Experiment10	3	01-12-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	

14	Revision	3	05-12-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
15	Revision	3	08-12-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
16	**Internal Exam**	3	15-12-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	
17	**Internal Exam**	3	22-12-2025		**TLM-4**	CO1, CO2,CO3,CO 4 & CO5	T1	

PROGRAM OUT COMES: Engineering Graduates will be able to:

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

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

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

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

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

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

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

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

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

10. **Communication**: Communicate effectively on complex engineering activities with the

engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Instructor	Course-coordinator	Module Coordinator	HOD
Dr. N. Aruna & Mrs.P.V.Sirisha	Dr.S.Yusub	Dr.S.Yusub	Dr.T. Satyanarayana

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

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

DEPARTMENT OF EEE

LAB HANDOUT

PART-A

Name of Course Instructor : Mr. J.V.Pavan Chand, Dr. M.S.Giridhar/ Dr. G.Nageswara Rao, Dr. A.V.G.M.Marthanda .

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

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

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

PREREQUISITE: NIL

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

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

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to BEEE Lab, Course Objectives and Outcomes.	3	23-08-2025		TLM4	
2.	Verification of KCL and KVL	3	30-08-2025		TLM4	
3.	Verification of Superposition theorem	3	06-09-2025		TLM4	
4.	Measurement of Resistance using Wheat stone bridge	3	13-09-2025		TLM4	
5.	Magnetization Characteristics of DC shunt Generator	3	20-09-2025		TLM4	
6.	Measurement of Power and Power factor using Single-phase wattmeter	3	27-09-2025		TLM4	
7.	Calculation of Electrical Energy for Domestic Premises.	3	04-10-2025		TLM4	
8.	Internal Lab Examination	3	18-10-2025		TLM4	
No. of classes required: 24				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Mr.J.V.Pavan Chand	**Mr.J.V.Pavan Chand**	Dr. G. Nageswararao	Dr. P.Shobha Rani

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

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

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	18-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23-08-2025 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	28-08-2025 30-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	01-09-2025 04-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	06-09-2025 08-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	11-09-2025 13-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 12						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	02	15-09-2025 18-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	01	20-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	01	22-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	01	25-09-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	02	27-09-2025 06-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	02	09-10-2025 11-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 09						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	Text Book followed	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	13-10-2025 16-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	18-10-2025 27-10-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	30-10-2025 01-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	03-11-2025 06-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	08-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	10-11-2025 13-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	15-11-2025 17-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	20-11-2025 22-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	24-11-2025 27-11-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	29-11-2025		TLM2 TLM5	CO4	T1,T2	

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

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	01	01-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	04-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	06-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	08-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	11-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 05						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Word Analogy**	01	13-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	15-12-2025		TLM2 &5	
3.	**Technical vocabulary**		18-12-2025		TLM2 &5	
No. of classes required to complete UNIT-V:				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. V.V. VAMSI KRISHNA**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

FRESHMANENGINEERINGDEPARTMENT

COURSEHANDOUT

PART-A

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

Course Objectives:

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

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

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

COURSEARTICULATIONMATRIX(Correlation between COs, Pos & PSOs):

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

TEXT BOOKS

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

REFERENCES

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

WEBRESOURCES

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

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

PART-B

COURSEDELIVERYPLAN(LESSONPLAN):

UNIT-I:INTERFERENCE,DIFFRACTION& POLARIZATION

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction to the Subject, Course Outcomes	1	18.8.25		**TLM-2**		
2.	Principle of superposition, Interference of light	1	19.8.25		**TLM-3**		
3.	Interference in thin films by reflection & applications	1	20.8.25		**TLM-2**		
4.	Colors in thin films, Newton's rings	1	21.8.25		**TLM-1**		
5.	Determination of wavelength and refractive index	1	25.8.25		**TLM-4**		
6.	Problems& Assignment/Quiz	1	26.8.25		**TLM-1**		
7.	Introduction, Fresnel and	1	28.8.25		**TLM-3**		

	Fraunhoffer diffractions						
8.	Fraunhoffer diffraction due to single slit	1	1.9.25		**TLM-2**		
9.	Double slit& N slits(Qualitative)	1	2.9.25		**TLM-4**		
10.	Diffraction Grating, Dispersive power & Resolving power of Grating-Qualitative	1	3.9.25		**TLM-4**		
11.	Problems& Assignment/Quiz	1	4.9.25		**TLM-3**		
12.	Introduction – Types of polarization	1	8.9.25		**TLM-2**		
13.	Polarization by reflection, refraction & double refraction	1	9.9.25		**TLM-2**		
14.	Nicol's prism	1	10.9.25		**TLM-5**		
15.	Half wave and Quarter wave plates	1	11.9.25		**TLM-2**		
16.	Problems& Assignment/Quiz	1	15.9.25		**TLM-3**		
No.of classes required to complete UNIT-I:16				No.of classes taken:			

UNIT-II:CRYSTALLOGRAPHY & X– RAY DIFFRACTION

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Space lattice; Basis, Unit cell & Lattice parameters	1	16.9.25		**TLM-3**		
2.	Bravais Lattices	1	17.9.25		**TLM-2**		
3.	Crystal Systems(3D)	1	18.9.25		**TLM-2**		
4.	Coordination number – Packing fraction of –SC, BCC	1	22.9.25		**TLM-1**		
5.	Coordination number – Packing fraction of FCC	1	23.9.25		**TLM-1**		
6.	Miller indices& Properties	1	24.9.25		**TLM-2**		
7.	Separation between successive (hkl) planes	1	25.9.25		**TLM-1**		

8.	Bragg's law; X–ray Diffractometer	1	6.10.25		**TLM-3**		
9.	Crystal Structure determination by Laue's method	1	7.10.25		**TLM-2**		
10.	Crystal Structure determination by Powder method	1	8.10.25		**TLM-5**		
11.	Problems	1	9.10.25		**TLM-3**		
12.	Assignment	1	13.10.25		**TLM-3**		
13.	Quiz	1	14.10.25		**TLM-3**		
14.	Revision	1	15.10.25		**TLM-3**		
15.	Revision	1	16.10.25		**TLM-3**		
16.	MID-1 Examinations	1	20.10.25		**----**		
17.	MID-1 Examinations	1	21.10.25		**----**		
18.	MID-1 Examinations	1	22.10.25		**----**		
19.	MID-1 Examinations	1	23.10.25		**----**		
No.of classes required to complete UNIT-II: 14				No.of classes taken:			

UNIT-III :DIELECTRIC & MAGNETIC MATERIALS

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

S.No	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Dielectric polarization Dielectric polarizability, Susceptibility	1	27.10.25		**TLM-2**		
2.	Dielectric constant & Displacement Vector, Relation between the electric vectors	1	28.10.25		**TLM-3**		
3.	Types of polarizations-Electronic polarization	1	29.10.25		**TLM-1**		
4.	Types of polarizations- ionic &	1	30.10.25		**TLM-1**		

	orientation polarizations (Qualitative)						
5.	Lorentz internal field	1	3.11.25		**TLM-2**		
6.	Claussius-Mosotti equation, Complex dielectric constant	1	4.11.25		**TLM-1**		
7.	Frequency dependence of polarization dielectric loss	1	5.11.25		**TLM-5**		
8.	Problems& Assignment/Quiz	1	6.11.25		**TLM-3**		
9.	Introduction Magnetic dipole moment, Magnetization Magnetic susceptibility & permeability	1	10.11.25		**TLM-4**		
10.	Atomic origin of magnetism	1	11.11.25		**TLM-1**		
11.	Classification of magnetic materials-Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	12.11.25		**TLM-2**		
12.	Domain concept for Ferromagnetism & Domain walls	1	13.11.25		**TLM-2**		
13.	Hysteresis	1	17.11.25		**TLM-5**		
14.	soft and hard magnetic materials	1	18.11.25		**TLM-1**		
15.	Problems& Assignment/Quiz	1	19.11.25		**TLM-3**		
No.of classes required to complete UNIT-III:15				No.of classes taken:			

UNIT-IV :QUANTUM MECHANICS&FREEELECTRONTHEORY

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Dual nature of matter,De-Broglie's Hypothesis	1	20.11.25		**TLM-2**		
2.	Heisenberg's Uncertainty Principle	1	24.11.25		**TLM-2**		
3.	Significance & properties of wave function	1	25.11.25		**TLM-2**		
4.	Schrodinger's time independent and dependent wave equations	1	26.11.25		**TLM-1**		

5.	Particle in a one – dimensional infinite potential well	1	27.11.25		**TLM-1**		
6.	Problems& Assignment/Quiz	1	1.12.25		**TLM-3**		
7.	Classical free electron theory-merits and demerits, Quantum free electron theory	1	2.12.25		**TLM-2**		
8.	Electrical conductivity based on quantum free electron theory	1	3.12.25		**TLM-1**		
9.	Fermi -Dirac distribution and temperature dependence	1	4.12.25		**TLM-5**		
10.	Density of states, Fermi energy	1	8.12.25		**TLM-1**		
11.	Problems& Assignment/Quiz	1	9.12.25		**TLM-3**		
No.of classes required to complete UNIT-IV:11				No.of classes taken:			

UNIT-V:SEMICONDUCTORPHYSICS

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

S.No.	Topics to be covered	No.of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Formation of energy bands, Classification of crystalline solids	1	10.12.25		**TLM-6**		
2.	Intrinsic semiconductors, Density of charge carriers	1	11.12.25		**TLM-1**		
3.	Electrical conductivity, Fermi level	1	15.12.25		**TLM-2**		
4.	Extrinsic semiconductors, Density of charge carriers	1	16.12.25		**TLM-1**		
5.	Dependence of Fermi energy on carrier concentration &temperature	1	17.12.25		**TLM-2**		
6.	Drift and Diffusion Currents, Einstein's equation	1	18.12.25		**TLM-1**		
7.	Hall Effect & its applications	1	22.12.25		**TLM-4**		

8.	Problems& Assignment/Quiz	1	23.12.25		**TLM-3**		
9.	Problems& Assignment/Quiz	1	24.12.25		**TLM-3**		
10.	MID-2 Examinations	1	29.12.25		**----**		
11.	MID-2 Examinations	1	30.12.25		**----**		
12.	MID-2 Examinations	1	31.12.25		**----**		
No.of classes required to complete UNIT-V:9				No.of classes taken:			

PART-C

EVALUATION PROCESS(R-23Regulation)

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

PART-D

PROGRAMMEOUTCOMES(POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineeringfundamentals,andanengineeringspecializationtothesolutionofcomplex Engineeringproblems.
PO 2	**Problemanalysis**:Identify,formulate,reviewresearchliteratureandanalyze complexengineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics,naturalsciencesand engineeringsciences.
PO 3	**Design/developmentofsolutions**:Designsolutionsforcomplexengineeringproblems and design system components or processes that meet the specified needswithappropriateconsiderationforthepublichealthandsafetyandthecultural, Societalandenvironmentalconsiderations.
PO 4	**Conductinvestigationsofcomplexproblems**:Useresearch-basedknowledgeand Researchmethodsincludingdesignofexperiments,analysisandinterpretationofdataandsynthesisoftheinformationtoprovidevalidconclusions.

PO 5	**Moderntoolusage**:Create,select,andapplyappropriatetechniques,resources,and modernengineeringandITtoolsincludingpredictionandmodelingtocomplexengineeringactivitieswithanunderstandingofthe limitations
PO 6	**The engineer and society**:Apply reasoninginformedby the contextual knowledgetoassesssocietal,health,safety,legalandculturalissuesandtheconsequent responsibilitiesrelevanttotheprofessionalengineeringpractice
PO 7	**Environmentandsustainability**:Understandtheimpactoftheprofessionalengineeringsolutionsinsocietalandenvironmentalcontexts,anddemonstratetheknowledgeofandneed forsustainabledevelopment.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and Responsibilitiesandnormsoftheengineeringpractice.
PO 9	**Individualandteamwork**:Functioneffectivelyasanindividual,andasamember orleaderindiverseteams,andinmultidisciplinarysettings.
PO 10	**Communication**: Communicate effectively on complex engineering activities withtheengineeringcommunityandwithsocietyatlarge,suchas,beingabletocomprehendandwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations, giveandreceiveclearinstructions.
PO 11	**Projectmanagementandfinance**: Demonstrate knowledge andunderstandingofthe engineering and management principles and apply these to one's own work, as amemberandleaderinateam,tomanageprojectsandinmultidisciplinary environments.
PO 12	**Life-longlearning**:Recognizetheneedforandhavethepreparationandabilityto engageinindependentandlife-longlearninginthebroadestcontextoftechnologicalchange.

CourseInstructor	CourseCoordinator	ModuleCoordinator	HOD
Dr. K. KUMARA RAJA	**Dr.S.YUSUF**	**Dr.S.YUSUF**	**Dr.T. Satyanarayana**

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

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

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

COURSE OUTCOMES (COs)

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

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

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

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

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

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED REFERENCE BOOKS:

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

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

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

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

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	04-08-2025 To 14-08-2025	04-08-2025 To 14-08-2025	TLM1			
2.	Introduction to the course	1	18-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	18-08-2025		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction **TUTORIAL I**	1	18-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	19-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	20-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	21-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	22-08-2025		TLM1	CO1	T1,T2	
9.	**TUTORIAL II**	1	25-08-2025		TLM3	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	26-08-2025		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	28-08-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	29-08-2025		TLM1	CO1	T1,T2	
13.	**TUTORIAL III**	1	01-08-2025		TLM3	CO1	T1,T2	
14.	Homogeneous System of Equations	1	02-09-2025		TLM1	CO1	T1,T2	
15.	Non-Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
16.	Gauss Elimination Method	1	04-09-2025		TLM1	CO1	T1,T2	
17.	**TUTORIAL IV**	1	08-09-2025		TLM3	CO1	T1,T2	
18.	Jacobi Iteration Method	1	09-09-2025		TLM1	CO1	T1,T2	
19.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	11-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		20			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
21.	Introduction to Unit II	1	12-09-2025		TLM1	CO2	T1,T2	
22.	**TUTORIAL V**	1	15-09-2025		TLM3	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	16-09-2025		TLM1	CO2	T1,T2	
24.	Eigen values, Eigen vectors	1	17-09-2025		TLM1	CO2	T1,T2	
25.	Properties	1	18-09-2025		TLM1	CO2	T1,T2	
26.	Properties	1	19-09-2025		TLM1	CO2	T1,T2	

27.	**TUTORIAL VI**	1	22-09-2025		TLM3	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	23-09-2025		TLM1	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	24-09-2025		TLM1	CO2	T1,T2	
30.	Diagonalization of a matrix	1	25-09-2025		TLM1	CO2	T1,T2	
31.	Diagonalization of a matrix	1	26-09-2025		TLM1	CO2	T1,T2	
32.	**TUTORIAL VII**	1	06-10-2025		TLM3	CO2	T1,T2	
33.	Quadratic Forms	1	07-10-2025		TLM1	CO2	T1,T2	
34.	Nature of Quadratic Forms	1	08-10-2025		TLM1	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	09-10-2025		TLM1	CO2	T1,T2	
36.	Reduction of Quadratic form to Canonical form	1	10-10-2025		TLM1	CO2	T1,T2	
37.	**TUTORIAL VIII**	1	13-10-2025		TLM3	CO2	T1,T2	
38.	Orthogonal Transformation	1	14-10-2025		TLM1	CO2	T1,T2	
39.	Orthogonal Transformation	1	15-10-2025		TLM1	CO2	T1,T2	
40.	REVISION	1	16-10-2025		TLM1	CO2	T1,T2	
41.	REVISION	1	17-10-2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		17			No. of classes taken:			

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

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
42.	Introduction to Unit III	1	27-10-2025		TLM1	CO3	T1,T2	
43.	Mean Value theorem	1	28-10-2025		TLM1	CO3	T1,T2	
44.	Rolle's theorem	1	29-10-2025		TLM1	CO3	T1,T2	
45.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
46.	Lagrange's mean value theorem	1	31-10-2025		TLM1	CO3	T1,T2	
47.	**TUTORIAL IX**	1	03-11-2025		TLM3	CO3	T1,T2	
48.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
49.	Cauchy's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
50.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
51.	Taylor's theorem	1	07-11-2025		TLM1	CO3	T1,T2	
52.	**TUTORIAL X**	1	10-11-2025		TLM3	CO3	T1,T2	
53.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
54.	Maclaurin's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
55.	Maclaurin's theorem	1	13-11-2025		TLM1	CO3	T1,T2	
56.	Problems and applications	1	14-11-2025		TLM1	CO3	T1,T2	
57.	**TUTORIAL XI**	1	17-11-2025		TLM3	CO3	T1,T2	
58.	Problems and applications	1	18-11-2025		TLM1	CO3	T1,T2	

No. of classes required to complete UNIT-III	16	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
59.	Introduction to Unit IV	1	19-11-2025		TLM1	CO4	T1,T2	
60.	Functions of several variables, Continuity and Differentiability	1	20-11-2025		TLM1	CO4	T1,T2	
61.	Partial Derivatives	1	21-11-2025		TLM1	CO4	T1,T2	
62.	**TUTORIAL XII**	1	24-11-2025		TLM3	CO4	T1,T2	
63.	Total derivatives, Chain rule	1	25-11-205		TLM1	CO4	T1,T2	
64.	Directional Derivative	1	26-11-2025		TLM1	CO4	T1,T2	
65.	Taylor's Series expansion	1	27-11-2025		TLM1	CO4	T1,T2	
66.	Maclaurin's series expansion	1	28-11-2025		TLM1	CO4	T1,T2	
67.	**TUTORIAL XIII**	1	01-12-2025		TLM3	CO4	T1,T2	
68.	Jacobian	1	02-12-2025		TLM1	CO4	T1,T2	
69.	Jacobian	1	03-12-2025		TLM1	CO4	T1,T2	
70.	Functional Dependence	1	04-12-2025		TLM1	CO4	T1,T2	
71.	Maxima and Minima	1	05-12-2025		TLM1	CO4	T1,T2	
72.	**TUTORIAL XIV**	1	08-12-2025		TLM3	CO4	T1,T2	
73.	Lagrange Multiplier Method	1	09-12-2025		TLM1	CO4	T1,T2	
74.	Lagrange Multiplier Method	1	10-12-2025		TLM1	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
75.	Introduction to Unit-V	1	11-12-2025		TLM1	CO5	T1,T2	
76.	Double Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
77.	**TUTORIAL XV**	1	15-12-2025		TLM3	CO5	T1,T2	
78.	Double Integrals - Cartesian coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
79.	Triple Integrals - Cartesian coordinates	1	17-12-2025		TLM1	CO5	T1,T2	
80.	Triple Integrals - Spherical coordinates	1	18-12-2025		TLM3	CO5	T1,T2	
81.	Change of order of Integration	1	19-12-2025		TLM1	CO5	T1,T2	
82.	**TUTORIAL XVI**	1	22-12-2025		TLM3	CO5	T1,T2	

83.	Change of order of Integration	1	23-12-2025		TLM1	CO5	T1,T2	
84.	Change of variables	1	24-12-2025		TLM1	CO5	T1,T2	
85.	Finding area by double Integral	1	26-12-2025		TLM1	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
86.	Other applications of double integral	1	26-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 31-12-2025)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

Dr.T.RADHA RANI	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.P.Srihari
Course Name & Code : BASIC ELECTRICAL & ELECTRONICS ENGINEERING – 23EE01
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I/EEE-B **A.Y.:** 2025-26

PREREQUISITE: Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): To expose to the field of electrical & electronics engineering, laws and principles of electrical/ electronic engineering and to acquire fundamental knowledge in the relevant field.

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

CO1	Extract electrical variables of AC & DC circuits using fundamental laws. (Understand)
CO2	Understand the operation of electrical machines and measuring instruments. (Understand)
CO3	Classify various energy resources, safety measures and interpret electricity bill generation in electrical systems. (Understand)
CO4	Interpret the characteristics of various semiconductor devices (Knowledge)
CO5	Infer the operation of rectifiers, amplifiers. (Understand)
CO6	Contrast various logic gates, sequential and combinational logic circuits. (Understand)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	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:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

PART A: BASIC ELECTRICAL ENGINEERING

UNIT-I: DC & AC Circuits

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to subject and course outcomes	1	19-08-2025		TLM1	
2.	**DC Circuits:** Electrical circuit elements (R, L and C)	1	21-08-2025		TLM1	
3.	Ohm's Law and its limitations	1	22-08-2025		TLM1	
4.	KCL & KVL	1	23-08-2025		TLM1	
5.	series, parallel, series-parallel circuits	1	26-08-2025		TLM1	
6.	Super Position theorem	1	28-08-2025		TLM1	
7.	**AC Circuits:** A.C. Fundamentals:	1	29-08-2025		TLM1	
8.	Equation of AC Voltage and current, waveform	1	30-08-2025		TLM1	
9.	Time period, frequency, amplitude, phase, phase difference, average value, RMS value	1	02-09-2025		TLM1	
10.	Form factor, peak factor, Voltage and current relationship with phasor diagrams in R, L, and C circuits	1	04-09-2025		TLM1	
11.	Concept of Impedance, Active power, reactive power and apparent power	1	06-09-2025		TLM1	
12.	Concept of power factor (Simple Numerical problems).	1	09-09-2025		TLM1	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Machines and Measuring Instruments

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	**Machines:** Construction, principle and operation of DC Motor	1	11-09-2025		TLM1	
14.	Construction, principle and operation of DC Generator	1	12-09-2025		TLM1	
15.	Construction, principle and operation of Three Phase Induction Motor	1	13-09-2025		TLM1	
16.	Construction, principle and operation of Alternator	1	16-09-2025		TLM1	
17.	Applications of electrical machines	1	18-09-2025		TLM1	
18.	**Measuring Instruments:** Construction and working principle of Permanent Magnet Moving Coil (PMMC), Moving Iron (MI) Instruments	2	19-09-2025 20-09-2025		TLM1	
19.	Wheat Stone bridge.	1	23-09-2025		TLM1	
No. of classes required to complete UNIT-II: 08				**No. of classes taken:**		

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

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

20.	**Energy Resources:** : Conventional and non-conventional energy resources	1	25-09-2025		TLM1	
21.	Layout and operation of various Power Generation systems: Hydel power generation	1	26-09-2025		TLM1	
22.	Layout and operation of Nuclear power generation	1	27-09-2025		TLM1	
23.	Layout and operation of Solar power generation	1	07-10-2025		TLM1	
24.	Layout and operation of Wind power generation.	1	09-10-2025		TLM1	
25.	**Electricity bill:** : Power rating of household appliances including air conditioners PCs, Laptops, Printers, etc	1	10-10-2025		TLM1	
26.	Definition of "unit" used for consumption of electrical energy, two-part electricity tariff, calculation of electricity bill for domestic consumers	1	11-10-2025		TLM1	
27.	**Equipment Safety Measures:** Working principle of Fuse and Miniature circuit breaker(MCB), merits and demerits	1	14-10-2025		TLM1	
28.	Personal safety measures: Electric Shock, Earthing and its types, Safety Precautions to avoid shock.	1	16-10-2025		TLM1	
29.	Revision	1	17-10-2025		**TLM1**	
30.	Revision & Content beyond syllabus	1	18-10-2025		**TLM1**	
No. of classes required to complete UNIT-III: 11				**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 & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

ACADEMIC CALENDAR:

Description	**From**	**To**	**Weeks**
I Phase of Instructions	18-08-2025	18-10-2025	
I Mid Examinations	20-10-2025	25-10-2025	

II Phase of Instructions	27-10-2025	27-12-2025	
II Mid Examinations	29-12-2025	03-01-2025	
Preparation and Practical's	05-01-2025	10-10-2025	
Semester End Examinations	19-01-2025	31-01-2025	

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr.P.Srihari**	**Mr.J.V.Pavan Chand**	**Dr. G. Nageswararao**	**Dr. P.Sobha Rani**
Signature				

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. G Rambabu

Course Name & Code : IT WORKSHOP Lab & 23IT51

L-T-P Structure : 0-0-2 **Credits: 1**

Program/Sem/Sec : B.Tech. – 1SEM/EEE- B Sec **A.Y.:** 2025-26

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

CO1	Identify the components of a PC and Assemble & disassemble the same. (Understand)
CO2	Experiment with installation of Operating System and Secure a computer from Cyber threats. (Apply)
CO3	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO4	Build dialogs and documents using ChatGPT. (Apply)
CO5	Improve individual / teamwork skills, communication and report writing skills with ethical values

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

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

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

1 - Low **2** –Medium **3** – High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	19-08-2025		**DM5**	
2.	Task-2	3	26-08-2025		**DM5**	
3.	Task-3	3	02-09-2025		**DM5**	
4.	Task-4	3	09-09-2025		**DM5**	
5.	Task-5	3	16-09-2025		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	30-09-2025		**DM5**	
7.	Task-2	3	07-10-2025		**DM5**	
8.	Task-3	3	14-10-2025		**DM5**	
9.	Task-4	3	14-10-2025		**DM5**	
Latex and WORD						
10.	Task-1	3	21-10-2025		**DM5**	
11.	Task-2	3	21-10-2025		**DM5**	
12.	Task-3	3	28-10-2025		**DM5**	
13.	Task-4	3	28-10-2025		**DM5**	
EXCEL						
14.	Task-1	3	04-11-2025		**DM5**	

15.	Task-2	3	04-11-2025		**DM5**	
LOOKUP/VLOOKUP						
16.	Task-1	3	11-11-2025		**DM5**	
POWER POINT						
17.	Task-1	3	18-11-2025		**DM5**	
18.	Task-2	3	25-11-2025		**DM5**	
19.	Task-3	3	25-11-2025		**DM5**	
AI TOOLS – ChatGPT						
20.	Task-1	3	02-12-2025		**DM5**	
21.	Task-2	3	09-12-2025		**DM5**	
22.	Task-3	3	16-12-2025		**DM5**	
23.	Internal exam	3	23-12-2025		**DM5**	

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

PART-C

EVALUATION PROCESS (R23 Regulations): According to Academic Regulations of R23 Distribution and Weightage of Marks for Laboratory Courses is as follows

Continuous Internal Evaluation (CIE): The Continuous Internal Evaluation (CIE) is based on the following parameters:

Parameter	**Marks**
Day to Day work	15
Record	15
Internal Test	
Total	**30**

Semester End Examinations (SEE): The Semester End examinations (SEE) for laboratory courses shall be jointly conducted by internal and external examiners with 3 hours' duration and evaluated for 35 marks. The performance of the student shall be evaluated as per the parameters indicated below:

Parameter	**Marks**
Procedure/Algorithm	20
Experimentation/Program execution	30
Result/Inference	
Viva voce	20
Total	**70**

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
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. G Rambabu			
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.V.Viswanadh,
Mr. J.Subba Reddy,
Dr. S.Rami Reddy

Course Name & Code : Engineering Graphics – 20ME01
L-T-P Structure : 2-0-3 **Credits:** 3
Program/Sem/Sec : B.Tech/I Sem/B-Section **A.Y.:** 2025-26
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

CO1	Identify the geometrical objects considering BIS standards. **(Remember-L1)**
CO2	Comprehend the basics of orthographic projections and deduce orthographic projections of a point and a line at different orientations. **(Understand-L2)**
CO3	Represent graphically the geometrical planes at different positions and orientations. **(Understand-L2)**
CO4	Analyze and draw solid objects at different positions and orientations. **(Apply- L3)**
CO5	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	PSO1	PSO2	PSO3
CO1	3	3	3	2	3						3		1	3
CO2	3	3	1	2	1						3		1	3
CO3	3	3	3	2	1						3		1	3
CO4	3	2	3	2	3						3		1	3
CO5	2	3	3	2	1						3		1	3

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, ORTHOGRAPHIC PROJECTIONS OF POINTS

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, Principles of Engineering Graphics and their significance, Drawing Instruments and their Use-Conventions in Drawing, Practice, Lettering and Dimensioning – BIS conventions.	2	21-08-2025		TLM1	
2.	Geometrical Constructions, Practice	3	22-08-2025		TLM1	
3.	Engineering Curves: Conic Sections- Ellipse, Parabola, Hyperbola General Methods Construction of Ellipse & Parabola-Practice	2	28-08-2025		TLM1	
4.	Construction of Hyperbola	3	29-08-2025		TLM1	
5.	Introduction to Engineering Curves, conics Cycloid, Epicycloid and Practice	2	04-09-2025		TLM1	
6.	Hypocycloid and Practice;	2	11-09-2025		TLM1	
7.	Involute Curves-Practice	3	12-09-2025		TLM1	
8.	**ORTHOGRAPHIC PROJECTIONS** Introduction to Orthographic Projections, First and third angle projection methods Projections of Points-Practice	2	18-09-2025		TLM1	
9.	Practice	3	19-09-2025		TLM1	
No. of classes required to complete UNIT-I: 23				**No. of classes taken:**		

UNIT-II: ORTHOGRAPHIC PROJECTIONS OF POINTS AND LINES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
10.	**UNIT II: Projections of straight lines** Projections of straight lines of different orientations when line is parallel to one and inclined to the other, Practice	2	25-09-2025		TLM1, 3	
11.	Projections of lines when inclined to both the planes	3	26-09-2025		TLM1	
12.	Projections of lines when inclined to both the planes	2	09-10-2025		TLM1	
13.	**PROJECTIONS OF PLANES:** Introduction to Projection of Planes Planes parallel to one of the reference planes, Practice	3	10-10-2025		TLM1	
14.	Inclined to one reference plane and perpendicular to other	2	16-10-2025		TLM1	
15.	Inclined to one reference plane and perpendicular to other, Practice	3	17-10-2025		TLM1	
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

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 –** Introduction to Projections of Solids, Practice	2	30-10-2025		TLM1, 3	
19.	Projection of solids in simple positions, resting on HP	3	31-10-2025		TLM1, 3	
20.	Projection of solids in simple positions, resting on VP	2	06-11-2025		TLM1	
21.	Practice	3	07-11-2025		TLM3	
22.	Axis inclined to one of the reference planes and parallel to the other, Practice	2	13-11-2025		TLM1	
23.	Axis inclined to one of the reference planes and parallel to the other, Practice	3	14-11-2025		TLM3	
No. of classes required to complete UNIT-III: 15				**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
24.	Perpendicular and inclined section planes	2	20-11-2025		TLM1, 3	
25.	Sectional views and true shape of section	3	21-11-2025		TLM1,3	

26.	Sections of solids in simple position	2	27-11-2025		TLM1	
27.	DEVELOPMENT OF SURFACES: Methods of development: Parallel line development	3	28-11-2025		TLM3	
28.	Radial line development	2	04-12-2025		TLM1	
29.	Development of a cube, prism, cylinder, pyramid and cone.	3	05-12-2025		TLM1,3	
No. of classes required to complete UNIT-IV: 15				**No. of classes taken:**		

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
30.	**UNIT V: ISOMETRIC VIEWS –** Introduction to Isometric Views, Practice Theory of isometric projection, isometric views, isometric axes, scale, lines & planes, Practice Isometric view of prism, pyramid, cylinder & cone, non-isometric lines- methods to generate an isometric drawing, Practice	2	11-12-2025		TLM1, 3	
31.	**TRANSFORMATION OF PROJECTIONS:** Introduction Conversion of Isometric Views to Orthographic Projections of composite objects, Practice	3	12-12-2025		TLM1,3	
32.	Conversion of Isometric Views to Orthographic Projections of composite objects, Practice	2	18-12-2025		TLM3	
33.	Conversion of Orthographic Projections to Isometric Views of composite objects, Practice	3	19-12-2025		TLM1,3	
34.	Conversion of Orthographic Projections to Isometric Views of composite objects, Practice	3	26-12-2025		TLM1, 3	
No. of classes required to complete UNIT-V: 13				**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 (Half of the Syllabus))	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 knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
PO 2	**Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
PO 3	**Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
PO 4	**Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
PO 5	**Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO 6	**The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
PO 7	**Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO 8	**Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO 9	**Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
PO 10	**Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO 11	**Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

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	Mr. K. V, Viswanadh	Mr. J. Subba Reddy	Mr. J. Subba Reddy	Dr. M.B.S.S. Reddy
Signature				

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. V.V. VAMSI KRISHNA
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech .....I .EEE-B.....
A.Y. : 2025-26

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

List of Activities:

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

Suggested Software:

1.Walden Infotech
2.Young India Films

Reference Books:

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

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	23-08-2025		TLM4	
2.	Vowels & Consonants	06	30-08-2025 06-09-2025		TLM1 TLM5	
3.	Neutralization	03	13-09-2025		TLM1, TLM5	
4.	Accent rules	03	20-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	27-09-2025 11-10-2025		TLM4	

6.	Role Play-I (Formal and Informal)	06	18-10-2025 01-11-2025		TLM4	
7.	e-mail Writing,	03	08-11-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	15-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	22-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	29-11-2025		TLM4, TLM6	
11.	PPT Presentation	03	06-12-2025		TLM2, TLM4	
12.	Poster Presentation	03	20-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	27-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	27-12-2025			
No. of classes required to complete Syllabus:				**No. of classes taken:**		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

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

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. V.V. VAMSI KRISHNA**	**Dr. B. Samrajya Lakshmi**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

FRESHMANENGINEERINGDEPARTMENT

COURSEHANDOUT

Part-A

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

Pre-requisites : Nil

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

Course Outcomes:

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

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

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

List of Experiments

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

References:

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

BOSAPPROVEDTEXTBOOKS:

1. LabManualPreparedbytheLBRCE.

EVALUATIONPROCESS:

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

Part-B

COURSEDELIVERYPLAN (LESSONPLAN): EEE-B

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	LearningOutcomeCOs	Text Book followed	HOD Sign
1.	Introduction & Demonstration	3	20.8.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
2.	Experiment1	3	3.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
3.	Experiment2	3	10.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
4.	Experiment3	3	17.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
5.	Experiment 3	3	24.9.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
6.	Experiment 4	3	8.10.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
7.	Experiment5	3	15.10.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
8.	**MID-1 Exam**	3	22.10.25		**---**	**---**	**---**	
9.	Experiment 6	3	29.10.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
10.	Experiment 7	3	5.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
11.	Experiment8	3	12.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
12.	Experiment 8	3	19.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
13.	Experiment 9	3	26.11.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
14.	Experiment10	3	3.12.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	

15.	**Revision**	3	10.12.25		**TLM-4**	CO1, CO2,CO3,CO4 & CO5	T1	
16.	**Internal Exam**	3	17.12.25					
17.	**Internal Exam**		24.12.25					
18.	**MID-2 Exam**		31.12.25		---	---	---	
No.of classes required to completelab		15			No.of classes taken:			

PROGRAM OUT COMES: Engineering Graduates will be able to:

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

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

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

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

(5). **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modernengineering and IT tools including prediction and modeling to complex engineering activities with anunderstandingofthelimitations.

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

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

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

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

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

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

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

CourseInstructor CourseCoordinator ModuleCoordinator H.O.D

Dr. Dr. K. KUMARA RAJA/
Dr. N. Aruna **Dr.S.YUSUF** **Dr.S.YUSUF** **Dr. T. Satyanarayana**