



**FRESHMAN ENGINEERING DEPARTMENT**

**COURSE HANDOUT**

**PART-A**

**Name of Course Instructor** : K. Sridevi  
**Course Name & Code** : Communicative English & 23FE01  
**L-T-P Structure** : 2-0-0 **Credits: 02**  
**Program/Sem/Sec** : B. Tech, I Sem –CIVIL  
**A.Y.** : 2023-24

**PREREQUISITE: NIL**

**COURSE EDUCATIONAL OBJECTIVES (CEOs):**

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

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

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

**COURSE ARTICULATION MATRIX (Correlation between COs & POs)**

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

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

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

#### UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	19-09-2023 21-09-2023		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	22-09-2023		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	26-09-2023		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	01	29-10-2023 03-10-2023		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	05-10-2023 06-10-2023		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms	01	10-10-2023		TLM2 TLM5	CO1	T1,T2	
7.	Affixes, Root Words	01	12-10-2023		TLM2 TLM5	CO1	T1,T2	
<b>No. of classes required to complete UNIT-I: 08</b>							<b>No. of classes taken:</b>	

#### UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8.	Nature: The Brook by Alfred Tennyson	02	13-10-2023 17-10-2023		TLM1 TLM 6	CO2	T1,T2	
9.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	19-10-2023		TLM2 TLM5	CO2	T1,T2	
10.	Structure of Paragraph – Paragraph Writing	01	26-10-2023 27-10-2023		TLM1 TLM6 TLM5	CO2	T1,T2	
11.	Cohesive Devices-linkers	01	31-10-2023		TLM2 TLM6	CO2	T1,T2	
12.	Use of Articles and zero article, Prepositions	02	02-11-2023 03-11-2023		TLM2 TLM6	CO2	T1,T2	
13.	Homophones, Homographs, Homonyms	01	07-11-2023 09-11-2023 11-11-2023		TLM2 TLM5	CO2	T1,T2	
<b>No. of classes required to complete UNIT-II: 08</b>							<b>No. of classes taken:</b>	

**UNIT-III:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Biography: Elon Musk	02	21-11-2023 23-11-2023		TLM1 TLM 6	CO3	T1,T2	
15.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	24-11-2023 28-11-2023		TLM2 TLM5	CO3	T1,T2	
16.	Summarizing, Note-making, Paraphrasing	01	30-11-2023		TLM1 TLM6 TLM5	CO3	T1,T2	
17.	Verbs- Tenses, Subject-verb agreement	02	01-12-2023 05-12-2023					
18.	Compound words, Collocations	01	07-12-2023 08-12-2023					
<b>No. of classes required to complete UNIT-III: 07</b>							<b>No. of classes taken:</b>	

**UNIT-IV:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Inspiration: The Toys of Peace- by Saki	02	12-12-2023 14-12-2023		TLM1 TLM 6	CO4	T1,T2	
20.	Study of graphic elements in text to display complicated data	01	15-12-2023		TLM2 TLM5	CO4	T1,T2	
21.	Letter Writing : Official Letters, Resumes	01	19-12-2023		TLM1 TLM6 TLM5	CO4	T1,T2	
22.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	21-12-2023 22-12-2023		TLM2 TLM6	CO4	T1,T2	
23.	Words often confused, Jargons	01	26-12-2023		TLM2 TLM5	CO4	T1,T2	
<b>No. of classes required to complete UNIT-IV: 07</b>							<b>No. of classes taken:</b>	

**UNIT-V:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24.	Motivation: The Power of Interpersonal Communication	01	28-12-2023 29-12-2023		TLM1 TLM 6	CO5	T1,T2	
25.	Reading Comprehension	01	02-01-2024 04-01-2024		TLM2 TLM5	CO5	T1,T2	
26.	Structured Essays on specific topics	01	05-01-2024		TLM1 TLM6 TLM5	CO5	T1,T2	

27.	Editing Texts – Correcting Common errors	01	09-01-2024		TLM2 TLM6	CO5	T1,T2	
28.	Technical Jargon	01	11-01-2024		TLM2 TLM5	CO5	T1,T2	
<b>No. of classes required to complete UNIT-V: 05</b>							<b>No. of classes taken:</b>	

### Content beyond the Syllabus

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

Teaching Learning Methods			
<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	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
<b>Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))</b>	<b>M=30</b>
<b>Cumulative Internal Examination (CIE):</b>	<b>30</b>
<b>Semester End Examination (SEE)</b>	<b>70</b>
<b>Total Marks = CIE + SEE</b>	<b>100</b>

### PART-D

#### PROGRAMME OUTCOMES (POs):

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

<b>PO 3</b>	<b>Design/development of solutions:</b> 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.
<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> 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.
<b>PO 5</b>	<b>Modern tool usage:</b> 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
<b>PO 6</b>	<b>The engineer and society:</b> 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
<b>PO 7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	<b>Communication:</b> 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
<b>PO 11</b>	<b>Project management and finance:</b> 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.
<b>PO 12</b>	<b>Life-long learning:</b> 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>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Ms. K. Sridevi</b>	<b>Dr. R. Padma</b>	<b>Dr.A. Ramireddy</b>	<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING**

(An Autonomous Institution since 2010)

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

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



**FRESHMAN ENGINEERING DEPARTMENT**

**COURSE HANDOUT**

**PART-A**

<b>PROGRAM</b>	<b>: I B.Tech., I-Sem., CIVIL</b>
<b>ACADEMIC YEAR</b>	<b>: 2023-24</b>
<b>COURSE NAME &amp; CODE</b>	<b>: ENGINEERING PHYSICS</b>
<b>L-T-P STRUCTURE</b>	<b>: 3-0-0</b>
<b>COURSE CREDITS</b>	<b>3</b>
<b>COURSE INSTRUCTOR</b>	<b>: N. T. SARMA</b>
<b>PRE-REQUISITE</b>	<b>: Basic Knowledge of Physics</b>

**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

<b>CO 1</b>	Analyze the intensity variation of light due to interference, diffraction and Polarization (Apply)
<b>CO 2</b>	Understand the basics of crystals and their structures (Understand)
<b>CO 3</b>	Summarize various types of polarization of dielectrics and classify the magnetic materials ( Understand)
<b>CO 4</b>	Explain fundamentals of quantum mechanics and free electron theory of metals (Understand)
<b>CO5</b>	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											
	Programme Outcomes											
Course Outcomes PO's	1	2	3	4	5	6	7	8	9	10	11	12
<b>CO1. →</b>	3	3	2	1	1	1	1					1
<b>CO2.</b>	3	3	2	1	1	1	1					1
<b>CO3.</b>	3	3	2	1	1	1						1
<b>CO4.</b>	3	3	2	1	1	1	1					1
<b>CO5.</b>	3	3	2	1	1	1	1					1
<b>1 = Slight (Low)                      2 = Moderate ( Medium)                      3 = Substantial ( High)</b>												

## TEXT BOOKS

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

## REFERENCES

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

## WEB RESOURCES

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

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

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

#### UNIT-I: INTERFERENCE, DIFFRACTION & POLARIZATION

Course Outcome :- CO 1; Text Book :- T1, R2

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction to the Subject, Course Outcomes	1	19/09/23		TLM-2		
2.	Principle of superposition, Interference of light	1	20/09/23		TLM-3		
3.	Interference in thin films by reflection & applications	1	22/09/23		TLM-2		
4.	Colors in thin films, Newton's rings	1	25/09/23		TLM-1		
5.	Determination of wavelength and refractive index	1	26/09/23		TLM-4		
6.	Problems & Assignment/Quiz	1	27/09/23		TLM-1		

7.	Introduction, Fresnel and Fraunhofer diffractions	1	29/09/23		<b>TLM-3</b>		
8.	Fraunhofer diffraction due to single slit	1	03/10/23		<b>TLM-2</b>		
9.	Double slit & N slits (Qualitative)	1	04/10/23		<b>TLM-4</b>		
10.	Diffraction Grating, Dispersive power & Resolving power of Grating-Qualitative	1	06/10/23		<b>TLM-4</b>		
11.	Problems & Assignment/Quiz	1	09/10/23		<b>TLM-3</b>		
12.	Introduction – Types of polarization	1	10/10/23		<b>TLM-2</b>		
13.	Polarization by reflection, refraction & double refraction	1	11/10/23		<b>TLM-2</b>		
14.	Nicol's prism	1	13/10/23		<b>TLM-5</b>		
15.	Half wave and Quarter wave plates	1	16/10/23		<b>TLM-2</b>		
16.	Problems & Assignment/Quiz	1	17/10/23		<b>TLM-3</b>		
No. of classes required to complete UNIT-I: 16				No. of classes taken:			

### **UNIT-II: CRYSTALLOGRAPHY & X- RAY DIFFRACTION**

**Course Outcome :- CO 2; Text Book :- T1, R2**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Space lattice; Basis, Unit cell & Lattice parameters	1	18/10/23		<b>TLM-3</b>		
2.	Bravais Lattices	1	20/10/23		<b>TLM-2</b>		
3.	Crystal Systems (3D)	1	24/10/23		<b>TLM-2</b>		
4.	Coordination number – Packing fraction of –SC, BCC	1	25/10/23		<b>TLM-1</b>		
5.	Coordination number – Packing fraction of FCC	1	27/10/23		<b>TLM-1</b>		
6.	Miller indices & Properties	1	30/10/23		<b>TLM-2</b>		



7.	Separation between successive (hkl) planes	1	31/10/23		<b>TLM-1</b>	
8.	Problems & Assignment /Quiz	1	01/11/23		<b>TLM-3</b>	
9.	Bragg's law; X-ray Diffractometer	1	03/11/23		<b>TLM-2</b>	
10.	Crystal Structure determination by Laue's method	1	06/11/23		<b>TLM-5</b>	
11.	Crystal Structure determination by Powder method	1	07/11/23		<b>TLM-5</b>	
12.	Problems & Assignment/Quiz	1	08/11/23		<b>TLM-3</b>	
13.	Revision	1	10/11/23		<b>TLM-2</b>	
14.	MID-1 Examinations	1	13/11/23		----	
15.	MID-1 Examinations	1	14/11/23		----	
16.	MID-1 Examinations	1	15/11/23		----	
17.	MID-1 Examinations	1	17/11/23		----	
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

### **UNIT-III : DIELECTRIC & MAGNETIC MATERIALS**

**Course Outcome :- CO 3; Text Book :- T1, R2**

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Dielectric polarization Dielectric polarizability, Susceptibility	1	20/11/23		<b>TLM-2</b>		
2.	Dielectric constant & Displacement Vector, Relation between the electric vectors	1	21/11/23		<b>TLM-3</b>		
3.	Types of polarizations- Electronic polarization	1	22/11/23		<b>TLM-1</b>		
4.	Types of polarizations - ionic & orientation polarizations (Qualitative)	1	24/11/23		<b>TLM-1</b>		

5.	Lorentz internal field	1	27/11/23		<b>TLM-2</b>	
6.	Claussius-Mosotti equation, Complex dielectric constant	1	28/11/23		<b>TLM-1</b>	
7.	Frequency dependence of polarization dielectric loss	1	29/11/23		<b>TLM-5</b>	
8.	Problems & Assignment/Quiz	1	01/12/23		<b>TLM-3</b>	
9.	Magnetic dipole moment, Magnetization Magnetic susceptibility & permeability	1	04/12/23		<b>TLM-4</b>	
10.	Atomic origin of magnetism	1	05/12/23		<b>TLM-1</b>	
11.	Classification of magnetic materials- Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	06/12/23		<b>TLM-2</b>	
12.	Domain concept for Ferromagnetism & Domain walls	1	08/12/23		<b>TLM-2</b>	
13.	Hysteresis, soft and hard magnetic materials	1	11/12/23		<b>TLM-5</b>	
14.	Problems & Assignment/Quiz	1	12/12/23		<b>TLM-3</b>	
No. of classes required to complete UNIT-V: 14				No. of classes taken:		

#### **UNIT-IV : QUANTUM MECHANICS & FREE ELECTRON THEORY**

**Course Outcome :- CO 4; Text Book :- T1, R2**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Dual nature of matter, De-Broglie's Hypothesis	1	13/12/23		<b>TLM-2</b>		Extra hour
2.	Heisenberg's Uncertainty Principle, Significance & properties of wave function	1	15/12/23		<b>TLM-2</b>		
3.	Schrodinger's time independent and dependent wave equations	1	18/12/23		<b>TLM-1</b>		
4.	Particle in a one – dimensional infinite potential well	1	19/12/23		<b>TLM-1</b>		

5.	Problems & Assignment/Quiz	1	20/12/23		<b>TLM-3</b>	
6.	Classical free electron theory-merits and demerits	1	22/12/23		<b>TLM-2</b>	
8.	Quantum free electron theory	1	26/12/23		<b>TLM-2</b>	
9.	Electrical conductivity based on quantum free electron theory	1	27/12/23		<b>TLM-1</b>	
10.	Fermi -Dirac distribution and temperature dependence	1	29/12/23		<b>TLM-5</b>	
11.	Density of states, Fermi energy	1	01/01/24		<b>TLM-1</b>	
12.	Problems & Assignment/Quiz	1	02/01/24		<b>TLM-3</b>	
No. of classes required to complete UNIT-III: 12				No. of classes taken:		

### **UNIT-V : SEMICONDUCTOR PHYSICS**

**Course Outcome :- CO 5; Text Book :- T2, R1**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Formation of energy bands, classification of crystalline solids	1	03/01/24		<b>TLM-6</b>		
2.	Intrinsic semiconductors, Density of charge carriers	1	05/01/24		<b>TLM-1</b>		
3.	Electrical conductivity, Fermi level	1	08/01/24		<b>TLM-2</b>		
4.	Extrinsic semiconductors, Density of charge carriers	1	09/01/24		<b>TLM-1</b>		
5.	Dependence of Fermi energy on carrier concentration & temperature	1	10/01/24		<b>TLM-2</b>		
6.	Drift and Diffusion Currents, Einstein's equation	1	10/01/24		<b>TLM-1</b>		
7.	Hall Effect & its applications	1	12/01/24		<b>TLM-4</b>		

8.	Problems & Assignment/Quiz	1	12/01/24		<b>TLM-3</b>	
9.	MID-2 Examinations	1	15/01/24		----	
10.	MID-2 Examinations	1	16/01/24		----	
11.	MID-2 Examinations	1	17/01/24		----	
12.	MID-2 Examinations	1	19/01/24		----	
No. of classes required to complete UNIT-IV: 08				No. of classes taken:		

### **PART-C**

#### **EVALUATION PROCESS (R-23 Regulation)**

<b>Evaluation Task</b>	<b>Marks</b>
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	<b>30</b>
Semester End Examination (SEE)	<b>70</b>
Total Marks = CIE + SEE	<b>100</b>

## **PART-D**

### **PROGRAMME OUTCOMES (POs):**

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> 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.
<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> 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.
<b>PO 5</b>	<b>Modern tool usage:</b> 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
<b>PO 6</b>	<b>The engineer and society:</b> 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
<b>PO 7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	<b>Communication:</b> 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.
<b>PO 11</b>	<b>Project management and finance:</b> 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.
<b>PO 12</b>	<b>Life-long learning:</b> Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Instructor

Course Coordinator

Module Coordinator

HOD

**N. T. SARMA**

**Dr. S. YUSUF**

**Dr. S. YUSUF**

**Dr. A. RAMI REDDY**



**FRESHMAN ENGINEERING DEPARTMENT**

**COURSE HANDOUT**

**Part-A**

<b>PROGRAM</b>	: I B. Tech., I-Sem., CIVIL
<b>ACADEMIC YEAR</b>	: 2023-24
<b>COURSE NAME &amp; CODE</b>	: Linear Algebra & Calculus
<b>L-T-P STRUCTURE</b>	: 3-0-0
<b>COURSE CREDITS</b>	: 3
<b>COURSE INSTRUCTOR</b>	: G.VIJAYA LAKSHMI
<b>COURSE COORDINATOR</b>	: Dr. A. Rami Reddy
<b>PRE-REQUISITES</b>	: 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", 44<sup>nd</sup> Edition, Khanna Publishers, New Delhi, 2017.
- T2** Erwin Kreyszig, "Advanced Engineering Mathematics", 10<sup>th</sup> Edition, John Wiley & sons, New Delhi, 2018.

**BOS APPROVED REFERENCE BOOKS:**

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

**Part-B**

**COURSE DELIVERY PLAN (LESSON PLAN):**

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	8	08-09-2023 TO 16-09-2023	08-09-2023 TO 16-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM2			
3.	Course Outcomes, Program Outcomes	1	20-09-2023		TLM2			

**UNIT-I: Matrices**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	22-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	23-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	26-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	27-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-09-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	30-09-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	03-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	04-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	06-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	07-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	09-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	10-10-2023		TLM1	CO1	T1,T2	
17.	<b>TUTORIAL 1</b>	1	11-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to Unit II	1	13-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	14-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	17-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	18-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	25-10-2023		TLM1	CO2	T1,T2	

24.	Diagonalization of a matrix	1	27-10-2023		TLM1	CO2	T1,T2	
25.	Quadratic Forms	1	28-10-2023		TLM1	CO2	T1,T2	
26.	Nature of Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	
27.	Reduction of Quadratic form to Canonical form	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Orthogonal Transformation	1	01-11-2023		TLM1	CO2	T1,T2	
29.	Orthogonal Transformation	1	03-11-2023		TLM1	CO2	T1,T2	
30.	<b>TUTORIAL 2</b>	1	04-11-2023		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

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

#### UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
31.	Introduction to Unit III	1	06-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	07-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	08-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	10-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	22-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem with remainders	1	24-11-2023		TLM1	CO3	T1,T2	
39.	Taylor's theorem	1	25-11-2023		TLM1	CO3	T1,T2	
40.	Maclaurin's theorem	1	27-11-2023		TLM1	CO3	T1,T2	
41.	Problems and applications	1	28-11-2023		TLM1	CO3	T1,T2	
42.	<b>TUTORIAL 3</b>	1	02-12-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		12			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
43.	Introduction to Unit IV	1	29-11-2023		TLM1	CO4	T1,T2	
44.	Functions of several variables	1	01-12-2023		TLM1	CO4	T1,T2	
45.	Continuity and Differentiability	1	04-12-2023		TLM1	CO4	T1,T2	
46.	Partial Derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
47.	Total derivatives, Chain rule, Directional Derivative	1	06-12-2023		TLM1	CO4	T1,T2	



48.	Taylor's Series expansion	1	08-12-2023		TLM1	CO4	T1,T2	
49.	Maclaurin's series expansion	1	11-12-2023		TLM1	CO4	T1,T2	
50.	Jacobian	1	12-12-2023		TLM1	CO4	T1,T2	
51.	Functional Dependence	1	13-12-2023		TLM1	CO4	T1,T2	
52.	Maxima and Minima	1	15-12-2023		TLM1	CO4	T1,T2	
53.	Maxima and Minima	1	16-12-2023		TLM1	CO4	T1,T2	
54.	Lagrange Multiplier Method	1	18-12-2023		TLM1	CO4	T1,T2	
55.	Lagrange Multiplier Method	1	19-12-2023		TLM1	CO4	T1,T2	
56.	<b>TUTORIAL 4</b>	1	23-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

#### UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Introduction to Unit-V	1	20-12-2023		TLM1	CO5	T1,T2	
58.	Double Integrals - Cartesian coordinates	1	22-12-2023		TLM1	CO5	T1,T2	
59.	Double Integrals - Cartesian coordinates	1	26-12-2023		TLM1	CO5	T1,T2	
60.	Double Integrals- Polar co ordinates	1	27-12-2023		TLM1	CO5	T1,T2	
61.	Triple Integrals - Cartesian coordinates	1	29-12-2023		TLM1	CO5	T1,T2	
62.	Triple Integrals - Spherical coordinates	1	30-12-2023		TLM1	CO5	T1,T2	
63.	Change of order of Integration	1	02-01-2024		TLM1	CO5	T1,T2	
64.	Change of order of Integration	1	03-01-2024		TLM1	CO5	T1,T2	
65.	Change of variables	1	05-01-2024		TLM1	CO5	T1,T2	
66.	Finding area by double Integral	1	06-01-2024		TLM1	CO5	T1,T2	
67.	Finding Volume by double and triple Integral	1	08-01-2024		TLM1	CO5	T1,T2	
68.	Revision	1	09-01-2024		TLM1	CO5	T1,T2	
69.	<b>TUTORIAL 5</b>	1	10-01-2024		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

#### Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
70.	Other applications of double integral	1	12-01-2024		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			

#### II MID EXAMINATIONS (15-01-2024 TO 20-01-2024)

Teaching Learning Methods			
<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/SwayamPrabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	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):**

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.
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<b>PO 5</b>	<b>Modern tool usage:</b> 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
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<b>PO 10</b>	<b>Communication:</b> 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.
<b>PO 11</b>	<b>Project management and finance:</b> 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.
<b>PO 12</b>	<b>Life-long learning:</b> 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>G.VIJAYA LAKSHMI</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>
Course Instructor	Course Coordinator	Module Coordinator	HOD



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF CIVIL ENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** Dr. V. Ramakrishna, Professor,  
Mr. M. Karthik Kumar, Assistant Professor,  
Mr. K. Harish Kumar, Sr. Assistant Professor

**Course Name & Code** : Engineering Graphics – 23ME01

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

**Credits:** 3

**Program/Sem/Sec** : B.Tech, I SEM, CE

**A.Y.:** 2023-24

**PREREQUISITE:** Engineering Physics, Mathematics

#### COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

C01	Understand the principles of engineering drawing, including engineering curves, scales, orthographic and isometric projections. ( <b>Understand</b> )
C02	Draw and interpret orthographic projections of points, lines, planes and solids in front, top and side views. ( <b>Apply</b> )
C03	Understand and draw projection of solids in various positions in first quadrant. ( <b>Apply</b> )
C04	Able to draw the development of surfaces of simple objects ( <b>Apply</b> )
C05	Prepare isometric and orthographic sections of simple solids. ( <b>Apply</b> )

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

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

#### TEXTBOOKS:

**T1** N. D. Bhatt, Engineering Drawing, Charotar Publishing House, 2016.

#### REFERENCE BOOKS:

**R1** Engineering Drawing, K.L. Narayana and P. Kanniah, Tata McGraw Hill, 2013.

**R2** Engineering Drawing, M.B.Shah and B.C. Rana, Pearson Education Inc, 2009.

**R3** Engineering Drawing with an Introduction to AutoCAD, DhananjayJolhe, Tata McGraw Hill, 2017

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

#### UNIT-I: INTRODUCTION TO ENGINEERING GRAPHICS, LETTERING, SCALES, CURVES, ORTHOGRAPHIC PROJECTIONS

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 CO's, PO's & Basics to Engineering Graphics	01	20.09.2023		TLM1	
2.	Basics of Engineering Graphics	02	20.09.2023		TLM1	
3.	Objectives of Engineering Graphics & Scales	01	21.09.2023		TLM1	
4.	Hands on practice session	02	21.09.2023		TLM3	
5.	Construction of polygons-theory	01	27.09.2023		TLM1	
6.	Construction of polygons-practice	02	27.09.2023		TLM3	
7.	Construction of polygons-practice	03	04.10.2023		TLM3	
8.	Construction of Ellipse & parabola-theory	01	05.10.2023		TLM1	
9.	Construction of Ellipse & parabola-practice	02	05.10.2023		TLM3	
10.	Construction of Hyperbola & cycloid-theory	01	11.10.2023		TLM1	
11.	Construction of Hyperbola & cycloid-practice	02	11.10.2023		TLM3	
12.	Construction of Epicycloid & hypocycloid-theory	01	12.10.2023		TLM1	
13.	Construction of Epicycloid & hypocycloid-practice	02	12.10.2023		TLM3	
14.	Involutes-theory	01	18.10.2023		TLM1	
15.	Involutes-practice	02	18.10.2023		TLM3	
16.	Projection of points-theory	01	19.10.2023		TLM1	
17.	Projection of points- practice	02	19.10.2023		TLM3	
<b>No. of classes required to complete UNIT-I: 18</b>				<b>No. of classes taken:</b>		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Projection of straight lines -theory	01	25.10.2023		TLM1	
19.	Projection of straight lines -simple projections	02	25.10.2023		TLM3	
20.	Projection of straight lines -theory	01	26.10.2023		TLM1	
21.	Projection of straight lines -inclined to VP/HP	02	26.10.2023		TLM3	
22.	Projection of straight lines -theory	01	01.11.2023		TLM1	
23.	Projection of straight lines -practice	02	01.11.2023		TLM3	
24.	Projection of planes- simple positions	01	02.11.2023		TLM1	
25.	Projection of planes- practice	02	02.11.2023		TLM3	
26.	Projection of planes- theory	01	08.11.2023		TLM1	
27.	Projection of planes- practice	02	08.11.2023		TLM3	
28.	Practice session	03	09.11.2023		TLM3	
	<b>MID-1 Examination</b>	13.11.2023-18.11.2023				
<b>No. of classes required to complete UNIT-II: 18</b>				<b>No. of classes taken:</b>		

### 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
29.	Types of solids-theory	01	22.11.2023		TLM1	
30.	Simple positions of solids	02	22.11.2023		TLM3	
31.	Projections of solids-theory	01	23.11.2023		TLM1	
32.	Projections of solids-simple positions	02	23.11.2023		TLM3	
33.	Projections of solids-axis inclined to VP/HP	01	29.11.2023		TLM1	
34.	Axis inclined to VP/HP -practice	02	29.11.2023		TLM3	
<b>No. of classes required to complete UNIT-III:09</b>				<b>No. of classes taken:</b>		

### UNIT-IV: SECTIONS OF SOLIDS & DEVELOPMENT OF SURFACES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
35.	Sections of solids-theory	01	30.11.2023		TLM1	
36.	Simple positions-practice	02	30.11.2023		TLM3	
37.	True shape of section-theory	01	06.12.2023		TLM1	
38.	True shape of section-practice	02	06.12.2023		TLM3	
39.	Parallel line development-theory	01	07.12.2023		TLM1	
40.	Simple positions-practice	02	07.12.2023		TLM3	
41.	Parallel line development-theory	01	13.12.2023		TLM1	
42.	Simple positions-practice	02	13.12.2023		TLM3	
43.	Radial line development-theory	01	14.12.2023		TLM1	
44.	Simple positions-practice	02	14.12.2023		TLM3	
45.	Radial line development-theory	01	20.12.2023		TLM1	
46.	Simple positions-practice	02	20.12.2023		TLM3	
<b>No. of classes required to complete UNIT-IV: 18</b>				<b>No. of classes taken:</b>		

### UNIT-V: CONVERSION OF VIEWS & COMPUTER GRAPHICS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
47.	Iso to Ortho views	01	21.12.2023		TLM1	
48.	Simple objects- practice	02	21.12.2023		TLM3	
49.	Iso to Ortho views	01	27.12.2023		TLM1	
50.	Simple objects- practice	02	27.12.2023		TLM3	
51.	Ortho to Iso views	01	28.12.2023		TLM1	
52.	Simple objects- practice	02	28.12.2023		TLM3	
53.	Ortho to Iso views	01	03.01.2024		TLM1	
54.	Simple objects- practice	02	03.01.2024		TLM3	
55.	AutoCAD Basics-theory	01	04.01.2024		TLM1	
56.	Hands on practice session	02	04.01.2024		TLM3	
57.	AutoCAD Basics-theory	01	10.01.2024		TLM2	
58.	Hands on practice session	02	10.01.2024		TLM3	
59.	Revision class	01	11.01.2024		TLM2	
60.	Hands on practice session	02	11.01.2024		TLM3	
<b>MID - II Examination</b>		<b>15.01.2024 - 20.01.2024</b>				
<b>No. of classes required to complete UNIT-V: 21</b>				<b>No. of classes taken:</b>		

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

## PART-C

### EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
I-Descriptive Examination (Units-I, II)	M1=15
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
Day to Day Evaluation	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):

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> 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.
<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> 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.
<b>PO 5</b>	<b>Modern tool usage:</b> 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
<b>PO 6</b>	<b>The engineer and society:</b> 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.
<b>PO 7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

<b>PO 10</b>	<b>Communication:</b> 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.
<b>PO 11</b>	<b>Project management and finance:</b> 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.
<b>PO 12</b>	<b>Life-long learning:</b> 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):

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	Dr. V. Ramakrishna	Dr. M B S S Reddy	Dr. M B S S Reddy	Dr. Venkateswara Rao
<b>Signature</b>				



**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)**

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

Phone: 08659-222933, Fax: 08659-222931

## COURSE HANDOUT

### PART-A

Name of Course Instructor: K. Sridevi

Course Name & Code : CE LAB, 23FE51

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

Credits: 01

Program/Sem/Sec : B. Tech- I SEM- CIVIL

A.Y. : 2023-24

PREREQUISITE: NIL

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

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

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

## **COURSE ARTICULATION MATRIX (Correlation between COs & POs)**

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

List of Activities:



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

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

### Suggested Software:

1. Walden Infotech
2. Young India Films

### Reference Books:

- Raman Meenakshi, Sangeeta-Sharma, *Technical Communication*, Oxford Press 2018.  
 Taylor Grant: *English Conversation Practice*, Tata McGraw-Hill Education India, 2016.  
 Hewing's, Martin, Cambridge Academic English (B2), CUP, 2012.  
 J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English*, (2<sup>nd</sup> 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	25-09-2023		TLM4	
2.	Self Introduction & Introducing others	03	9-10-2023		TLM4	
3.	Vowels & Consonants	03	16-10-2023		TLM1, TLM5	
4.	Neutralization / Accent rules	03	30-10-2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	06-11-2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	20-11-2023		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	27-11-2023		TLM1, TLM5	
8.	Group Discussion	03	04-12-2023		TLM4, TLM6	

9.	Debate	03	11-12-2023		TLM4, TLM6
10.	PPT & Poster Presentation	03	18-12-2023		TLM2, TLM4
11.	Mock Interviews	03	01-12-2024		TLM1, TLM6
12.	Lab Internal Exam	03	08-01-2024		
<b>No. of classes required to complete Syllabus: 36</b>				<b>No. of classes taken:</b>	

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

### Laboratory Examination:

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

### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> 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.
<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> 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.
<b>PO 5</b>	<b>Modern tool usage:</b> 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
<b>PO 6</b>	<b>The engineer and society:</b> 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
<b>PO 7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	<b>Communication:</b> 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
<b>PO 11</b>	<b>Project management and finance:</b> 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.
<b>PO 12</b>	<b>Life-long learning:</b> 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>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Ms. K. Sridevi</b>	<b>Dr. R. Padma</b>	<b>Dr. A. Ramireddy</b>	<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



**FRESHMAN ENGINEERING DEPARTMENT**  
**COURSE HANDOUT**

**Part-A**

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

**Pre-requisites** : Nil

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

**Course Outcomes:**

- CO1: Analyze the wave properties of light using optical instruments (Apply-L3).
- CO2: Estimate the elastic 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
<b>1 = slight (Low)                      2 = Moderate ( Medium)                      3 = Substantial ( High)</b>												

## List of Experiments

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

### References:

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

### BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

### EVALUATION PROCESS:

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

**Part-B**

**COURSE DELIVERY PLAN (LESSON PLAN): CIVIL**

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	21/09/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
2.	Experiment 1	3	05/10/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
3.	Experiment 2	3	12/10/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
4.	Experiment 3	3	19/10/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
5.	Experiment 4	3	26/10/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
6.	Experiment 5	3	02/11/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
7.	Experiment 6	3	09/11/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
8.	<b>MID-1 Exam</b>	3	16/11/23		---	---	---	
9.	Experiment 6	3	23/11/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
10.	Experiment 7	3	30/11/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
11.	Experiment 8	3	07/12/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
12.	Experiment 8	3	14/12/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
13.	Experiment 9	3	21/12/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
14.	Experiment 10	3	28/12/23		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	T1	
15.	<b>Internal Exam</b>	3	04/01/24		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	---	
16.	<b>Internal Exam</b>	3	11/01/24		<b>TLM-4</b>	CO1, CO2, CO3, CO4 & CO5	---	
17.	<b>MID-2 Exam</b>	3	18/01/24		---	---	---	
No. of classes required to complete lab		14			No. of classes taken:			

**PROGRAM OUTCOMES:** Engineering Graduates will be able to:

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

Course Instructor

Course Coordinator

Module Coordinator

H.O.D

**N. T. SARMA**

**Dr. S. YUSUF**

**Dr. S. YUSUF**

**Dr. A. RAMIREDDY**