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: ANURADHA MATTA
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **2-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem – ASE
A.Y. : 2024-25
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	3 Weeks	15-07-2023 TO 03-8-2023	03-8-24	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	09-08-2024& 10-8-2024		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	16-8-2024		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation	01	17-8-2024		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech & Parts of Sentences	01	23-8-2024		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	24-8-2024		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms	01	30-8-2024		TLM2 TLM5	CO1	T1,T2	
7.	Affixes, Root Words	01	31-8-2024		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 8						**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	06-09-2024		TLM1 TLM 6	CO2	T1,T2	
2.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	13-9-2024		TLM2 TLM5	CO2	T1,T2	
3.	Structure of Paragraph – Paragraph Writing	01	14-9-2024		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	Cohesive Devices- linkers	01	20-9-2024		TLM2 TLM6	CO2	T1,T2	
5.	Use of Articles and zero article	01	21-9-2024		TLM2 TLM6	CO2	T1,T2	
6.	Prepositions	01	27-9-2024		TLM2 TLM6	CO2	T1,T2	
7.	Homophones, Homographs, Homonyms	01	28-9-2024		TLM2 TLM5	CO2	T1,T2	
No. of classes required to complete UNIT-II: 8				**No. of classes taken:**				

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Biography: Elon Musk	02	18-10-2024& 19-10-2024		TLM1 TLM 6	CO3	T1,T2	

	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	25-10-2024		TLM2 TLM5	CO3	T1,T2	
3.	Summarizing, Note-making, Paraphrasing,	01	26-10-2024		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	Compound words, Collocations	01	01-11-2024		TLM1 TLM6 TLM5	C03	T1,T2	
5.	Verbs- Tenses,	01	02-11-2024		TLM2 TLM6	CO3	T1,T2	
6.	Subject-verb agreement	01	08-11-2024		TLM2 TLM6			
No. of classes required to complete UNIT-III: 7						**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	01	09-11-2024		TLM1 TLM 6	CO4	T1,T2	
2.	Study of graphic elements in text to display complicated data	01	15-11-2024		TLM2 TLM5	CO4	T1,T2	
3.	Letter Writing : Official Letters, Resumes	01	16-11-2024		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	01	22-11-2024		TLM2 TLM6	CO4	T1,T2	
5.	Words often confused, Jargons	01	23-11-2024		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 05						**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	29-11-2024		TLM1 TLM 6	CO5	T1,T2	
2.	Structured Essays on specific topics	01	30-11-2024		TLM1 TLM6 TLM5	CO5	T1,T2	
3.	Editing Texts,	01	06-12-2024		TLM5, TLM6	CO5	T1,T2	
4.	Correcting Common errors	01	07-12-2024		TLM2 TLM6	CO5	T1,T2	
5.	Technical Jargon	01	13-12-2024		TLM2 TLM5	CO5		
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	1	14-12-2024		TLM2 &5	
No. of classes required to complete UNIT-V: 02				**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

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM	**: I B.Tech., I-Sem., ASE**
ACADEMIC YEAR	**: 2024-25**
COURSE NAME & CODE	**: ENGINEERING PHYSICS**
L-T-P STRUCTURE	**: 4-0-0**
COURSE CREDITS	**3**
COURSE INSTRUCTOR	**: Dr. P. Sobhanachalam**
PRE-REQUISITE	**: Basic Knowledge of Physics**

Course Objectives:

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

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

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

WEB RESOURCES

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTERFERENCE, DIFFRACTION & POLARIZATION

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

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction to the Subject, Course Outcomes	1	05/08/24		**TLM-2**		
2.	Principle of superposition, Interference of light	1	06/08/24		**TLM-3**		
3.	Interference in thin films by reflection & applications	1	07/08/24		**TLM-2**		
4.	Colors in thin films, Newton's rings	1	09/08/24		**TLM-1**		
5.	Determination of wavelength and refractive index	1	12/08/24		**TLM-4**		
6.	Problems & Assignment/Quiz	1	13/08/24		**TLM-1**		
7.	Introduction, Fresnel and Fraunhoffer	1	14/08/24		**TLM-3**		

	diffractions						
8.	Fraunhoffer diffraction due to single slit	1	16/08/24		**TLM-2**		
9.	Double slit & N slits (Qualitative)	1	19/08/24		**TLM-4**		
10.	Diffraction Grating, Dispersive power & Resolving power of Grating-Qualitative	1	20/08/24		**TLM-4**		
11.	Problems & Assignment/Quiz	1	21/08/24		**TLM-3**		
12.	Introduction – Types of polarization	1	23/08/24		**TLM-2**		
13.	Polarization by reflection, refraction & double refraction	1	27/08/24		**TLM-2**		
14.	Nicol's prism	1	28/08/24		**TLM-5**		
15.	Half wave and Quarter wave plates	1	30/08/24		**TLM-2**		
16.	Problems & Assignment/Quiz	1	02/09/24		**TLM-3**		
No. of classes required to complete UNIT-I: 16				No. of classes taken:			

UNIT-II: CRYSTALLOGRAPHY & X– RAY DIFFRACTION

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

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Space lattice; Basis, Unit cell & Lattice parameters	1	03/09/24		**TLM-3**		
2.	Bravais Lattices	1	04/09/24		**TLM-2**		
3.	Crystal Systems (3D)	1	06/09/24		**TLM-2**		
4.	Coordination number – Packing fraction of –SC, BCC	1	09/09/24		**TLM-1**		
5.	Coordination number – Packing fraction of FCC	1	10/09/24		**TLM-1**		
6.	Miller indices & Properties	1	11/09/24		**TL-2**		
7.	Separation between successive (hkl) planes	1	13/09/24		**TLM-1**		
8.	Problems & Assignment/Quiz	1	17/09/24		**TLM-3**		

9.	Bragg's law; X–ray Diffractometer	1	18/09/24		**TLM-2**		
10.	Crystal Structure determination by Laue's method	1	20/09/24		**TLM-5**		
11.	Crystal Structure determination by Powder method	1	23/09/24		**TLM-5**		
12.	Problems & Assignment/Quiz	1	24/09/24		**TLM-3**		
13.	Revision	1	25/09/24		**TLM-2**		
14.	Revision	1	27/09/24		**TLM-2**		
15.	MID-1 Examinations	1	30/09/24		**----**		
16.	MID-1 Examinations	1	01/10/24		**----**		
17.	MID-1 Examinations	1	04/10/24		**----**		
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	07/10/24		**TLM-2**		
2.	Dielectric constant & Displacement Vector, Relation between the electric vectors	1	08/10/24		**TLM-3**		
3.	Types of polarizations- Electronic polarization	1	09/10/24		**TLM-1**		
4.	Types of polarizations - ionic & orientation polarizations (Qualitative)	1	14/10/24		**TLM-1**		
5.	Lorentz internal field	1	15/10/24		**TLM-2**		
6.	Claussius-Mosotti equation, Complex dielectric constant	1	16/10/24		**TLM-1**		
7.	Frequency dependence of polarization dielectric loss	1	18/10/24		**TLM-5**		
	Problems &		21/10/24				

8.	Assignment/Quiz	1			**TLM-3**		
9.	Introduction Magnetic dipole moment, Magnetization Magnetic susceptibility & permeability	1	22/10/24		**TLM-4**		
10.	Atomic origin of magnetism	1	23/10/24		**TLM-1**		
11.	Classification of magnetic materials- Dia, para, Ferro, anti-ferro & Ferri magnetic materials	1	25/10/24		**TLM-2**		
12.	Domain concept for Ferromagnetism & Domain walls	1	28/10/24		**TLM-2**		
13.	Hysteresis	1	29/10/24		**TLM-5**		
14.	soft and hard magnetic materials	1	30/10/24		**TLM-1**		
15.	Problems & Assignment/Quiz	1	01/11/24		**TLM-3**		
No. of classes required to complete UNIT-V: 15				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	04/11/24		**TLM-2**		Extra hour
2.	Heisenberg's Uncertainty Principle	1	05/11/24		**TLM-2**		
3.	Significance & properties of wave function	1	06/11/24		**TLM-2**		
4.	Schrodinger's time independent and dependent wave equations	1	08/11/24		**TLM-1**		
5.	Particle in a one –dimensional infinite potential well	1	11/11/24		**TLM-1**		
6.	Problems & Assignment/Quiz	1	12/11/24		**TLM-3**		
8.	Classical free electron theory- merits and demerits	1	13/11/24		**TLM-2**		
9.	Quantum free electron theory	1	15/11/24		**TLM-2**		
10.	Electrical conductivity based on quantum free	1	18/11/24		**TLM-1**		

	electron theory						
11.	Fermi -Dirac distribution and temperature dependence	1	19/11/24		**TLM-5**		
12.	Density of states	1	20/11/24		**TLM-1**		
13.	Fermi energy	1	22/11/24		**TLM-1**		
14.	Problems & Assignment/Quiz	1	25/11/24		**TLM-3**		
No. of classes required to complete UNIT-III: 14				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,	1	26/11/24		**TLM-6**		
2.	Classification of crystalline solids	1	27/11/24		**TLM-6**		
3.	Intrinsic semiconductors, Density of charge carriers	1	29/11/24		**TLM-1**		
4.	Electrical conductivity, Fermi level	1	02/12/24		**TLM-2**		
5.	Extrinsic semiconductors, Density of charge carriers	1	03/12/24		**TLM-1**		
6.	Dependence of Fermi energy on carrier concentration & temperature	1	04/12/24		**TLM-2**		
7.	Drift and Diffusion Currents	1	06/12/24		**TLM-1**		
8.	Einstein's equation	1	09/12/24		**TLM-1**		
9.	Hall Effect & its applications	1	10/12/24		**TLM-4**		
10.	Problems & Assignment/Quiz	1	11/12/24		**TLM-3**		
11.	Revision	1	13/12/24		**TLM-2**		
12.	MID-2 Examinations	1	16/12/24		**----**		
13.	MID-2 Examinations	1	17/12/24		**----**		
14.	MID-2 Examinations	1	18/12/24		**----**		
15.	MID-2 Examinations	1	20/12/24		**----**		

No. of classes required to complete UNIT-IV: 10	No. of classes taken:	

PART-C

EVALUATION PROCESS (R-23 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): M	**30**
Semester End Examination (SEE)	**70**
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
	Problem analysis: Identify, formulate, review research literature, and analyze

PO 2	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.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr. P. Sobhanachalam	**Dr. S. YUSUF**	**Dr. S. YUSUF**	**Dr. A. RAMI REDDY**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., ASE
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : **Dr. K. Jhansi Rani**
COURSE COORDINATOR : Dr. 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	29-07-2024 TO 03-08-2024	29-07-2024 TO 03-08-2024	TLM1			
2.	Orientation Programme	1	05-08-2024					
3.	Introduction to the course	1	06-08-2024		TLM1			
4.	Course Outcomes, Program Outcomes	1	07-08-2024		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
5.	Introduction to Unit I, Matrices	1	08-08-2024		TLM1	CO1	T1,T2	
6.	Rank of a matrix	1	08-08-2024		TLM1	CO1	T1,T2	
7.	Echelon form	1	12-08-2024		TLM1	CO1	T1,T2	
8.	Normal form	1	14-08-2024		TLM1	CO1	T1,T2	
9.	Cauchy-Binet formulae	1	19-08-2024		TLM1	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	20-08-2024		TLM1	CO1	T1,T2	
11.	Inverse by Gauss-Jordan method	1	21-08-2024		TLM1	CO1	T1,T2	
12.	System of Linear Equations	1	22-08-2024		TLM1	CO1	T1,T2	
13.	**TUTORIAL I**	1	22-08-2024		TLM3	CO1	T1,T2	
14.	Homogeneous System of Equations	1	27-08-2024		TLM1	CO1	T1,T2	
15.	Homogeneous System of Equations	1	28-08-2024		TLM1	CO1	T1,T2	
16.	Non-Homogeneous System of Equations	1	29-08-2024		TLM1	CO1	T1,T2	
17.	**TUTORIAL II**	1	29-08-2024		TLM3	CO1	T1,T2	
18.	Gauss Elimination Method	1	02-09-2024		TLM1	CO1	T1,T2	
19.	Jacobi Iteration Method	1	03-09-2024		TLM1	CO1	T1,T2	
20.	Jacobi Iteration Method	1	04-09-2024		TLM1	CO1	T1,T2	
21.	Gauss-Seidel Method	1	05-09-2024		TLM1	CO1	T1,T2	
22.	**TUTORIAL III**	1	05-09-2024		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
23.	Introduction to Unit II	1	09-09-2024		TLM1	CO2	T1,T2	

24.	Eigen values, Eigen vectors	1	10-09-2024		TLM1	CO2	T1,T2	
25.	Eigen values, Eigen vectors	1	11-09-2024		TLM1	CO2	T1,T2	
26.	**TUTORIAL IV**	1	12-09-2024		TLM3	CO1	T1,T2	
27.	Properties	1	12-09-2024		TLM1	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	17-09-2024		TLM1	CO2	T1,T2	
29.	Cayley-Hamilton Theorem	1	18-09-2024		TLM1	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	19-09-2024		TLM1	CO2	T1,T2	
31.	**TUTORIAL V**	1	19-09-2024		TLM3	CO1	T1,T2	
32.	Diagonalization of a matrix	1	23-09-2024		TLM1	CO2	T1,T2	
33.	Quadratic Forms	1	24-09-2024		TLM1	CO2	T1,T2	
34.	Nature of Quadratic Forms	1	25-09-2024		TLM1	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	26-09-2024		TLM1	CO2	T1,T2	
36.	Orthogonal Transformation	1	26-09-2024		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		14			No. of classes taken:			

I MID EXAMINATIONS (30-09-2024 TO 05-10-2024)

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
37.	Introduction to Unit III	1	07-10-2024		TLM1	CO3	T1,T2	
38.	Mean Value theorem	1	08-10-2024		TLM1	CO3	T1,T2	
39.	Rolle's theorem	1	09-10-2024		TLM1	CO3	T1,T2	
40.	Lagrange's mean value theorem	1	15-10-2024		TLM1	CO3	T1,T2	
41.	Lagrange's mean value theorem	1	16-10-2024		TLM1	CO3	T1,T2	
42.	Cauchy's mean value theorem	1	17-10-2024		TLM1	CO3	T1,T2	
43.	**TUTORIAL VI**	1	17-10-2024		TLM3	CO3	T1,T2	
44.	Cauchy's mean value theorem	1	21-10-2024		TLM1	CO3	T1,T2	
45.	Taylor's theorem	1	22-10-2024		TLM1	CO3	T1,T2	
46.	Taylor's theorem	1	23-10-2024		TLM1	CO3	T1,T2	
47.	Maclaurin's theorem	1	24-10-2024		TLM1	CO3	T1,T2	
48.	Problems and applications	1	28-10-2024		TLM1	CO3	T1,T2	
49.	**TUTORIAL VII**	1	24-10-2024		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
50.	Introduction to Unit IV	1	29-10-2024		TLM1	CO4	T1,T2	

51.	Functions of several variables.	1	30-10-2024		TLM1	CO4	T1,T2	
52.	Continuity and Differentiability	1	04-11-2024		TLM3	CO4	T1,T2	
53.	Partial Derivatives	1	05-11-2024		TLM1	CO4	T1,T2	
54.	Total derivatives, Chain rule, Directional Derivative	1	06-11-2024		TLM1	CO4	T1,T2	
55.	Taylor's Series expansion	1	07-11-2024		TLM1	CO4	T1,T2	
56.	**TUTORIAL VIII**	1	07-11-2024		TLM3	CO4	T1,T2	
57.	Taylor's Series expansion	1	11-11-2024		TLM1	CO4	T1,T2	
58.	Maclaurin's series expansion	1	12-11-2024		TLM1	CO4	T1,T2	
59.	Jacobian	1	13-11-2024		TLM1	CO4	T1,T2	
60.	Jacobian	1	14-11-2024		TLM1	CO4	T1,T2	
61.	**TUTORIAL IX**	1	14-11-2024		TLM3	CO4	T1,T2	
62.	Functional Dependence	1	18-11-2024		TLM1	CO4	T1,T2	
63.	Maxima and Minima	1	19-11-2024		TLM1	CO4	T1,T2	
64.	Maxima and Minima	1	20-11-2024		TLM1	CO4	T1,T2	
65.	Lagrange Multiplier Method	1	21-11-2024		TLM1	CO4	T1,T2	
66.	**TUTORIAL X**	1	21-11-2024		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		17			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
67.	Introduction to Unit-V	1	25-11-2024		TLM1	CO5	T1,T2	
68.	Double Integrals - Cartesian coordinates	1	26-11-2024		TLM1	CO5	T1,T2	
69.	Double Integrals- Polar co ordinates	1	27-11-2024		TLM1	CO5	T1,T2	
70.	Triple Integrals - Cartesian coordinates	1	28-11-2024		TLM1	CO5	T1,T2	
71.	**TUTORIAL XI**	1	28-11-2024		TLM3	CO5	T1,T2	
72.	Triple Integrals - Cartesian coordinates	1	02-12-2024		TLM1	CO5	T1,T2	
73.	Triple Integrals - Spherical coordinates	1	03-12-2024		TLM1	CO5	T1,T2	
74.	Change of order of Integration	1	04-12-2024		TLM1	CO5	T1,T2	
75.	Change of order of Integration	1	05-12-2024		TLM1	CO5	T1,T2	
76.	**TUTORIAL XII**	1	05-12-2024		TLM3	CO5	T1,T2	
77.	Change of variables	1	09-12-2024		TLM1	CO5	T1,T2	
78.	Finding area by double Integral	1	10-12-2024		TLM1	CO5	T1,T2	

79.	Finding area by double Integral	1	11-12-2024		TLM1	CO5	T1,T2	
80.	Finding Volume by double and triple Integral	1	12-12-2024		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
81.	Other applications of double integral	1	12-12-2024		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (16-12-2024 TO 21-12-2024)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

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

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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.A.PRATYUSH
Course Name & Code **:** BC&ME, 23CM01
L-T-P Structure **: 5-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I-Sem/**A-Sec** **A.Y.: 2024-25**
PREREQUISITE: NO

COURSE EDUCATIONAL OBJECTIVES (CEOs): The students after completing the course are expected to

- Get familiarized with the scope and importance of Mechanical Engineering in different sectors and industries.
- Explain different engineering materials and different manufacturing processes.
- Provide an overview of different thermal and mechanical transmission systems and introduction basic of robotics and its applications.

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

CO1	Summarize the different manufacturing processes. (Remember-L1)
CO2	Explain the basics of thermal engineering and its applications. (Understand-L2)
CO3	Illustrate the working of different mechanical power transmission systems and power plants (Understand-L2)
CO4	Describe the basics of robotics and its applications (Understand-L2)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO09	PO10	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	-	-	-	-	-	-	-	-	1	-	-	-
CO2	2	2	-	1	-	-	-	-	-	-	-	1	-	-	-
CO3	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-
CO4	2	2	1	1	-	-	-	-	-	-	-	1	-	-	-
1 - Low			**2 –**Medium						**3 -** High						

TEXTBOOKS:

T1. Internal Combustion Engines by V.Ganesan, By Tata McGraw Hill publications (India) Pvt. Ltd.

T2. A text book of Theory of Machines by S.S. Rattan, Tata McGraw Hill Publications, (India) Pvt. Ltd.

T3 An introduction to Mechanical Engg by Jonathan Wicker and Kemper Lewis, Cengage learning India Pvt. Ltd.

REFERENCE BOOKS:

R1 G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, Tata McGraw Hill publications (India) Pvt. Ltd.

R2 Thermal Engineering by Mahesh M Rathore Tata McGraw Hill publications (India) Pvt. Ltd.

R3. 3D printing & Additive Manufacturing Technology- L. Jyothish Kumar, Pulak M Pandey,

Springer publications

R4. Appuu Kuttan KK, Robotics, I.K. International Publishing House Pvt. Ltd. Volume-I

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Mechanical Engineering	1	06-08-2024		TLM1	
2.	Role of Mechanical Engineering in Industries and Society	1	07-08-2024		TLM1	
3.	Technologies in different sectors such as Energy.	1	09-08-2024		TLM1	
4.	Technologies in different sectors such as Manufacturing.	1	10-08-2024		TLM1	
5.	Technologies in different sectors such as Automotive.	1	13-08-2024		TLM1	
6.	Technologies in different sectors such as Aerospace, and Marine sectors.	1	14-08-2024		TLM1	
7.	Engineering Materials - Metals	1	16-08-2024		TLM1	
8.	Ferrous Metals	1	17-08-2024		TLM1	
9.	Non-ferrous Metals	1	20-08-2024		TLM1	
10.	Ceramics.	1	21-08-2024		TLM1	
11.	Composites.	1	23-08-2024		TLM1	
12.	Smart materials.	1	24-08-2024		TLM1	
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	HOD Sign Weekly
13.	Manufacturing Processes	1	27-08-2024		TLM1	
14.	Principles of Casting,	1	28-08-2024		TLM1	
15.	Forming,	1	30-08-2024		TLM1	
16.	joining processes,	1	31-08-2024		TLM1	
17.	Machining,	1	03-09-2024		TLM1	
18.	Introduction to CNC machines,	1	03-09-2024		TLM1	
19.	3D printing, and Smart manufacturing.	1	03-09-2024		TLM1	
20.	Thermal Engineering- Working principle of Boilers	1	04-09-2024		TLM1	
21.	Working principle of Boilers	1	04-09-2024		TLM1	

22.	Otto cycle	1	06-09-2024		TLM1	
23	Diesel cycle	1	06-09-2024		TLM1	
24	Refrigeration and air-conditioning cycles	1	10-09-2024		TLM1	
25	IC engines	1	10-09-2024		TLM1	
26	2-Stroke and 4-Stroke engines	1	11-09-2024		TLM1	
27	2-Stroke and 4-Stroke engines	1	11-09-2024		TLM1	
28	SI/CI Engines	1	13-09-2024		TLM1	
29	Components of Electric and Hybrid Vehicles.	1	13-09-2024		TLM1	
No. of classes required to complete UNIT-II: 17				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30	Power plants – Working principle of Steam power plants	1	14-09-2024		TLM1	
31	Power plants – Working principle of Diesel power plants	1	14-09-2024		TLM1	
32	Power plants – Working principle of Hydro power plants	1	17-09-2024		TLM1	
33	Power plants – Working principle of Nuclear power plants	1	18-09-2024		TLM1	
34	Mechanical Power Transmission - Belt Drives.	1	20-09-2024		TLM1	
35	Chain, Rope drives.	1	21-09-2024		TLM1	
36	Gear Drives and their applications.	1	24-09-2024		TLM1	
37	Introduction to Robotics- Joints & links.	1	25-09-2024		TLM1	
38	Configurations and applications of robotics.	1	28-09-2024		TLM1	
I-Mid Exams			30-09-2024 to 05-10-2024			
No. of classes required to complete UNIT-III: 08				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (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=09
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=09
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge:
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 09	Communication
PO 10	Project management and finance
PO 12	Life-long learning

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.A.Pratyush**			**Dr.P.Lovaraju**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF AEROSPACE ENGINERRING

COURSE HANDOUT

Name of Course Instructor: S. Indrasena Reddy
Course Name & Code **:** Engineering Graphics & 23ME01
L-T-P Structure **:2-0-4** **Credits:** 4
Program/Sem/Sec : B.Tech/I Sem **A.Y.:** 2024-25

PRE-REQUISITES: - Mathematics, Physics

COURSE OBJECTIVES:

- 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: At the end of the course, the student will be able to:

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

Course Articulation Matrix:

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

TEXT BOOK:
N. D. Bhatt, Engineering Drawing, Charotar Publishing House, 2016

REFERENCES:

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

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I : Introduction To Engineering Drawing

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.	Dimensioning – Lettering,	3	05-08-24		TLM 1	
2.	polygons ,Geometrical Constructions	3	08-08-24		TLM 1	
3.	Conic Sections- Ellipse, General method	3	12-08-24		TLM 1 TLM2	
4.	Parabola , Hyperbola General method	3	19-08-24		TLM 1	
5.	Plain , Diagonal Scales, Vernier Scales, Involutes	3	22-08-24		TLM 1	
6.	Cycloid, Epi Cycloid and Hypo-Cycloid	3	29-08-24		TLM 1 TLM2	
7.	Orthographic Projections introduction - Projection of Points	3	02-09-24		TLM 1	
No. of classes required to complete UNIT-I		21		No. of classes taken:		

UNIT-II : Projection of Straight Lines & 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
8.	Introduction to Orthographic Projections	3	05-09-24		TLM 1	
9.	Projections of straight lines	3	09-09-24		TLM 1	
10.	Projections of straight lines inclined to one plane	3	12-09-24		TLM 1 TLM2	
11.	Projections of straight lines inclined to both the planes	3	19-09-24		TLM 1	
12.	Introduction to Projection of Planes, Planes parallel to one planes	3	23-09-24		TLM 1 TLM2	
13.	Plane inclined to both the reference planes.	3	26-09-24		TLM 1	
No. of classes required to complete UNIT-II		18		No. of classes taken:		

UNIT-III: Projection 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
14.	Types of solids: Polyhedra and Solids of revolution	3	07-10-24		TLM 1	
15.	Projections of solids in simple positions: Axis perpendicular to horizontal plane	3	10-10-24		TLM 1 TLM2	
16.	Axis perpendicular to vertical plane and Axis parallel to both the reference planes,	3	14-10-24		TLM 1	
17.	Axis inclined to one plane	3	17-10-24		TLM 1	
18.	Axis inclined to one of the reference planes and parallel to the other	3	21-10-24		TLM 1 TLM2	
No. of classes required to complete UNIT-III		15		No. of classes taken:		

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
19.	Sections of Solids section planes	3	24-10-24		TLM 1	
20.	Perpendicular and inclined section planes	3	28-10-24		TLM 1	
21.	Sectional views and True shape of section	3	04-11-24		TLM 1 TLM2	
22.	Sections of solids in simple position	3	07-11-24		TLM 1 TLM2	
23.	Parallel line development	3	11-11-24		TLM 1	
24.	Development of a cube, prism, cylinder	3	14-11-24		TLM 1 TLM2	
25.	Radial line development. pyramid and cone	3	18-11-24		TLM 1 TLM2	
No. of classes required to complete UNIT-IV		21		No. of classes taken:		

UNIT-V: Conversion of Views

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Isometric Projections	3	21-11-24		TLM 1	
27.	Conversion of isometric views to orthographic views(Simple)	3	25-11-24		TLM 1 TLM2	
28.	Conversion of isometric views to orthographic views(Complex)	3	28-11-24		TLM 1 TLM2	
29.	Conversion of orthographic views to isometric views.(Simple)	3	02-12-24		TLM 1 TLM2	
30.	Conversion of orthographic views to isometric views.(Complex)	3	05-12-24		TLM 1 TLM2	
31.	**Computer graphics**: Creating 2D&3D drawings of objects	3	09-12-24		TLM 4	
32.	Transformations using Auto CAD	3	12-12-24		TLM 4	
No. of classes required to complete UNIT-V		21		No. of classes taken:		

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

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Sheet Marks	1,2,3,4,5	A=15
I-Mid Examination	1,2,3	B1=15
II-Mid Examination	3,4,5	B2=15
Evaluation of Mid Marks: B=80% of Max(B1,B2)+20% of Min(B1,B2)	1,2,3,4,5	B=15
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**30**
Semester End Examinations	**1,2,3,4,5**	**C=70**
Total Marks: A+B+C	**1,2,3,4,5**	**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 1	To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures and Flight Dynamics in the Aerospace vehicle design
PSO 2	To prepare the students to work effectively in Aerospace and Allied Engineering organizations

Mr.S.Indrasena Reddy	Mr.S.Indrasena Reddy	Dr.P.Lovaraju
Course Instructor	Module Coordinator	HOD

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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.G.RAJENDRA
Course Name & Code : IT WORKSHOP Lab & 23IT51
L-T-P Structure : 0-0-2 **Credits: 1**
Program/Sem/Sec : B.Tech. - ASE/I **A.Y.:** 2024-25
PREREQUISITE : **NIL**

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

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

CO1	Identify the components of a PC and 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	-	-	-	-	-
1-Low 2-Medium 3-High															

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

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 3rd edition.

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	09-08-2024		**DM5**	
2.	Task-2				**DM5**	
3.	Task-3	3	16-08-2024		**DM5**	
4.	Task-4	3	23-08-2024		**DM5**	
5.	Task-5	3	30-08-2024		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	06-09-2024		**DM5**	
7.	Task-2				**DM5**	
8.	Task-3	3	13-09-2024		**DM5**	
9.	Task-4				**DM5**	
LaTex and WORD						
10.	Task-1	3	20-09-2024		**DM5**	
11.	Task-2	3	27-09-2024		**DM5**	
12.	Task-3	3	18-10-2024		**DM5**	
13.	Task-4	3	25-10-2024		**DM5**	
EXCEL						
14.	Task-1	3	01-11-2024		**DM5**	
15.	Task-2	3	08-11-2024		**DM5**	
LOOKUP/VLOOPUP						
16.	Task-1	3	15-11-2024		**DM5**	
POWER POINT						
17.	Task-1	3	22-11-2024		**DM5**	
18.	Task-2	3			**DM5**	
19.	Task-3	3			**DM5**	
AI TOOLS-ChatGPT						
20.	Task-1	3	29-11-2024		**DM5**	
21.	Task-2				**DM5**	
22.	Task-3	3	06-12-2024		**DM5**	
23.	Internal exam	3	13-12-2024		**DM4**	

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

PART-C

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr. G.Rajendra		Dr.K.Phaneendra	Dr. P. Lovaraju
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: M. ANURADHA
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech ASE I SEM
A.Y. : 2024-25

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

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):

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	10-08-24		TLM4	
2.	Vowels & Consonants	03	17-08-24		TLM4	
3.	Vowels & Consonants	03	24-8-24		TLM1, TLM5	
4.	Neutralization	03	31-8-24		TLM1, TLM5	
5.	Accent rules	03	14-9-24		TLM1,TLM5	
6.	Self-Introduction & Introducing others	03	21-09-24		TLM1,TLM5	
7.	JAM-I(Short and Structured Talks)	03	28-9-24		TLM4	
8.	Conversation practice Role Play	03	19-10-24		TLM4	
9.	e-mail Writing,	03	26-10-24		TLM1,TLM5	
10.	Resume writing, Cover letter, SOP	03	02-11-24		TLM1, TLM5	
11.	Group Discussion	03	09-11-24		TLM4, TLM6	
12.	Group Discussion	03	16-11-24		TLM4, TLM6	
13.	Debate	03	23-11-24		TLM4, TLM6	
14.	PPT & Poster Presentation	03	30-11-24		TLM2, TLM4	
15.	Mock Interviews	03	07-12-24		TLM1,TLM6	
16.	Lab Internal Exam	03	14-12-24			
No. of classes required to complete Syllabus:48				**No. of classes taken:**		

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

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	**ANURADHA M**	**Dr. R. PADMA VEKAT**	**Dr. A. Rami Reddy**	**Dr. A. Rami Reddy**
Signature				

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	:	**B.Tech., I-Sem., ASE**
ACADEMIC YEAR	:	**2024-25**
COURSE NAME & CODE	:	**ENGINEERING PHYSICS LAB**
L-T-P STRUCTURE	:	**0 – 0 – 3**
COURSE CREDITS	:	**1**
COURSE INSTRUCTOR	:	**Dr. P. Sobhanachalam / Mrs. P. Vijaya 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 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.

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): ASE

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	06/08/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
2.	Experiment 1	3	13/08/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
3.	Experiment 2	3	20/08/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
4.	Experiment 3	3	27/08/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
5.	Experiment 3	3	03/09/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
6.	Experiment 4	3	10/09/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
7.	Experiment 5	3	17/09/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
8.	Experiment 5	3	24/09/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
9.	**MID-1 Exam**	3	30/9/24		**---**	**---**	**---**	
10.	Experiment 6	3	08/10/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
11.	Experiment 7	3	15/10/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
12.	Experiment 8	3	22/10/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
13.	Experiment 8	3	29/10/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
14.	Experiment 9	3	05/11/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
15.	Experiment 10	3	12/11/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
16.	Experiment 10	3	19/11/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
17.	Revision	3	26/11/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
						CO1, CO2,	T1	

17.	**Internal Exam**	3	03/12/24		**TLM-4**	CO3, CO4 & CO5		
18.	**Internal Exam**	3	10/12/24		**TLM-4**	CO1, CO2, CO3, CO4 & CO5	T1	
No. of classes required to complete lab		16			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, naturalsciences, and engineering sciences.

(3). **Design/development of solutions**: Design solutions for complex engineering problems anddesign 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 anunderstanding of the limitations.

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

(7). Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need forsustainable 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 leaderin 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
Dr. P. Sobhanachalam/ Mrs. P. Vijaya Sirisha	**Dr. S. YUSUF**	**Dr. S. YUSUF**	**Dr. A. RAMIREDDY**

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.-521230.
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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. G. V. Surya Narayana

Course Name &	**:** Engineering Workshop & 23ME51	**Regulation**	: R23
L-T-P Structure	**: 0-0-3**	**Credits**	: 1.5
Program/Sem/Sec	**:** B. Tech/I/ASE	**A.Y.**	: 2024-25

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): To familiarize students with wood working, sheet metal operations, fitting, electrical house wiring skills, and basic repairs of two-wheeler vehicles.

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

CO1	Identify workshop tools and their operational capabilities. **(Remember)**
CO2	Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding. **(Understand)**
CO3	Modal various basic prototypes in fitting trade. **(Apply)**
CO4	Apply basic electrical engineering knowledge for House Wiring Practice. **(Apply)**

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

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

Textbooks:

T1. Basic Workshop Technology: Manufacturing Process, Felix W.; Independently Published,2019. Workshop Processes, Practices and Materials; Bruce J. Black, Routledge publishers, 5th Edn. 2015.

T2. A Course in Workshop Technology Vol I. & II, B.S. Raghuwanshi, Dhanpath Rai & Co., 2015 & 2017.

Reference Books:

R1. LBRCE Workshop Lab Manual.

R2. Elements of Workshop Technology, Vol. I by S. K. Hajra Choudhury & Others, Media Promoters and Publishers, Mumbai. 2007, 14th edition.

R3. Workshop Practice by H. S. Bawa, Tata-McGraw Hill, 2004.

R4. Wiring Estimating, Costing and Contracting; Soni P.M. & Upadhyay P.A.; Atul Prakash an, 2021-22.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

Si. 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
	CYCLE-I					
1.	**Introduction to Lab:** Safety practices and precautions to be observed in workshop.	6	07-08-2024 14-08-2024		TLM8	
2.	**WOODWORK:** Dove Tail Joint	3	21-08-2024		TLM8	
3.	Corner Lap Joint	3	28-08-2024		TLM8	
4.	**FITTING:** L-Fitting	3	04-09-2024		TLM8	
5.	V-Fitting	3	11-09-2024		TLM8	
6.	**ELECTRICAL WIRING:** Two Laps in Series and Parallel Connection with One Way Switch	3	18-09-2024		TLM8	
7.	Florescent Lamp and Calling Bell Circuit	3	25-09-2024		TLM8	
	CYCLE-II					
8.	**PLUMBING:** Preparation of Pipe Layout-Demonstration and practice of Plumbing tools	3	09-10-2024		TLM8	
9.	**Pipe Threading-** Preparation of Pipe joints with coupling for same diameter and with reducer for different diameters.	3	16-10-2024		TLM8	
10.	**SHEET METAL WORKING:** Preparation of Tapered Tray	3	23-10-2024		TLM8	
11.	**FOUNDRY TRADE:**	3	30-10-2024		TLM8	

	Demonstration and practice on Moulding tools and processes, Preparation of Green Sand Moulds for given Patterns.				
12.	**WELDING SHOP:** Demonstration and practice on Arc Welding and Gas welding. Preparation of Lap joint and Butt joint.	3	06-11-2024		TLM8
13.	**BASIC REPAIRS OF TWO-WHEELER VEHICLE**: Demonstration of working of two-wheeler vehicle and its repairs.	3	13-11-2024		TLM8
14.	Repetition	6	27-11-2024 04-12-2024		TLM8
15.	Internal Lab Exam	3	11-12-2024		-----
No. of classes required to complete:				**No. of classes taken:**	

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

PART-C

ACADEMIC CALENDAR

Description	From	To	Weeks
I Phase of Instructions-1	05-08-2024	28-09-2024	8W
I Mid Examinations	30-09-2024	05-10-2024	1W
II Phase of Instructions	07-10-2024	14-12-2024	10W
II Mid Examinations	16-12-2024	21-12-2024	1W
Preparation and Practical's	23-12-2024	28-12-2024	1W
Semester End Examinations	30-12-2024	11-01-2024	2W

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work = **A**	1,2,3,4,5,6,7,8	A=10
Record/ Viva = **B**	1,2,3,4,5,6,7,8	B=05
Internal Test = **C**	1,2,3,4,5,6,7,8	C = 15
Cumulative Internal Examination: A+B+C = 30	1,2,3,4,5,6,7,8	**30**
Semester End Examinations = D	1,2,3,4,5,6,7,8	**70**
Total Marks: A+ B + C + D = 100	1,2,3,4,5,6,7,8	**100**

PART-D

PROGRAM EDUCATIONAL OBJECTIVES (PEOS):

PEO1	To provide students with sound mathematical, engineering, and multidisciplinary knowledge to solve Aerospace and Allied Engineering problems.
PEO2	To prepare students to excel in higher education programs and to succeed in industry/academia profession.
PEO3	To inculcate ethical attitude, leadership qualities, problem solving abilities and life-long learning for a successful professional career.

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 teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1:	To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures and Flight Dynamics in the Aerospace vehicle design.
PSO2:	To prepare the students to work effectively in Aerospace and Allied Engineering organizations.

	Course Instructor	**Module Coordinator**	**Head of the Department**
Signature			
Name of the Faculty	Mr. G.V. SURYA NARAYANA	Mr. I DAKSHNAMURTHY	Dr. P. LOVARAJU