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: Mrs. K. Samaikya
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem (CSM-A)
A.Y. : 2025-26

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

Course Outcomes	Programme Outcomes											
PO's →	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	-	-	-	1	-	-	-	-	3	3	-	2
CO2.	-	-	-	1	-	-	-	-	3	3	-	2
CO3.	-	-	-	1	-	-	-	-	3	3	-	2
CO4.	-	-	-	1	-	-	-	-	3	3	-	2
CO5.	-	-	-	1	-	-	-	-	3	3	-	2

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	19-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	22-08-2025 26-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	28-08-2025 29-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	01	02-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	04-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	09-09-2025 11-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 10						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	03	16-09-2025 18-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	19-09-2025 23-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	25-09-2025 26-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	02	07-10-2025 09-10-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	01	10-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	01	14-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 11						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	28-10-2025 30-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	31-10-2025 04-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	06-11-2025 07-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	11-11-2025 13-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	14-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	18-11-2025 20-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	21-11-2025 25-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	27-11-2025 28-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	02-12-2025 04-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	05-12-2025		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 09						**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	02	09-12-2025 11-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	02	12-12-2025 16-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	02	18-12-2025 19-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	23-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	26-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 09						**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.	**One-word substitutes**	01	12-09-2025		TLM2 &5	
2.	**Word Analogy**	01	16-10-2025		TLM2 &5	
3.	**Technical vocabulary**	01	17-10-2025		TLM2 &5	
No. of classes required to complete : 03				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs. K. Samaikya**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

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DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Lakshmi V R Babu Syamala & Mr. D. Mallikharjuna Rao

Course Name & Code : Chemistry & 23FE02

L-T-P Structure : **3-0-0** **Credits: 03**

Program/Sem/Sec : I B.Tech./I Sem/AI&ML-A **A.Y. :**2025-26

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions.
- To strengthen the basic concepts of bonding models, advanced engineering materials, electrochemistry, batteries and polymers.
- To introduce instrumental methods and their applications.

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

CO1	Understand the fundamentals of quantum mechanics and molecular orbital energy diagrams for molecules. **(Understand)**
CO2	Summarize the suitability of advanced materials like semiconductors, superconductors, super capacitors and nano materials, in advanced fields. **(Understand)**
CO3	Apply Nernst equation in calculating cell potentials and understand conductometric, potentiometric titrations, electrochemical sensors and compare batteries for different applications. **(Understand)**
CO4	Outline the importance of polymers and conducting polymers in advanced technologies. **(Understand)**
CO5	Understand the fundamentals of UV-Visible, IR spectroscopic techniques and basic principles of chromatographic techniques. **(Understand)**

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

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

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

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference: Books:

1. Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
2. J.D. Lee, Concise Inorganic Chemistry, 5th Edition, Wiley Publications, Feb.2008
3. Textbook of Polymer Science, Fred W. Billmayer, Jr, 3rd Edition

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): CSE-D

UNIT-I: STRUCTURE AND BONDING MODELS

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 chemistry course, CO's &PO's & Bridge Course	4	18-08-2025 to 22-08-2025 (18,21,21,22)		TLM1	
2.	Fundamentals of Quantum Mechanics	2	25-08-2025 & 28-08-2025			
3.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	28-08-2025		TLM1	
4.	Particle in one dimensional box	1	29-08-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	01-09-2025 & 04-09-2025		TLM1	
6.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	1	04-09-2025		TLM1	
7.	Energy level diagrams-Summary	1	05-09-2025		TLM1	
8.	π-molecular orbitals of butadiene	1	08-09-2025		TLM1	
9.	π-molecular orbitals ofbenzene	1	11-09-2025		TLM1	
10.	Calculation of Bond order	1	11-09-2025		TLM1	
11.	Revision and assignment	1	12-09-2025		TLM1	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: MODERN ENGINEERING MATERIALS

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.	Semiconductors – Introduction, Basic concepts	1	15-09-2025		TLM1	
2.	Semiconductors- Conduction mechanism & applications	1	18-09-2025		TLM1	
3.	Super conductors – Introduction, Basic concepts	1	18-09-2025		TLM1	
4.	Super conductors – Properties, Types and applications	2	19-09-2025 & 22-09-2025		TLM1	
5.	Super capacitors - Introduction, Basic concepts	1	25-09-2025		TLM1	
6.	Super capacitors - classification & applications	1	25-09-2025		TLM1	
7.	Nano materials - Introduction	1	26-09-2025		TLM2	
8.	Nano materials - classification	1	06-10-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	09-10-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	2	09-10-2025 & 10-10-2025		TLM2	
11.	Revision and assignment of U-II	2	13-10-2025 & 16-10-2025		TLM1	
12.	Mid-1 Preparation	2	16-10-2025 & 17-10-2025			
No. of classes required to complete UNIT-II: 14+2				No. of classes taken:		

UNIT-III: ELECTROCHEMISTRY AND APPLICATIONS

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.	Electrochemical cell, Nernst equation	2	27-10-2025 & 30-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	30-10-2025 & 31-10-2025		TLM1	

3.	Potentiometry-potentiometric titrations (redox titrations)	1	03-11-2025		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	06-11-2025		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	06-11-2025		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	07-11-2025 & 10-11-2025		TLM1	
7.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells	1	13-11-2025		TLM1	
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	13-11-2025		TLM1	
9.	Revision and assignment	1	14-11-2025		TLM1	
No. of classes required to complete UNIT-III: 12				No. of classes taken:		

UNIT-IV: POLYMER CHEMISTRY

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 polymers, functionality of monomers	1	17-11-2025		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	20-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	20-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	21-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	24-11-2025 & 27-11-2025		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	27-11-2025		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	2	28-11-2025 & 01-12-2025		TLM1	

8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	04-12-2025		TLM1	
9.	Revision and assignment	1	04-12-2025		TLM1	
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V: INSTRUMENTAL METHODS AND APPLICATIONS

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.	Electromagnetic spectrum	1	05-12-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	08-12-2025		TLM1	
3.	UV-Visible Spectroscopy	1	11-12-2025		TLM1	
4.	electronic transition, Instrumentation	1	11-12-2025		TLM1	
5.	IR spectroscopy, fundamental modes	1	12-12-2025		TLM1	
6.	selection rules, Instrumentation	1	15-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	18-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	18-12-2025 & 19-12-2025		TLM1	
9.	Revision and assignment	1	22-12-2025		TLM1	
No. of classes required to complete UNIT-V: 10				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

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.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	26-12-2025		TLM1	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr. Lakshmi V R Babu Syamala**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

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DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Lakshmi V R Babu Syamala & Dr. V.Parvathi
Course Name & Code : Chemistry Lab & 23FE52
L-T-P Structure : **0-0-3** **Credits: 1.5**
Program/Sem/Sec : I B.Tech./I Sem/AI&ML-A **A.Y. :** 2025-26

Pre requisites: Nil

Course Educational Objective:

- To enable the students to perform different types of volumetric titrations.
- It provides an overview of preparation of polymers, nanomaterials and analytical techniques.

Course Outcomes: At the end of the course, the students will be able to

CO1: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus. (**Analyze**)

CO2: Acquire practical knowledge related to preparation of Bakelite and nanomaterials. (**Apply**)

CO3: Measure the strength of acid present in Pb-Acid battery. (**Apply**)

CO4: Analyze important parameters of water to check its suitability for drinking purpose and industrial applications. (**Analyze)**

CO5: Improve individual / teamwork skills, communication and report writing skills with ethical values. (**Apply**)

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	1	2	-	-	-	-	-
CO2	3	-	1	-	-	2	1	-	-	-	-	-
CO3	3	2	1	-	-	-	2	-	-	-	-	-
CO4	3	1	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	2	-	-	-	-	-	-	-
1 = Slight (Low)				2 = Moderate (Medium)				3 = Substantial (High)				

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): AI&ML-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to Chemistry lab, CO's, PO's	3	23-08-2025		TLM1	CO1	
2.	Explanation of chemicals and glassware	3	30-08-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	06-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	13-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	20-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	27-09-2025		TLM4	CO3	
7.	Alkalinity of water sample	3	11-10-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	18-10-2025		TLM4	CO1	
9.	Estimation of Ferrous ion by Dichrometry	3	01-11-2025		TLM4	CO4	
10.	Estimation of total hardeness of given water sample	3	08-11-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	15-11-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	22-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	29-11-2025		TLM4	CO1	
14.	Additional experiment-Virtual Lab	3	06-12-2025		TLM4	CO3	
15.	Additional experiment-Beyond the syllabus	3	13-12-2025		TLM4	CO4	
16.	Internal Exam	3	20-12-2025 & 27-12-2025		TLM4		
	Total						

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:

According to Academic Regulations of R20 Distribution and Weightage of Marks for Laboratory Courses is as follows.

(a) Continuous Internal Evaluation(CIE):

- ✓ The continuous internal evaluation for laboratory course is based on the following parameters:

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

PROGRAMME OUTCOMES (POs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr. Lakshmi V R Babu Syamala**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Samaikya
Course Name & Code : Communicative English Lab, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech (CSM-A) I SEM
A.Y. : 2025-26

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

List of Activities:

1. Vowels& Consonants

2. Neutralization/ Accent Rules

3. Communication Skills: JAM

4. Roleplay or Conversational Practice

5. E-mail Writing

6. Resume writing, Cover letter, SOP

7. Group Discussions - methods & Practice

8. Debates – Methods and practice

9. PPT Presentations & Poster Presentations

10. Interview Skills

Suggested Software:

1. Walden

2. Young India Films

Reference Books:

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

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	20-08-2025		TLM4	
2.	Self Introduction & Introducing others	03	03-09-2025		TLM4	
3.	Vowels & Consonants	06	10-09-2025 17-09-2025		TLM1, TLM5	
4.	Neutralization / Accent rules	03	24-09-2025		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	08-10-2025		TLM4	

6.	Role Play-I(Formal and Informal)	06	15-10-2025 29-10-2025		TLM4	
7.	E-mail Writing, resume writing, Cover letter, SOP	06	05-11-2025 12-11-2025		TLM1, TLM5	
8.	Group Discussion	03	19-11-2025		TLM4, TLM6	
9.	Debate	03	26-11-2025		TLM4, TLM6	
10.	PPT & Poster Presentation	06	03-12-2025 10-12-2025		TLM2, TLM4	
11.	Mock Interviews	03	17-12-2025		TLM1, TLM6	
12.	Lab Internal Exam	03	24-12-2025			
No. of classes required to complete Syllabus: 48				**No. of classes taken:**		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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PO 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.
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PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs. K. Samaikya**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., AIML-A
ACADEMIC YEAR	**:** 2025-26
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 4-1-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Dr. K.Bhanu Lakshmi
COURSE COORDINATOR	**:** Dr. K.Bhanu Lakshmi
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 conceptto find nature of quadratic form, inverse and powers of matrix – **L3**

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

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

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED REFERENCE BOOKS:

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

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

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

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

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	04-08-2025To 16-08-2025	04-08-2025To 16-08-2025	TLM1			
2.	Introduction to the course	1	18-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	19-08-2025		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	20-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	21-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	22-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	25-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	26-08-2025		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	28-08-2025		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	29-08-2025		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	01-09-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	02-09-2025		TLM1	CO1	T1,T2	
13.	**TUTORIAL I**	1	03-09-2025		TLM3	CO1	T1,T2	
14.	Non-Homogeneous System of Equations	1	04-09-2025		TLM1	CO1	T1,T2	
15.	Gauss Elimination Method	1	05-09-2025		TLM1	CO1	T1,T2	
16.	Jacobi Iteration Method	1	08-09-2025		TLM1	CO1	T1,T2	
17.	Jacobi Iteration Method	1	09-09-2025		TLM1	CO1	T1,T2	
18.	**TUTORIAL II**	1	10-09-2025		TLM3	CO1	T1,T2	
19.	Gauss-Seidel Method	1	11-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		20			No. of classes taken:			

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

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

27.	Cayley-Hamilton Theorem	1	23-09-2025		TLM1	CO2	T1,T2	
28.	**TUTORIAL IV**	1	24-09-2025		TLM3	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	25-09-2025		TLM1	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	26-09-2025		TLM1	CO2	T1,T2	
31.	Diagonalization of a matrix	1	06-10-2025		TLM1	CO2	T1,T2	
32.	Diagonalization of a matrix	1	07-10-2025		TLM1	CO2	T1,T2	
33.	**TUTORIAL V**	1	08-10-2025		TLM3	CO2	T1,T2	
34.	Quadratic Forms, Nature of Quadratic Forms	1	09-10-2025		TLM1	CO2	T1,T2	
35.	Quadratic Forms, Nature of Quadratic Forms	1	10-10-2025		TLM1	CO2	T1,T2	
36.	Reduction of Quadratic form to Canonical form	1	13-10-2025		TLM1	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
38.	**TUTORIAL VI**	1	15-10-2025		TLM3	CO2	T1,T2	
39.	Orthogonal Transformation	1	16-10-2025		TLM1	CO2	T1,T2	
40.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		20			No. of classes taken:			

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

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
41.	Introduction to Unit III	1	27-10-2025		TLM1	CO3	T1,T2	
42.	Mean Value theorem	1	28-10-2025		TLM1	CO3	T1,T2	
43.	Rolle's theorem	1	29-10-2025		TLM1	CO3	T1,T2	
44.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	31-10-2025		TLM1	CO3	T1,T2	
46.	Lagrange's mean value theorem	1	03-11-2025		TLM1	CO3	T1,T2	
47.	Cauchy's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
48.	**TUTORIAL VII**	1	05-11-2025		TLM3	CO3	T1,T2	
49.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
50.	Taylor's theorem	1	07-11-2025		TLM1	CO3	T1,T2	
51.	Taylor's theorem	1	10-11-2025		TLM1	CO3	T1,T2	
52.	Maclaurin's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
53.	**TUTORIAL VIII**	1	12-11-2025		TLM3	CO3	T1,T2	
54.	Maclaurin's theorem	1	13-11-2025		TLM1	CO3	T1,T2	
55.	Problems and applications	1	14-11-2025		TLM1	CO3	T1,T2	
No. of classes required to complete UNIT-III		15			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
56.	Introduction to Unit IV	1	17-11-2025		TLM1	CO4	T1,T2	
57.	Functions of several variables, Continuity and Differentiability	1	18-11-2025		TLM1	CO4	T1,T2	
58.	**TUTORIAL IX**	1	19-11-2025		TLM3	CO4	T1,T2	
59.	Partial Derivatives	1	20-11-2025		TLM1	CO4	T1,T2	
60.	Total derivatives, Chain rule, Directional Derivative	1	21-11-2025		TLM1	CO4	T1,T2	
61.	Taylor's Series expansion	1	24-11-2025		TLM1	CO4	T1,T2	
62.	Maclaurin's series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
63.	**TUTORIAL X**	1	26-11-2025		TLM3	CO4	T1,T2	
64.	Jacobian	1	27-11-2025		TLM1	CO4	T1,T2	
65.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
66.	Functional Dependence	1	01-12-2025		TLM1	CO4	T1,T2	
67.	Maxima and Minima	1	02-12-2025		TLM1	CO4	T1,T2	
68.	**TUTORIAL XI**	1	03-12-2025		TLM3	CO4	T1,T2	
69.	Lagrange Multiplier Method	1	04-12-2025		TLM1	CO4	T1,T2	
70.	Lagrange Multiplier Method	1	05-12-2025		TLM1	CO4	T1,T2	
No. of classes required to complete UNIT-IV		15			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
71.	Introduction to Unit-V	1	08-12-2025		TLM1	CO5	T1,T2	
72.	Double Integrals - Cartesian coordinates	1	09-12-2025		TLM1	CO5	T1,T2	
73.	**TUTORIAL XII**	1	10-12-2025		TLM3	CO5	T1,T2	
74.	Double Integrals- Polar co ordinates	1	11-12-2025		TLM1	CO5	T1,T2	
75.	Triple Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
76.	Triple Integrals - Spherical coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
77.	**TUTORIAL XIII**	1	17-12-2025		TLM3	CO5	T1,T2	
78.	Change of order of Integration	1	18-12-2025		TLM1	CO5	T1,T2	
79.	Change of order of Integration	1	19-12-2025		TLM1	CO5	T1,T2	
80.	Change of variables	1	22-12-2025		TLM1	CO5	T1,T2	
81.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	

82.	**TUTORIAL XIV**	1	24-12-2025		TLM3	CO5	T1,T2	
83.	Finding Volume by double and triple Integral	1	26-12-2025		TLM1	CO5	T1,T2	
No. of classes required to complete UNIT-V		13			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
84.	Other applications of double integral	1	15-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 03-01-2025)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

Dr. K. Bhanu Lakshmi	**Dr. K. Bhanu Lakshmi**	**Dr. A. Rami Reddy**	**Dr.T.Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING(AI & ML)

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. Sivanagaraju Vallabhuni
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech./I Sem./A Sec. A.Y.: 2025-26
PRE-REQUISITE: : Mathematics, Basic Computer concepts

COURSE EDUCATIONAL OBJECTIVE (CEO):

- To introduce students to the fundamentals of computer programming.
- To provide hands-on experience with coding and debugging.
- To foster logical thinking and problem-solving skills using programming.
- To familiarize students with programming concepts such as data types, control structures, functions, and arrays.
- To encourage collaborative learning and teamwork in coding projects

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

CO1:	Understand basics of computers, concept of algorithms and flowcharts.	Understand – L2
CO2:	Understand the features of C language.	Understand – L2
CO3:	Interpret the problem and develop an algorithm to solve it.	Apply – L3
CO4:	Implement various algorithms using the C programming language.	Apply – L3
CO5:	Develop skills required for problem-solving and optimizing the code.	Apply – L3

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

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

TEXTBOOKS:

T1: The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall, 1988, Edition, 2015.

T2: Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill Education, 1996.

REFERENCE BOOKS:

R1: Computing fundamentals and C Programming, Balagurusamy, E., McGraw-Hill Education, 2008.

R2: Programming in C, Reema Thareja, Oxford, 2016, 2nd edition.

R3: C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad,CENGAGE, 3rd edition

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: Introduction to Programming and Problem Solving

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.	Discussion of CEO's and CO's	1	19-08-2025		TLM1	
2.	History of Computers	1	20-08-2025		TLM1	
3.	Basic organization of a computer: ALU, input-output units.	2	21-08-2025 22-08-2025		TLM1 TLM1	
4.	Memory, program counter	1	23-08-2025		TLM1	
5.	Introduction to Programming Languages,	1	25-08-2025		TLM1	
6.	Basics of a Computer Program-Algorithms	1	26-08-2025		TLM1	
7.	Flowcharts (Using Dia Tool), pseudo code.	1	28-08-2025		TLM1	
8.	Introduction to Compilation and Execution	1	29-08-2025		TLM1	
9.	Primitive Data Types	2	30-08-2025 02-09-2025		TLM1 TLM1	
10.	Variables, and Constants, Basic Input and Output operations	1	03-09-2025		TLM1	
11.	Type Conversion, and Casting	1	04-09-2025		TLM1	
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	05-09-2025		TLM1	
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	06-09-2025		TLM1	
14.	Time and space complexities of algorithms.	1	09-09-2025		TLM1	
No. of classes required to complete UNIT – I: 16				**No. of classes taken:**		

UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs Conditional Statements	1	10-09-2025		TLM1	
16.	if, if-else	1	11-09-2025		TLM1	
17.	Else-if ladder, nested if	1	12-09-2025		TLM1	
18.	Switch, sample programs	1	13-09-2025		TLM1	
19.	Example programs on DecisionMaking and Branching	2	16-09-2025 17-09-2025		TLM1 TLM1	
20.	Loops: while , Example programs	2	18-09-2025 19-09-2025		TLM1 TLM1	
21.	Loops: do-while, Example programs	1	20-09-2025		TLM1	
22.	Loops: for, Example programs	1	23-09-2025		TLM1	
23.	Break , Example programs	1	24-09-2025		TLM1	
24.	Continue, Example programs	1	25-09-2025		TLM1	
25.	Goto Example programs	1	26-09-2025		TLM1	
26.	Example programs on loops	1	27-09-2025		TLM1	
27.	Example programs on loops	1	07-10-2025		TLM1	
28.	Revision	1	08-10-2025		TLM1	
No. of classes required to complete UNIT – II: 16				**No. of classes taken:**		

UNIT – III: Arrays and Strings

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.	Arrays Introduction, Declaration	1	09-10-2025		TLM1	
30.	Array indexing, Accessing elements	1	10-10-2025		TLM1	
31.	memory model	1	11-10-2025		TLM1	
32.	programs with array of integers	1	14-10-2025		TLM1	
33.	Introduction to two dimensional arrays	1	15-10-2025		TLM1	
34.	2D Array indexing, Accessing elements	1	16-10-2025		TLM1	
35.	programs with 2D arrays	1	17-10-2025		TLM1	
36.	Introduction to Strings	1	18-10-2025		TLM1	
37.	Reading and Writing Operations on Strings	1	28-10-2025		TLM1	
38.	String Handling Functions	1	29-10-2025		TLM1	
39.	Example Programs using Strings	1	30-10-2025		TLM1	
40.	Revision	1	31-10-2025		TLM1	
No. of classes required to complete UNIT – III: 12				**No. of classes taken:**		

UNIT – IV: Pointers & User Defined Data types

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Introduction to Pointers	1	04-11-2025		TLM1	
42.	dereferencing and address operators	1	05-11-2025		TLM1	
43.	pointer and address arithmetic	1	06-11-2025		TLM1	
44. 45.	array manipulation using pointers	2	7-11-2025 8-11-2025		TLM1	
46.	User-defined data types	1	11-11-2025		TLM1	
47. 48.	Structures, Definition and Initialization	2	12-11-2025 13-11-2025		TLM1 TLM1	
49.	Example programs	1	14-11-2025		TLM1	
50. 51.	Unions	2	15-11-2025 18-11-2025		TLM1 TLM1	
52.	Example programs	1	19-11-2025		TLM1	
53.	Revision	1	20-11-2025		TLM1	
No. of classes required to complete UNIT – IV: 13				**No. of classes taken:**		

UNIT – V: Functions and File Handling

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
54.	Introduction to Functions	1	21-11-2025		TLM1	
55.	Function Declaration and Definition	1	22-11-2025		TLM1	
56.	Function call Return Types	1	25-11-2025		TLM1	
57.	Arguments	1	26-11-2025		TLM1	
58. 59.	modifying parameters inside functions using pointers	2	27-11-2025 28-11-2025		TLM1 TLM1	
60.	arrays as parameters	1	29-11-2025		TLM1	
61.	Scope and Lifetime of Variables	1	02-12-2025		TLM1	
62.	Storage classes examples	1	03-12-2025		TLM1	
63.	Introduction to Files	1	04-12-2025		TLM1	
64.	Basics of File Handling	1	05-12-2025		TLM1	
65.	Basics of File Handling examples	1	06-12-2025		TLM1	
66.	Operations on Files	1	09-12-2025		TLM1	
67.	Operations on Files examples	1	10-12-2025		TLM1	
68.	Revision	1	11-12-2025		TLM1	
No. of classes required to complete UNIT – V: 15				**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	HOD Sign Weekly
69.	Number based real time problems	1	12-12-2025		TLM1	
70.	Number based real time problems	1	13-12-2025		TLM1	
71.	Control structures real time problems	1	16-12-2025		TLM1	
72.	Control structures real time problems	1	17-12-2025		TLM1	
73.	Array based real time examples	1	18-12-2025		TLM1	
74.	Array based real time examples	1	19-12-2025		TLM1	
75.	Pattern based problems	1	20-12-2025		TLM1	
76.	String real world examples	1	23-12-2025		TLM1	
77.	Introduction to Data structures	1	24-12-2025		TLM1	

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): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**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.
PO3	**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.
PO4	**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.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
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PO7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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PO9	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**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.
PO11	**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.
PO12	**Life-long learning**: Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. Sivanagaraju Vallabhuni	Dr. M. Srinivasrao	Dr. Y. V. B. Reddy	Dr. S. Jayaprada
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING(AI & ML)

COURSEHANDOUT

PART-A

Name of Course Instructor : Mr. Sivanagaraju Vallabhuni

Course Name & Code : Computer Programming Lab (23CS51)

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

Program/Sem/Sec : B.Tech.–CSE(AI &ML) /I-Sem/A A.Y. :2025-26

PRE-REQUISITE: Fundamentals of Mathematics.

COURSE EDUCATIONAL OBJECTIVE (CEO): The course aims to give students hands – on experience and train them on the concepts of the C- programming language.

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

CO1:	Read, understand, and trace the execution of programs written in C language. (Understand)	Apply–Level2
CO2:	Select the right control structure for solving the problem. (Apply)	Apply–Level3
CO3:	Develop C programs which utilize memory efficiently using programming constructs like pointers. (Apply)	Apply–Level3
CO4:	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (Apply).	Apply–Level3
CO5:	Improve individual / teamwork skills, communication and report writing skills with ethical values.	Apply–Level3

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	-	-	3	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO4	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-
1 –Low								**2** –Medium					**3**– High		

PART-B

COURSE DELIVERY PLAN -LESSONPLAN:

S No.	Programs to be covered	No. of Classes		Actual Date of Completion	Delivery Method	HOD Sign.
		Required as per the Schedu le	Tentative Date of Completion			
1.	Week1: Familiarization with programming environment	03	19-08-2025		TLM4	
2.	Week2: Problem-solving using Algorithms and Flow charts.	03	26-08-2025		TLM4	
3.	Week3: Exercise Programs on Variable types and type conversions	03	02-09-2025		TLM4	
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03	09-09-2025		TLM4	
5.	Week5: Exercise Programs on Branching and logical expressions	03	16-09-2025		TLM4	
6.	Week6: Exercise Programs on Loops, while and for loops	03	23-09-2025		TLM4	
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03	07-10-2025		TLM4	
8.	Week8: ExerciseProgramson2 D arrays, sorting and Strings.	03	14-10-2025		TLM4	
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03	28-10-2025		TLM4	
10.	Week10: Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03	04-11-2025		TLM4	
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03	11-11-2025		TLM4	
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03	18-11-2025		TLM4	
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03	25-11-2025		TLM4	
14.	Week 14: Exercise Programs on File handling.	03	02-12-2025		TLM4	
15.	Lab Internal Test	03	09-12-2025		TLM4	

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

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. Sivanagaraju Vallabhuni	Dr. M. Srinivasarao	Dr. Y.Vijay Bhaskar Reddy	Dr. S. Jayaprada
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: P. KEERTHI

Course Name & Code : Basic Civil and Mechanical Engineering & 23CM01

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

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

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- Get familiarized with the scope and importance of Civil Engineering sub-divisions.
- Introduce the preliminary concepts of surveying.
- Acquire preliminary knowledge on Transportation and its importance in nation's economy.
- Get familiarized with the importance of quality, conveyance and storage of water.
- Introduction to basic civil engineering materials and construction techniques.

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

CO1:	Describe various sub-divisions of Civil Engineering and to appreciate their role in societal development. **(Understand)**
CO2:	Outline the concepts of surveying and obtain the theoretical measurement of distances, angles and levels through surveying. **(Understand)**
CO3:	Classify the various materials used in construction and highway engineering and identify their appropriate usage as per the needs. **(Understand)**
CO4:	Illustrate the fundamental principles involved in transportation network system, their individual components and their engineering importance. **(Understand)**
CO5:	Explain the quality parameters of various water sources and functions of selected water storage and conveyance structures. **(Understand)**

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

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

Textbooks:

1. Basic Civil Engineering, M.S.Palanisamy, , Tata Mcgraw Hill publications (India) Pvt. Ltd. Fourth Edition.
2. Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers. 2022. First Edition.
3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

Reference Books:

1. Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019. Fifth Edition.
2. Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi. 2016
3. Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023. 38th Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10th Edition.
5. Indian Standard DRINKING WATER — SPECIFICATION IS 10500-2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

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 CO's & PO's, Subject	1	18-08-2025		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	20-08-2025		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	22-08-2025		**TLM2**	
4.	Geo-technical Engineering-Transportation Engineering	1	23-08-2025		**TLM2**	
5.	Hydraulics and Water Resources Engineering	1	25-08-2025		**TLM2**	
6.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	29-08-2025		**TLM2**	
7.	Construction Materials-Cement -types	1	30-08-2025		**TLM2**	
8.	Aggregate types- Bricks-classifications	1	01-09-2025		**TLM2**	
9.	Steel-properties - types Cement concrete- Applications	1	03-09-2025		**TLM2**	
10.	Introduction to Prefabricated construction Techniques, Over view-Prefabricated construction	1	05-09-2025		**TLM2**	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: Surveying

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.	Objectives of Surveying, Horizontal Measurements	1	06-09-2025		**TLM2**	
2.	Angular Measurements, Compass survey	1	08-09-2025		**TLM2**	
3.	Introduction to Bearings,	1	10-09-2025		**TLM2**	
4.	Simple problems on bearings	1	12-09-2025		**TLM2**	
5.	Levelling introduction-	1	15-09-2025		**TLM2**	
6.	Practice problems	1	17-09-2025		**TLM2**	
7.	Levelling instruments used for levelling	1	19-09-2025		**TLM1**	
8.	Practice problems	1	20-09-2025		**TLM1**	
9.	Practice problems	1	22-09-2025		**TLM2**	
10.	Contour mapping	1	24-09-2025		**TLM2**	
No. of classes required to complete UNIT-II: 10				**No. of classes taken:**		

UNIT-III: Transportation Engineering & Water Resources and Environmental Engineering

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.	Transportation Engineering Importance of Transportation in Nation's economic development	1	26-09-2025		**TLM2**	
2.	Types of Highway Pavements	1	27-09-2025		**TLM2**	
3.	Basics of Harbour, Tunnel	1	06-10-2025		**TLM2**	
4.	Basics of Airport, Railway Engineering	1	08-10-2025		**TLM2**	
5.	Water Resources and Environmental Engineering Introduction	1	10-10-2025		**TLM2**	
6.	Sources of water, Quality of water-Specifications	1	13-10-2025		**TLM2**	
7.	Introduction to Hydrology	1	15-10-2025		**TLM2**	
8.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	17-10-2025		**TLM2**	
9.	Simple introduction to Dams and Reservoirs	1	18-10-2025		**TLM2**	
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

Teaching Learning Methods

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyse 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**	**Head of the Department**
Name of the Faculty	**P. Keerthi**	**B. Ramakrishna**	**Dr. K.V.Ramana**
Signature			

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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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 COMPUTER SCIENCE AND ENGINEERING (AI &ML)

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Siva Sankra Babu Chinka
Course Name & Code : BC&ME, 23CM01, PART-B
L-T-P Structure : 4-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech/I-Sem/CSE (AI&ML) **A-Sec** **A.Y.: 2025-26**
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	PO10	PO11	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:

BOS APPROVED TEXT BOOKS:

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

BOS APPROVED 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: Introduction to Mechanical Engineering & Engineering Materials

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,CEO's & CO's	1	27-10-2025		TLM1	
2.	Role of Mechanical Engineering in Industries and Society	1	29-10-2025		TLM1	
3.	Technologies in different sectors such as Energy.	1	31-10-2025		TLM1,2	
4.	Technologies in different sectors such as Manufacturing.	1	01-11-2025		TLM1,2	
5.	Technologies in different sectors such as Automotive.	1	03-11-2025		TLM1,2	
6.	Technologies in different sectors such as Aerospace, and Marine sectors.	1	05-11-2025		TLM1,2	
7.	Engineering Materials - Metals	1	07-11-2025		TLM1,2	
	Beyond Syllabus: Properties of materials	1	07-11-2025		TLM1	
8.	Ferrous Metals	1	08-11-2025		TLM1,2	
9.	Non-ferrous Metals	1	10-11-2025		TLM1	
10.	Ceramics.	1	12-11-2025		TLM1	
11.	Composites.	1	14-11-2025		TLM1	
12.	Smart materials.	1	15-11-2025		TLM1	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: Manufacturing Processes &Thermal Engineering

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	17-11-2025		TLM1	
14.	Principles of Casting, Forming	1	19-11-2025		TLM1	
15.	Joining processes, Machining	1	21-11-2025		TLM2	
16.	Introduction to CNC machines,	1	22-11-2025		TLM2	
17.	3D printing, and Smart manufacturing.	1	24-11-2025		TLM2	
18.	Thermal Engineering- Working principle of Boilers	1	26-11-2025		TLM1	
19.	**Beyond Syllabus: Laws of Thermodynamics**	1	26-11-2025		TLM1	
20.	Working principle of Boilers	1	28-11-2025		TLM2	
21.	Otto cycle, Diesel cycle	1	29-11-2025		TLM1	
22.	Refrigeration and air-conditioning cycles	1	01-12-2025		TLM1	
23.	IC engines	1	03-12-2025		TLM2	
24.	2-Stroke and 4-Stroke engines	1	05-12-2025		TLM1	
25.	SI/CI Engines	1	06-12-2025		TLM1	
26.	Components of Electric and Hybrid Vehicles.	1	08-12-2025		TLM2	
No. of classes required to complete UNIT-II: 14				No. of classes taken:		

UNIT-III: Power plants, Mechanical Power Transmission, Introduction to Robotics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Power plants – Working principle of Steam power plants, Diesel power plants	1	10-12-2025		TLM1	
28.	Power plants – Working principle of Hydro power plants	1	12-12-2025		TLM1	
29.	Power plants – Working principle of nuclear power plants	1	13-12-2025		TLM1	
30.	**Beyond Syllabus: Working principle of Solar power plants**	1	10-10-2025		TLM1	
31.	Mechanical Power Transmission - Belt Drives		17-12-2025		TLM1	
32.	Chain drives, Rope drives.		19-12-2025		TLM1	
33.	Gear Drives and their applications.		20-12-2025		TLM1	
34.	Introduction to Robotics- Joints & links		22-12-2025		TLM1, 2	
35.	Robotic Configurations	1	24-12-2025		TLM2	
36.	Robotics applications of robotics.		26-12-2025		TLM1,2	
37.	Revision	1	27-12-2025		TLM2	
II-Mid Exams			**29-12-2025 to 03-12-2025**			
No. of classes required to complete UNIT-III: 11				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

Signature				
Name of the Faculty	**Dr. CH.Siva Sankara Babu**	**Dr. CH.Siva Sankara Babu**	**Dr. P. Vijaya Kumar**	**Dr.M.B.S.Sreekara Reddy**
Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**

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DEPARTMENT OF CSE(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.Rajendra Prasad Banavathu
Course Name & Code : IT Workshop Lab &23IT51
L-T-P Structure : 0-0-2 **Credits:**1
Program/Sem/Sec : B.Tech - A/I/A **A.Y.:**2025-26

PREREQUISITE :NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the student will learn.

- To introduce the internal parts of a computer ,peripherals, I/O ports, connecting cables
- To demonstrate configuring the systems Dual boot both Windows and other Operating Systems Viz. Linux , BOSS.
- To teach basic command line interface commands on Linux.
- To teach the usage of Internet for productivity and self-paced life-long learning
- To introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools.

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, 3rdedition.
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.	Peripherals of a computer	3	18-08-2025		DM5	
2.	Disassemble and Assemble the PC	3	25-08-2025		DM5	
3.	Instal MS WINDOWS Operating System	3	01-09-2025		DM5	
4.	Instal LINUX Operating System	3	08-09-2025		DM5	
5.	Instal BOSS Operating System	3	15-09-2025		DM5	
Internet & World Wide Web						
6.	Orientation & connectivity Boot Camp	3	22-09-2025		DM5	
7.	Web Browsers and Surfing the Web	3	29-09-2025		DM5	
8.	Search Engines	3	06-10-2025		DM5	
9.	Cyber Hygiene	3	13-10-2025		DM5	
LaTeX and WORD						
10.	Word orientation	3	20-11-2025		DM5	
11.	Creating a Certificate	3	27-11-2025		DM5	
12.	Creating project abstract features	3	03-11-2025		DM5	
13.	Creating News Latter	3	10-11-2025		DM5	
EXCEL						

14.	Excel orientation	3	17-11-2025		DM5	
15.	Calculating GPA	3	24-11-2025		DM5	
LOOKUP/VLOOKUP						
16.	H LOOKUP-V LOOKUP	3	01-12-2025		DM5	
POWER POINT						
17.	PPT Basics	3	08-12-2025		DM5	
18.	Interactive Presentations	3	15-12-2025		DM5	
19.	Master Layouts	3	22-12-2025		DM5	
AI TOOLS – ChatGPT						
20.	Prompt Engineering	3	29-12-2025		DM5	
21.	Creative writing	3	01-12-2025		DM5	
22.	Language Translation	3	13-12-2025		DM5	
23.	Internal exam	3	13-12-2025		DM5	

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

PART-C

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 Analyse 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	Dr.B.Rajendra Prasad	Mr.N. Srikanth	Dr. D. Venkata Subbaiah	Dr. D. Jayaprada
Signature				

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

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

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	19-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	22-08-2025 26-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	28-08-2025 29-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	02-09-2025 04-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	05-09-2025 09-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	11-09-2025 12-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 12						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	02	16-09-2025 18-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	19-09-2025 23-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	25-09-2025 07-10-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	01	09-10-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	02	10-10-2025 14-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	02	16-10-2025 17-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 11						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	Text Book followed	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	28-10-2025 30-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	31-10-2025 04-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	06-11-2025 07-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	11-11-2025 13-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	14-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	18-11-2025 20-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	21-11-2025 25-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	27-11-2025 28-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	02-12-2025 04-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	05-12-2025		TLM2 TLM5	CO4	T1,T2	

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

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	01	09-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	11-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	12-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	16-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	18-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 05						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Word Analogy**	01	19-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	23-12-2025		TLM2 &5	
3.	**Technical vocabulary**		26-12-2025		TLM2 &5	
No. of classes required to complete UNIT-V:				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMANENGINEERING(AI&ML)

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. V.Parvathi
Course Name & Code **:**Chemistry & 23FE02
L-T-P Structure **:3-0-0** **Credits:03**
Program/Sem/Sec : B.Tech/I sem/ CSM-B **A.Y. :**2025-26

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions.
- To strengthen the basic concepts of bonding models, advanced engineering materials, electrochemistry, batteries and polymers.
- To introduce instrumental methods and their applications.

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

CO1	Understand the fundamentals of quantum mechanics and molecular orbital energydiagrams for molecules(Understand)
CO2	Summarize the suitability of advanced materials like semiconductors,superconductors, super capacitors and nano materials, in advanced fields(Understand)
CO3	Apply Nernst equation in calculating cell potentials and understand conductometric,potentiometric titrations, electrochemical sensors and compare batteries for differentapplications(Understand)
CO4	Outline the importance of polymers and conducting polymers in advancedtechnologies(Understand)
CO5	Understand the fundamentals of UV-Visible, IR spectroscopic techniques and basicprinciples of chromatographic techniques(Understand)

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

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	-	-	-	1
CO2	3	2	2	2	-	2	2	-	-	-	-	2
CO3	3	3	2	2	-	2	2	-	-	-	-	2
CO4	3	2	2	2	-	2	2	-	-	-	-	2
CO5	3	2	1	1	-	-	-	-	-	-	-	1
1 = Slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, DhanpatRai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference: Books:

1. Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
2. J.D. Lee, Concise Inorganic Chemistry, 5th Edition, Wiley Publications, Feb.2008
3. Textbook of Polymer Science, Fred W. Billmayer Jr, 3rd Edition

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: STRUCTURE AND BONDING MODELS

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.	Bridge Course	1	18 -08-2025		TLM1	
2.		1	20-08-2025		TLM1	
3.		1	21-08-2025		TLM1	
4.		1	22-08-2025		TLM1	
5.	Fundamentals Of Quantum Mechanics	1	25-08-2025		TLM1	
6.	Fundamentals Of Quantum Mechanics	1	28-08-2025		TLM1	
7.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules	1	29-08-2025		TLM1	
8.	Practice of examples	1	01-09-2025		TLM1	
9.	Practice of examples	1	03-09-2025		TLM1	
10	Energy level diagrams of O_2 and CO	1	04-09-2025		TLM1	
11	Practice of examples	1	05-09-2025		TLM1	
12	π-molecular orbitals of butadiene	1	08-09-2025		TLM1	
13	π-molecular orbitals of benzene	1	10-09-2025		TLM1	
14	π-molecular orbitals of benzene cond … with practice	1	11-09-2025		TLM1	
15	Schrodinger Wave Equation & Significance of Ψ and Ψ^2	1	12-09-2025		TLM1	
16	Particle In one dimensional box	1	15-09-2025		TLM1	
17	Revision of unit 1	1	17-09-2025		TLM1	
No. of classes required to complete UNIT-I: 17				No. of classes taken:		

UNIT-II: MODERN ENGINEERING MATERIALS

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.	Semiconductors - Introduction	1	18-09-2025		TLM1	
2.	Semiconductors - Basic concept&applications	1	19-09-2025		TLM1	
3.	Super conductors - Introduction	1	22-09-2025		TLM1	
4.	Super conductors - Basic concept&applications	1	24-09-2025		TLM1	
5.	Supercapacitors - Introduction	1	25-09-2025		TLM2	
6.	Supercapacitors - Basic concept- classification	1	26-09-2025		TLM2	
7.	Cont… Clasiification	1	06-10-2025		TLM2	
8.	Applications of super capacitors.	1	08-10-2025		TLM2	
9.	Nano materials - Introduction	1	09-10-2025		TLM2	
10.	Nano materials - classification	1	10-10-2025		TLM2	
11.	Nano materials - properties and applications of fullerenes	1	13-10-2025		TLM2	
12.	Nano materials - carbon nano tubes and graphene nanoparticles	1	15-10-2025		TLM2	
13.	Revision of unit 2	1	16-10-2025		TLM2	
14.	Introductions of Mid-I	1	17-10-2025			
No.of classes required to complete UNIT-II: 14				No. of classes taken:		

UNIT-III: ELECTROCHEMISTRY AND APPLICATIONS

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.	Mid I Analysis	1	27-10-2025		TLM2	
2.	Electrochemical cell and basic concepts of electrochemistry.	1	29-10-2025		TLM1	

3.	Cell potential calculations and numerical problems	1	30-10-2025		TLM1	
4.	Continue...numerical problems.	1	31-10-2025		TLM1	
5.	Potentiometry-potentiometric titrations (redox titrations)	1	03-11-2025		TLM1	
6.	Concept of conductivity, conductivitycell,conducto metric titrations (acid-base titrations)	1	05-11-2025		TLM1	
7.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	06-11-2025		TLM1	
8.	Primary cells – Zinc-air battery, Secondary cells – - working of the batteries including cell reactions	1	07-11-2025		TLM1	
9.	lithium-ion batteries working of the batteries including cell reactions	1	10-11-2025		TLM1	
10.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells, Polymer electrolyte membrane fuel cells (PEMFC)	1	12-11-2025		TLM1	
11.	Practise of making and cell reactions of above batteries.	1	13-11-2025		TLM1	
12.	Nernst equation and problems	1	14-11-2025		TLM1	
No.of classes required to complete UNIT-III: 12				No. of classes taken:		

UNIT-IV: POLYMER CHEMISTRY

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 polymers, functionality of monomers	1	17-11-2025		TLM1	
2.	Thermo and Thermosetting plastics, types of polymerisation with examples.	1	19-11-2025		TLM1	
3.	Mechanisms of addition polymerisation	1	20-11-2025		TLM1	
4.	Mechanism of step growth polymerization.		21-11-2025			
5.	Mechanism coordination polymerization, with specific example.	1	24-11-2025		TLM1	

6.	Preparation, properties and applications of – PVC, Teflon.	1	26-11-2025		TLM1	
7.	Preparation, properties and applications of Nylon-6,6, carbon fibres	1	27-11-2025		TLM1	
8.	Preparation, properties and applications of Bakelite,	1	28-11-2025		TLM1	
9.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	01-12-2025		TLM1	
10.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	03-12-2025		TLM1	
11.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	04-12-2025		TLM1	
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V: INSTRUMENTAL METHODS AND APPLICATIONS

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.	Electromagnetic spectrum	1	05-12-2025		TLM2	
2.	Absorption of radiation: Beer-Lambert's law	1	08-12-2025		TLM2	
3.	UV-Visible Spectroscopy	1	10-12-2025		TLM2	
4.	electronic transition, Instrumentation	1	11-12-2025		TLM2	
5.	IR spectroscopies, fundamental modes	1	12-12-2025		TLM2	
6.	selection rules, Instrumentation of IR spectroscopy	1	15-12-2025		TLM2	
7.	Applications of IR spectroscopy	1	17-12-2025		TLM2	
8.	Chromatography-Basic Principle	1	18-12-2025		TLM2	
9	Classification-HPLC: Principle, Instrumentation and Applications	1	19-12-2025		TLM1	
10	Cont… chromatography	1	22-12-2025		TLM1	
No. of classes required to complete UNIT-V: 10				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

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.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	24-12-2025		TLM2	
2	Applications of polymers in advanced technologies .	1	26-12-2025		TLM2	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II)	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 engineeringproblems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics 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 appropriateconsiderationforthepublichealthandsafety,andthecultural,societal,andenviron mentalconsiderations.
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 theinformation to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modernengineering 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, beingable to comprehend andwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgivean dreceiveclear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of theengineeringandmanagementprinciplesandapplythesetoone'sownwork,asamemberandle aderinateam, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. V.Parvathi**	**Dr.V.Parvathi**	**Dr.V.Parvathi**	**Dr.T.Satyanarayana**
Signature				

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

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

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

COURSE OUTCOMES (COs)

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

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

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

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

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

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED REFERENCE BOOKS:

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

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

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

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

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	18-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	20-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	21-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	22-08-2025		TLM1	CO1	T1,T2	
8.	**TUTORIAL II**	1	23-08-2025		TLM3	CO1	T1,T2	
9.	Cauchy-Binet formulae	1	25-08-2025		TLM1	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	28-08-2025		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	29-08-2025		TLM1	CO1	T1,T2	
12.	**TUTORIAL III**	1	30-08-2025		TLM3	CO1	T1,T2	
13.	Homogeneous System of Equations	1	01-09-2025		TLM1	CO1	T1,T2	
14.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
15.	Non-Homogeneous System of Equations	1	04-09-2025		TLM1	CO1	T1,T2	
16.	**TUTORIAL IV**	1	06-09-2025		TLM3	CO1	T1,T2	
17.	Gauss Elimination Method	1	08-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
19.	Jacobi Iteration Method	1	11-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		20			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
21.	Introduction to Unit II **TUTORIAL V**	1	13-09-2025		TLM3	CO2	T1,T2	
22.	Eigen values, Eigen vectors	1	15-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	17-09-2025		TLM1	CO2	T1,T2	
24.	Eigen values, Eigen vectors	1	18-09-2025		TLM1	CO2	T1,T2	
25.	Properties	1	19-09-2025		TLM1	CO2	T1,T2	
26.	**TUTORIAL VI**	1	20-09-2025		TLM3	CO2	T1,T2	

27.	Properties	1	22-09-2025		TLM1	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	24-09-2025		TLM1	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	25-09-2025		TLM1	CO2	T1,T2	
30.	Diagonalization of a matrix	1	26-09-2025		TLM1	CO2	T1,T2	
31.	**TUTORIAL VII**	1	27-09-2025		TLM3	CO2	T1,T2	
32.	Diagonalization of a matrix	1	06-10-2025		TLM1	CO2	T1,T2	
33.	Quadratic Forms	1	08-10-2025		TLM1	CO2	T1,T2	
34.	Nature of Quadratic Forms	1	09-10-2025		TLM1	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	10-10-2025		TLM1	CO2	T1,T2	
36.	**TUTORIAL VIII**	1	11-10-2025		TLM3	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	13-10-2025		TLM1	CO2	T1,T2	
38.	Orthogonal Transformation	1	15-10-2025		TLM1	CO2	T1,T2	
39.	Orthogonal Transformation	1	16-10-2025		TLM1	CO2	T1,T2	
40.	REVISION	1	17-10-2025		TLM1	CO2	T1,T2	
41.	**TUTORIAL IX**	1	18-10-2025		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		17			No. of classes taken:			

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

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
42.	Introduction to Unit III	1	27-10-2025		TLM1	CO3	T1,T2	
43.	Mean Value theorem	1	29-10-2025		TLM1	CO3	T1,T2	
44.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
45.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
46.	**TUTORIAL X**	1	01-11-2025		TLM3	CO3	T1,T2	
47.	Lagrange's mean value theorem	1	03-11-2025		TLM1	CO3	T1,T2	
48.	Lagrange's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
49.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
50.	Cauchy's mean value theorem	1	07-11-2025		TLM1	CO3	T1,T2	
51.	**TUTORIAL XI**	1	08-11-2025		TLM3	CO3	T1,T2	
52.	Taylor's theorem	1	10-11-2025		TLM1	CO3	T1,T2	
53.	Taylor's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
54.	Maclaurin's theorem	1	13-11-2025		TLM1	CO3	T1,T2	
55.	Maclaurin's theorem	1	14-11-2025		TLM1	CO3	T1,T2	
56.	**TUTORIAL XII**	1	15-11-2025		TLM3	CO3	T1,T2	
57.	Problems and applications	1	17-11-2025		TLM1	CO3	T1,T2	
58.	Problems and applications	1	19-11-2025		TLM1	CO3	T1,T2	

No. of classes required to complete UNIT-III	16	No. of classes taken:

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
59.	Introduction to Unit IV	1	20-11-2025		TLM1	CO4	T1,T2	
60.	Functions of several variables, Continuity and Differentiability	1	21-11-2025		TLM1	CO4	T1,T2	
61.	**TUTORIAL XIII**	1	22-11-2025		TLM3	CO4	T1,T2	
62.	Partial Derivatives	1	24-11-2025		TLM1	CO4	T1,T2	
63.	Total derivatives, Chain rule	1	26-11-205		TLM1	CO4	T1,T2	
64.	Directional Derivative	1	27-11-2025		TLM1	CO4	T1,T2	
65.	Taylor's Series expansion	1	28-11-2025		TLM1	CO4	T1,T2	
66.	**TUTORIAL XIV**	1	29-11-2025		TLM3	CO4	T1,T2	
67.	Maclaurin's series expansion	1	01-12-2025		TLM1	CO4	T1,T2	
68.	Jacobian	1	03-12-2025		TLM1	CO4	T1,T2	
69.	Jacobian	1	04-12-2025		TLM1	CO4	T1,T2	
70.	Functional Dependence	1	05-12-2025		TLM1	CO4	T1,T2	
71.	**TUTORIAL XV**	1	06-12-2025		TLM3	CO4	T1,T2	
72.	Maxima and Minima	1	08-12-2025		TLM1	CO4	T1,T2	
73.	Lagrange Multiplier Method	1	10-12-2025		TLM1	CO4	T1,T2	
74.	Lagrange Multiplier Method	1	11-12-2025		TLM1	CO4	T1,T2	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
75.	Introduction to Unit-V	1	12-12-2025		TLM1	CO5	T1,T2	
76.	**TUTORIAL XV**I	1	13-12-2025		TLM3	CO5	T1,T2	
77.	Double Integrals - Cartesian coordinates	1	15-12-2025		TLM1	CO5	T1,T2	
78.	Double Integrals - Cartesian coordinates	1	17-12-2025		TLM1	CO5	T1,T2	
79.	Triple Integrals - Cartesian coordinates	1	18-12-2025		TLM1	CO5	T1,T2	
80.	Triple Integrals - Spherical coordinates	1	19-12-2025		TLM3	CO5	T1,T2	
81.	**TUTORIAL XVII**	1	20-12-2025		TLM3	CO5	T1,T2	
82.	Change of order of Integration	1	22-12-2025		TLM1	CO5	T1,T2	

83.	Change of order of Integration	1	24-12-2025		TLM1	CO5	T1,T2	
84.	Change of variables	1	26-12-2025		TLM1	CO5	T1,T2	
85.	Finding area by double Integral	1	27-12-2025		TLM1	CO5	T1,T2	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
86.	Other applications of double integral	1	27-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 31-12-2025)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

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

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: B. Rama Krishna

Course Name & Code : Basic Civil and Mechanical Engineering & 23CM01

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

Program/Sem/Sec : B.Tech., I-I-Sem., AI&ML-B **A.Y.:** 2025-26

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- Get familiarized with the scope and importance of Civil Engineering sub-divisions.
- Introduce the preliminary concepts of surveying.
- Acquire preliminary knowledge on Transportation and its importance in nation's economy.
- Get familiarized with the importance of quality, conveyance and storage of water.
- Introduction to basic civil engineering materials and construction techniques.

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

CO1:	Describe various sub-divisions of Civil Engineering and to appreciate their role in societal development. **(Understand)**
CO2:	Outline the concepts of surveying and obtain the theoretical measurement of distances, angles and levels through surveying. **(Understand)**
CO3:	Classify the various materials used in construction and highway engineering and identify their appropriate usage as per the needs. **(Understand)**
CO4:	Illustrate the fundamental principles involved in transportation network system, their individual components and their engineering importance. **(Understand)**
CO5:	Explain the quality parameters of various water sources and functions of selected water storage and conveyance structures. **(Understand)**

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

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

Textbooks:

1. Basic Civil Engineering, M.S.Palanisamy, , Tata Mcgraw Hill publications (India) Pvt. Ltd. Fourth Edition.
2. Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers. 2022. First Edition.
3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

Reference Books:

1. Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019. Fifth Edition.
2. Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi. 2016
3. Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023. 38th Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10th Edition.
5. Indian Standard DRINKING WATER — SPECIFICATION IS 10500-2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

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 CO's & PO's, Subject	1	18-08-2025		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	19-08-2025		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	21-08-2025		**TLM2**	
4.	Geo-technical Engineering-Transportation Engineering	1	23-08-2025		**TLM2**	
5.	Hydraulics and Water Resources Engineering Environmental Engineering	1	25-08-2025		**TLM2**	
6.	Building Construction and Planning-	1	26-08-2025		**TLM2**	
7.	Construction Materials-Cement -types	1	28-08-2025		**TLM2**	
8.	Aggregate types- Bricks-classifications	1	30-08-2025		**TLM2**	
9.	Steel-properties - types	1	01-09-2025		**TLM2**	
10.	Cement concrete- Applications	1	02-09-2025		**TLM2**	
11.	Introduction to Prefabricated construction Techniques, Over view-Prefabricated construction	1	04-09-2025		**TLM2**	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Surveying

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.	Objectives of Surveying, Horizontal Measurements	1	06-09-2025		**TLM2**	
2.	Angular Measurements, Compass survey	1	08-09-2025		**TLM2**	
3.	Introduction to Bearings,	1	09-09-2025		**TLM2**	
4.	Simple problems on bearings	1	11-09-2025		**TLM2**	
5.	Levelling introduction-	1	13-09-2025		**TLM2**	
6.	Practice problems	1	15-09-2025		**TLM2**	
7.	Levelling instruments used for levelling	1	16-09-2025		**TLM1**	
8.	Practice problems	1	18-09-2025		**TLM1**	
9.	Practice problems	1	20-09-2025		**TLM2**	
10.	Contour mapping	1	22-09-2025		**TLM2**	
No. of classes required to complete UNIT-II: 10				**No. of classes taken:**		

UNIT-III: Transportation Engineering & Water Resources and Environmental Engineering

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.	Transportation Engineering Importance of Transportation in Nation's economic development	1	23-09-2025		**TLM2**	
2.	Types of Highway Pavements	1	25-09-2025		**TLM2**	
3.	Basics of Harbour, Tunnel	1	27-09-2025		**TLM2**	
4.	Basics of Airport,	1	06-10-2025		**TLM2**	
5.	Railway Engineering	1	07-10-2025		**TLM2**	
6.	Water Resources and Environmental Engineering Introduction	1	09-10-2025		**TLM2**	
7.	Sources of water, Quality of water-Specifications	1	11-10-2025		**TLM2**	
8.	Introduction to Hydrology	1	13-10-2025		**TLM2**	
9.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	14-10-2025		**TLM2**	
10.	Simple introduction to Dams and Reservoirs	1	16-10-2025		**TLM2**	
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyse 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**	**Head of the Department**
Name of the Faculty	**B. Ramakrishna**	**B. Ramakrishna**	**Dr. K.V.Ramana**
Signature			

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING(AI&ML)

COURSE HANDOUT

PART-A

Name of Course Instructor	: Dr. I.Murali Krishna	
Course Name & Code	: Introduction to Programming (23CS01)	
L-T-P Structure	: 3-0-0	Credits: 3
Program/Sem/Sec	: B.Tech./I Sem./C Sec.	A.Y.: 2025-26
PRE-REQUISITE:	: Mathematics, Basic Computer concepts	

COURSE EDUCATIONAL OBJECTIVE (CEO):

- To introduce students to the fundamentals of computer programming.
- To provide hands-on experience with coding and debugging.
- To foster logical thinking and problem-solving skills using programming.
- To familiarize students with programming concepts such as data types, control structures, functions, and arrays.
- To encourage collaborative learning and teamwork in coding projects

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

CO1:	Understand basics of computers, concept of algorithms and flowcharts.	Understand – L2
CO2:	Understand the features of C language.	Understand – L2
CO3:	Interpret the problem and develop an algorithm to solve it.	Apply – L3
CO4:	Implement various algorithms using the C programming language.	Apply – L3
CO5:	Develop skills required for problem-solving and optimizing the code.	Apply – L3

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

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

1 – Low **2 –** Medium **3 –** High

TEXTBOOKS:

T1: The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall, 1988, Edition, 2015.

T2: Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill Education, 1996.

REFERENCE BOOKS:

R1: Computing fundamentals and C Programming, Balagurusamy, E., McGraw-Hill Education, 2008.

R2: Programming in C, Reema Thareja, Oxford, 2016, 2nd edition.

R3: C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad,CENGAGE, 3rd edition

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: Introduction to Programming and Problem Solving

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.	Discussion of CEO's and CO's	1	19-08-2025		TLM1	
2.	History of Computers	1	20-08-2025		TLM1	
3.	Basic organization of a computer: ALU, input-output units.	2	20-08-2025 21-08-2025		TLM1 TLM1	
4.	Memory, program counter	1	23-08-2025		TLM1	
5.	Introduction to Programming Languages,	1	26-08-2025		TLM1	
6.	Basics of a Computer Program-Algorithms	1	27-08-2025		TLM1	
7.	Flowcharts (Using Dia Tool), pseudo code.	1	27-08-2025		TLM1	
8.	Introduction to Compilation and Execution	1	28-08-2025		TLM1	
9.	Primitive Data Types	2	30-08-2025 02-09-2025		TLM1 TLM1	
10.	Variables, and Constants, Basic Input and Output operations	1	03-09-2025		TLM1	
11.	Type Conversion, and Casting	1	03-09-2025		TLM1	
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	04-09-2025		TLM1	
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	06-09-2025		TLM1	
14.	Time and space complexities of algorithms.	1	09-09-2025		TLM1	
No. of classes required to complete UNIT – I: 16				**No. of classes taken:**		

UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs Conditional Statements	1	10-09-2025		TLM1	
16.	if, if-else	1	10-09-2025		TLM1	
17.	Else-if ladder, nested if	1	11-09-2025		TLM1	
18.	Switch, sample programs	1	13-09-2025		TLM1	
19.	Example programs on DecisionMaking and Branching	2	16-09-2025 17-09-2025		TLM1 TLM1	
20.	Loops: while , Example programs	2	17-09-2025 18-09-2025		TLM1 TLM1	
21.	Loops: do-while, Example programs	1	20-09-2025		TLM1	
22.	Loops: for, Example programs	1	23-09-2025		TLM1	
23.	Break , Example programs	1	24-09-2025		TLM1	
24.	Continue, Example programs	1	24-09-2025		TLM1	
25.	Goto Example programs	1	25-09-2025		TLM1	
26.	Example programs on loops	1	27-09-2025		TLM1	
27.	Example programs on loops	1	07-10-2025		TLM1	
28.	Revision	1	08-10-2025		TLM1	
No. of classes required to complete UNIT – II: 16				**No. of classes taken:**		

UNIT – III: Arrays and Strings

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.	Arrays Introduction, Declaration	1	08-10-2025		TLM1	
30.	Array indexing, Accessing elements	1	09-10-2025		TLM1	
31.	memory model	1	11-10-2025		TLM1	
32.	programs with array of integers	1	14-10-2025		TLM1	
33.	Introduction to two dimensional arrays	1	15-10-2025		TLM1	
34.	2D Array indexing, Accessing elements	1	15-10-2025		TLM1	
35.	programs with 2D arrays	1	16-10-2025		TLM1	
36.	Introduction to Strings	1	18-10-2025		TLM1	
37.	Reading and Writing Operations on Strings	1	28-10-2025		TLM1	
38.	String Handling Functions	1	29-10-2025		TLM1	
39.	Example Programs using Strings	1	29-10-2025		TLM1	
40.	Revision	1	30-10-2025		TLM1	
No. of classes required to complete UNIT – III: 12				**No. of classes taken:**		

UNIT – IV: Pointers & User Defined Data types

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Introduction to Pointers	1	01-11-2025		TLM1	
42.	dereferencing and address operators	1	04-11-2025		TLM1	
43.	pointer and address arithmetic	1	05-11-2025		TLM1	
44. 45.	array manipulation using pointers	2	05-11-2025 06-11-2025		TLM1	
46.	User-defined data types	1	08-11-2025		TLM1	
47. 48.	Structures, Definition and Initialization	2	11-11-2025 12-11-2025		TLM1 TLM1	
49.	Example programs	1	12-11-2025		TLM1	
50. 51.	Unions	2	13-11-2025 15-11-2025		TLM1 TLM1	
52.	Example programs	1	18-11-2025		TLM1	
53.	Revision	1	19-11-2025		TLM1	
No. of classes required to complete UNIT – IV: 13				**No. of classes taken:**		

UNIT – V: Functions and File Handling

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
54.	Introduction to Functions	1	19-11-2025		TLM1	
55.	Function Declaration and Definition	1	20-11-2025		TLM1	
56.	Function call Return Types	1	22-11-2025		TLM1	
57.	Arguments	1	25-11-2025		TLM1	
58. 59.	modifying parameters inside functions using pointers	2	26-11-2025 26-11-2025		TLM1 TLM1	
60.	arrays as parameters	1	27-11-2025		TLM1	
61.	Scope and Lifetime of Variables	1	29-11-2025		TLM1	
62.	Storage classes examples	1	02-12-2025		TLM1	
63.	Introduction to Files	1	03-12-2025		TLM1	
64.	Basics of File Handling	1	03-12-2025		TLM1	
65.	Basics of File Handling examples	1	04-12-2025		TLM1	
66.	Operations on Files	1	06-12-2025		TLM1	
67.	Operations on Files examples	1	09-12-2025		TLM1	
68.	Revision	1	10-12-2025		TLM1	
No. of classes required to complete UNIT – V: 15				**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	HOD Sign Weekly
69.	Number based real time problems	1	10-12-2024		TLM1	
70.	Number based real time problems	1	11-12-2024		TLM1	
71.	Control structures real time problems	1	13-12-2024		TLM1	
72.	Control structures real time problems	1	16-12-2024		TLM1	
73.	Array based real time examples	1	17-12-2024		TLM1	
74.	Array based real time examples	1	17-12-2024		TLM1	
75.	Pattern based problems	1	18-12-2024		TLM1	
76.	String real world examples	1	20-12-2024		TLM1	
77.	Introduction to Data structures	1	23-12-2024		TLM1	

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): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**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.
PO3	**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.
PO4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data andsynthesis of the information to provide valid conclusions.
PO5	**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
PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge toassess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
PO7	**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.
PO8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**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.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a memberand leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning**: Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. I,Murali Krishna	Dr. M. Srinivasrao	Dr. Y. V. B. Reddy	Dr. S. Jayapradha
Signature				

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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.Ravi Kumar
Course Name & Code **:** IT Workshop Lab &23IT51
L-T-P Structure **:**0-0-2 **Credits:**1
Program/Sem/Sec : B.Tech – CSE(AI&ML)-1-B **A.Y.:**2025-26

PREREQUISITE **:**NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the student will learn.

- To introduce the internal parts of a computer ,peripherals, I/O ports, connecting cables
- To demonstrate configuring the systems Dual boot both Windows and other Operating Systems Viz. Linux , BOSS.
- To teach basic command line interface commands on Linux.
- To teach the usage of Internet for productivity and self-paced life-long learning
- To introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools.

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.	Peripherals of a computer	3	26-08-2025		DM5	
2.	Disassemble and Assemble the PC	3	02-09-2025		DM5	
3.	Instal MS WINDOWS Operating System	3	09-09-2025		DM5	
4.	Instal LINUX Operating System	3	16-09-2025		DM5	
5.	Instal BOSS Operating System	3	23-09-2025		DM5	
Internet & World Wide Web						
6.	Orientation & connectivity Boot Camp	3	07-10-2025		DM5	
7.	Web Browsers and Surfing the Web	3	07-10-2025		DM5	
8.	Search Engines	3	14-10-2025		DM5	
9.	Cyber Hygiene	3	28-10-2025		DM5	
LaTeX and WORD						
10.	Word orientation	3	04-11-2025		DM5	
11.	Creating a Certificate	3	04-11-2025		DM5	
12.	Creating project abstract features	3	11-11-2025		DM5	
13.	Creating News Latter	3	18-11-2025		DM5	
EXCEL						

14.	Excel orientation	3	25-11-2025		DM5	
15.	Calculating GPA	3	25-11-2025		DM5	
LOOKUP/VLOOKUP						
16.	H LOOKUP-V LOOKUP	3	02-12-2025		DM5	
POWER POINT						
17.	PPT Basics	3	09-12-2025		DM5	
18.	Interactive Presentations	3	09-12-2025		DM5	
19.	Master Layouts	3	16-12-2025		DM5	
AI TOOLS – ChatGPT						
20.	Prompt Engineering	3	16-12-2025		DM5	
21.	Creative writing	3	23-12-2025		DM5	
22.	Language Translation	3	23-12-2025		DM5	
23.	Internal exam	3	30-12-2025		DM5	

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

PART-C

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 Analyse 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.K. Ravi Kumar	Mr.N. Srikanth	Dr. D. Venkata Subbaiah	Dr. S.JayaPradha
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

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

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

List of Activities:

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

Suggested Software:

1.Walden Infotech
2.Young India Films

Reference Books:

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

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	22-08-2025		TLM4	
2.	Vowels & Consonants	06	25-08-2025 29-09-2025		TLM1 TLM5	
3.	Neutralization	03	05-10-2025		TLM1, TLM5	
4.	Accent rules	03	12-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	19-10-2025 26-10-2025		TLM4	

6.	Role Play-I (Formal and Informal)	06	03-10-2025 10-10-2025		TLM4	
7.	e-mail Writing,	03	17-10-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	31-10-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	07-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	14-11-2025		TLM4, TLM6	
11.	PPT Presentation	03	21-11-2025		TLM2, TLM4	
12.	Poster Presentation	03	28-11-2025		TLM2, TLM4	
13.	Mock Interviews	03	05-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	12-12-2025			
No. of classes required to complete Syllabus:				**No. of classes taken:**		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

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

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

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

DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. V.Parvathi & Mr.S.Vijaya dasarada
Course Name & Code **:** Chemistry Lab & 23FE52
L-T-P Structure **:0-0-3** **Credits:1.5**
Program/Sem/Sec : B.Tech/ I sem/ CSM-B **A.Y. :**2025- 26

Pre requisites: Nil

Course Educational Objective:

- To enable the students to perform different types of volumetric titrations.
- It provides an overview of preparation of polymers, nanomaterials and analytical techniques.

CO1: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus. (**Analyze**)
CO2: Acquire practical knowledge related to preparation of Bakelite and nanomaterials. (**Apply**)
CO3: Measure the strength of acid present in Pb-Acid battery. (**Apply**)
CO4: Analyze important parameters of water to check its suitability for drinking purpose and industrial applications. (**Analyze)**
CO5: Improve individual / teamwork skills, communication and report writing skills with ethical values. (**Apply**)

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

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	1	2	-	-	-	-	-
CO2	3	-	1	-	-	2	1	-	-	-	-	-
CO3	3	2	1	-	-	-	2	-	-	-	-	-
CO4	3	1	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	2	-	-	-	-	-	-	-
1 = Slight (Low)				**2 = Moderate (Medium)**				**3 = Substantial (High)**				

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to chemistry lab	3	18-08-2025		TLM1		
2.	Introduction to chemistry lab		25-08-2025				
3.	Introduction to chemistry lab	**3**	01-09-2025		TLM4		
4.	General Introduction- Safety Rules, Glass wares and Chemicals explanation.	3	08-09-2025		TLM4	CO1	
5.	Volumetric Analysis- Glass wares, Chemicals, indicators and model titration.	3	15-09-2025		TLM4	CO2	
6.	Preparation of Bakelite	3	22-09-2025		TLM4	CO2	
7.	Determination of pH.	3	06-10-2025		TLM4	CO4	
8.	Model Experiment- Na_2CO_3 versus HCl	3	13-10-2025		TLM4	CO1	
9	Lead acid battery	3	27-10-2025		TLM4	CO3	
10.	Alkalinity	3	03-11-2025		TLM4	CO4	
11.	Permanganometry	3	10-11-2025		TLM4	CO4	
12.	Dichrometry	3	17-11-2025		TLM4	CO1	
13	Hardness of water EDTA method	3	24-11-2025		TLM4	CO1	
14	Conductometry- Strong Acid versus Strong Base	3	01-12-2025		TLM4	CO4	
15	Conductometry- Weak Acid versus Strong Base	3	08-12-2025		TLM4	CO4	
16	Additional Experiment /Repetition	3	15-12-2025		TLM4		
17	Internal Exam	3	22-12-2025				

Part - C

EVALUATION PROCESS:

According to Academic Regulations of R20 Distribution and Weightage of Marks for Laboratory Courses is as follows.

(a) Continuous Internal Evaluation(CIE):

- ✓ The continuous internal evaluation for laboratory course is based on the following parameters:

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

PROGRAMME OUTCOMES (POs):

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 engineeringsciences.
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 environmentalconsiderations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and researchmethodsincludingdesignofexperiments,analysisandinterpretationofdata,

and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of thelimitations.
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 engineeringpractice.
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 sustainabledevelopment.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineeringpractice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinarysettings.
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 clearinstructions.
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 multidisciplinaryenvironments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr.V.Parvathi**	**Dr.V.Parvathi**	**Dr.V.Parvathi**	**Dr.T.Satyanarayana**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING(AI&ML)

COURSEHANDOUT

PART-A

Name of Course Instructor	: Dr. I.Murali Krishna	
Course Name & Code	: Computer Programming Lab (23CS51)	
L-T-P Structure	: 0-0-3	Credits:1.5
Program/Sem/Sec	: B.Tech.–CSM /I-Sem/C	A.Y. :2025-26

PRE-REQUISITE: Fundamentals of Mathematics.

COURSE EDUCATIONAL OBJECTIVE (CEO): The course aims to give students hands – on experience and train them on the concepts of the C- programming language.

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

CO1:	Read, understand, and trace the execution of programs written in C language. (Understand)	Apply–Level2
CO2:	Select the right control structure for solving the problem. (Apply)	Apply–Level3
CO3:	Develop C programs which utilize memory efficiently using programming constructs like pointers. (Apply)	Apply–Level3
CO4:	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (Apply).	Apply–Level3
CO5:	Improve individual / teamwork skills, communication and report writing skills with ethical values.	Apply–Level3

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	-	-	3	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO4	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO5	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-
1 –Low							**2** –Medium						**3**– High		

PART-B

COURSE DELIVERY PLAN -LESSONPLAN:

S No.	Programs to be covered	No. of Classes		Actual Date of Completion	Delivery Method	HOD Sign.
		Required as per the Schedu le	Tentative Date of Completion			
1.	Week1: Familiarization with programming environment	03	23-08-2025		TLM4	
2.	Week2: Problem-solving using Algorithms and Flow charts.	03	30-08-2025		TLM4	
3.	Week3: Exercise Programs on Variable types and type conversions	03	13-09-2025		TLM4	
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03	20-09-2025		TLM4	
5.	Week5: Exercise Programs on Branching and logical expressions	03	27-09-2025		TLM4	
6.	Week6: Exercise Programs on Loops, while and for loops	03	18-10-2025		TLM4	
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03	25-10-2025		TLM4	
8.	Week8: ExerciseProgramson2 D arrays, sorting and Strings.	03	01-11-2025		TLM4	
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03	15-11-2025		TLM4	
10.	Week10: Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03	22-11-2025		TLM4	
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03	29-11-2025		TLM4	
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03	06-12-2025		TLM4	
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03	20-12-2025		TLM4	
14.	Week 14: Exercise Programs on File handling.	03	27-12-2025		TLM4	
15.	Lab Internal Test	03	03-01-2026		TLM4	

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.I,Murali Krishna	Dr. M. Srinivasarao	Dr. Y.Vijay Bhaskar Reddy	Dr. S. Jayaprada
Signature				