LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

COURSE HANDOUT

PART-A

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

PREREQUISITE : NIL

COURSE OBJECTIVES:

- To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables
- To demonstrate configuring the system as 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 the 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, the student will be able to

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC .**(Apply-L3)**
CO2	Develop presentation /documentation using Office tools and LaTeX. **(Apply-L3)**
CO3	Build dialogs and documents using ChatGPT. **(Apply-L3)**
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. **(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	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	18-8-2025		DM5	
2.	Task-2	3	18-8-2025		DM5	
3.	Task-3	3	25-8-2025		DM5	
4.	Task-4	3	25-8-2025		DM5	
5.	Task-5	3	01-09-2025		DM5	
Internet & World Wide Web						
6.	Task-1	3	01-09-2025		DM5	
7.	Task-2	3	08-09-2025		DM5	
8.	Task-3	3	08-09-2025		DM5	
9.	Task-4	3	15-09-2025		DM5	
LaTex and WORD						
10.	Task-1	3	15-09-2025		DM5	
11.	Task-2	3	06-10-2025		DM5	
12.	Task-3	3	06-10-2025		DM5	
13.	Task-4	3	13-10-2025		DM5	
EXCEL						
14.	Task-1	3	13-10-2025		DM5	
15.	Task-2	3	27-10-2025		DM5	

LOOKUP/VLOOKUP						
16.	Task-1	3	03-11-2025		DM5	
POWER POINT						
17.	Task-1	3	10-11-2025		DM5	
18.	Task-2	3	17-11-2025		DM5	
19.	Task-3	3	24-11-2025		DM5	
AI TOOLS – ChatGPT						
20.	Task-1	3	01-12-2025		DM5	
21.	Task-2	3	08-12-2025		DM5	
22.	Task-3	3	15-12-2025		DM5	
23.	Internal exam	3	22-12-2025		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 Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr.N.Srikanth	Mr.N.Srikanth	Dr. D. Venkata Subbaiah	Dr.S.Nagarjuna Reddy
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. S. Vijaya Dasaradha
Course Name & Code : Chemistry Lab & 23FE52
L-T-P Structure : **0-0-3** **Credits: 1.5**
Program/Sem/Sec : I B.Tech./I Sem/CSE-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): CSE-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	19-08-2025		TLM1	CO1	
2	Explanation of chemicals and glassware	3	26-08-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	02-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	09-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	16-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	23-09-2025		TLM4	CO3	
7.	Alkalinity of water sample	3	07-10-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	14-10-2025		TLM4	CO1	
9.	Estimation of Ferrous ion by Dichrometry	3	28-10-2025		TLM4	CO4	
10.	Estimation of total hardeness of given water sample	3	04-11-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	11-11-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	18-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	25-11-2025		TLM4	CO1	
14.	Additional experiment-Virtual Lab	3	02-12-2025		TLM4	CO3	
15.	Additional experiment beyond the syllabus	3	09-12-2025		TLM4	CO4	
16.	Internal Exam	3	16-12-2025 & 23-12-2025		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	**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 & Mr. S. Vijaya Dasaradha

Course Name & Code : Chemistry & 23FE02

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

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

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	19-08-2025 to 23-08-2025 (19,21,22,23)		TLM1	
2.	Fundamentals of Quantum Mechanics	2	26-08-2025 & 28-08-2025			
3.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	29-08-2025		TLM1	
4.	Particle in one dimensional box	1	30-08-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	02-09-2025 & 04-09-2025		TLM1	
6.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	1	05-09-2025		TLM1	
7.	Energy level diagrams-Summary	1	06-09-2025		TLM1	
8.	π-molecular orbitals of butadiene	1	09-09-2025		TLM1	
9.	π-molecular orbitals ofbenzene	1	11-09-2025		TLM1	
10.	Calculation of Bond order	1	12-09-2025		TLM1	
11.	Revision and assignment	1	13-09-2025		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	16-09-2025		TLM1	
2.	Semiconductors- Conduction mechanism & applications	1	18-09-2025		TLM1	
3.	Super conductors – Introduction, Basic concepts	1	19-09-2025		TLM1	
4.	Super conductors – Properties, Types and applications	2	20-09-2025 & 23-09-2025		TLM1	
5.	Super capacitors - Introduction, Basic concepts	1	25-09-2025		TLM1	
6.	Super capacitors - classification & applications	1	26-09-2025		TLM1	
7.	Nano materials - Introduction	1	27-09-2025		TLM2	
8.	Nano materials - classification	1	07-10-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	09-10-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	2	10-10-2025 & 11-10-2025		TLM2	
11.	Revision and assignment of U-II	2	14-10-2025 & 16-10-2025		TLM1	
12.	Mid-1 Preparation	2	17-10-2025 & 18-10-2025			
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	28-10-2025 & 30-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	31-10-2025 & 01-11-2025		TLM1	

3.	Potentiometry-potentiometric titrations (redox titrations)	1	04-11-2025		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	07-11-2025		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	08-11-2025 & 11-11-2025		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	14-11-2025		TLM1	
9.	Revision and assignment	1	15-11-2025		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	18-11-2025		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	20-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	21-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	22-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	25-11-2025 & 27-11-2025		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	28-11-2025		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	2	29-11-2025 & 02-12-2025		TLM1	

8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	04-12-2025		TLM1	
9.	Revision and assignment	1	05-12-2025		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	06-12-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	09-12-2025		TLM1	
3.	UV-Visible Spectroscopy	1	11-12-2025		TLM1	
4.	electronic transition, Instrumentation	1	12-12-2025		TLM1	
5.	IR spectroscopy, fundamental modes	1	13-12-2025		TLM1	
6.	selection rules, Instrumentation	1	16-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	18-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	19-12-2025 & 20-12-2025		TLM1	
9.	Revision and assignment	1	23-12-2025		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.	2	26 & 27-12-2025		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				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
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Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada
L.B. Reddy Nagar, Mylavaram, NTR Dist., Andhra Pradesh-521 230.
Phone: 08659-222933, **Fax**: 08659-222931
FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., CSE 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. R. Kavitha
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 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	8	04-08-2025 TO 16-08-2025	04-08-2025 TO 16-08-2025	TLM1			
2.	Introduction to the course	1	19-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-08-2025		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	21-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	26-08-2025		TLM1	CO1	T1,T2	
8.	**TUTORIAL 1**	1	28-08-2025		TLM3	CO1	T1,T2	
9.	Cauchy-Binet formulae	1	29-08-2025		TLM1	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	30-08-2025		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	02-09-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
13.	**TUTORIAL 2**	1	04-09-2025		TLM3	CO1	T1,T2	
14.	Homogeneous System of Equations	1	05-09-2025		TLM1	CO1	T1,T2	
15.	Non-Homogeneous System of Equations	1	06-09-2025		TLM1	CO1	T1,T2	
16.	Non-Homogeneous System of Equations	1	09-09-2025		TLM1	CO1	T1,T2	
17.	Gauss Elimination Method	1	10-09-2025		TLM1	CO1	T1,T2	
18.	**TUTORIAL 3**	1	11-09-2025		TLM3	CO1	T1,T2	
19.	Jacobi Iteration Method	1	12-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	16-09-2025		TLM1	CO1	T1,T2	
21.	Gauss-Seidel Method	1	17-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I : 18					No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	18-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	19-09-2025		TLM1	CO2	T1,T2	

24.	Eigen values, Eigen vectors	1	20-09-2025		TLM1	CO2	T1,T2	
25.	Properties	1	23-09-2025		TLM1	CO2	T1,T2	
26.	Cayley-Hamilton Theorem	1	24-09-2025		TLM1	CO2	T1,T2	
27.	**TUTORIAL 4**	1	25-09-2025		TLM3	CO2	T1,T2	
28.	Finding Inverse and Powers of matrix	1	26-09-2025		TLM1	CO2	T1,T2	
29.	Diagonalisation of a matrix	1	27-09-2025		TLM1	CO2	T1,T2	
30.	Diagonalisation of a matrix	1	07-10-2025		TLM1	CO2	T1,T2	
31.	Quadratic Forms	1	08-10-2025		TLM1	CO2	T1,T2	
32.	**TUTORIAL 5**	1	09-10-2025		TLM3	CO2	T1,T2	
33.	Nature of Quadratic Forms	1	10-10-2025		TLM1	CO2	T1,T2	
34.	Reduction of Quadratic form to Canonical form	1	11-10-2025		TLM1	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
36.	Orthogonal Transformation	1	15-10-2025		TLM1	CO2	T1,T2	
37.	**TUTORIAL 6**	1	16-10-2025		TLM3	CO2	T1,T2	
38.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
39.	Revision	1	18-10-2025					
No. of classes required to complete UNIT-II: 18					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
40.	Introduction to Unit III	1	28-10-2025		TLM1	CO3	T1,T2	
41.	Mean Value theorem	1	29-10-2025		TLM1	CO3	T1,T2	
42.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
43.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
44.	Lagrange's mean value theorem	1	01-11-2025		TLM1	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
46.	Cauchy's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
47.	**TUTORIAL 7**	1	06-11-2025		TLM3	CO3	T1,T2	
48.	Taylor's theorem	1	07-11-2025		TLM1	CO3	T1,T2	
49.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
50.	Maclaurin's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
51.	**TUTORIAL 8**	1	13-11-2025		TLM3	CO3	T1,T2	
52.	Problems and applications	1	14-11-2025		TLM1	CO3	T1,T2	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
53.	Introduction to Unit IV	1	15-11-2025		TLM1	CO4	T1,T2	
54.	Functions of several variables.	1	18-11-2025		TLM1	CO4	T1,T2	
55.	Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
56.	Partial Derivatives	1	20-11-2025		TLM1	CO4	T1,T2	
57.	Total derivatives, Chain rule, Directional Derivative	1	21-11-2025		TLM1	CO4	T1,T2	
58.	Taylor's Series expansion	1	22-11-2025		TLM1	CO4	T1,T2	
59.	Maclaurin's series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
60.	Jacobian	1	26-11-2025		TLM1	CO4	T1,T2	
61.	**TUTORIAL 9**	1	27-11-2025		TLM3	CO4	T1,T2	
62.	Functional Dependence	1	28-11-2025		TLM1	CO4	T1,T2	
63.	Maxima and Minima	1	02-12-2025		TLM1	CO4	T1,T2	
64.	Maxima and Minima	1	03-12-2025		TLM1	CO4	T1,T2	
65.	**TUTORIAL 10**	1	04-12-2025		TLM3	CO4	T1,T2	
66.	Lagrange Multiplier Method	1	05-12-2025		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
67.	Introduction to Unit-V	1	06-12-2025		TLM1	CO5	T1,T2	
68.	Double Integrals - Cartesian coordinates	1	09-12-2025		TLM1	CO5	T1,T2	
69.	Double Integrals - Cartesian coordinates	1	10-12-2025		TLM1	CO5	T1,T2	
70.	**TUTORIAL 11**	1	11-12-2025		TLM3	CO5	T1,T2	
71.	Double Integrals- Polar co ordinates	1	12-12-2025		TLM1	CO5	T1,T2	
72.	Triple Integrals - Cartesian coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
73.	Triple Integrals - Spherical coordinates	1	17-12-2025		TLM1	CO5	T1,T2	
74.	**TUTORIAL 12**	1	18-12-2025		TLM3	CO5	T1,T2	
75.	Change of order of Integration	1	19-12-2025		TLM1	CO5	T1,T2	
76.	Change of order of Integration	1	20-12-2025		TLM1	CO5	T1,T2	
77.	Change of variables	1	23-12-2025		TLM1	CO5	T1,T2	
78.	Finding area by double Integral	1	24-12-2025		TLM1	CO5	T1,T2	

79.	Finding Volume by double and triple Integral	1	25-12-2025		TLM1	CO5	T1,T2	
80.	Revision	1	26-12-2025					
No. of classes required to complete UNIT-V		14			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
81.	Other applications of double integral	1	27-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (16-12-2024 TO 21-12-2024)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

DR. K. R. KAVITHA	**Dr. K. BHANU LAKSHMI**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Siva Sankra Babu Chinka
Course Name & Code : BC&ME, 23CM01
L-T-P Structure : **4-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I-Sem/**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): Section-B

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	18-08-2025		TLM1	
2.	Role of Mechanical Engineering in Industries and Society	1	19-08-2025		TLM1	
3.	Technologies in different sectors such as Energy.	1	21-08-2025		TLM1	
4.	Technologies in different sectors such as Manufacturing.	1	23-08-2025		TLM1	
5.	Technologies in different sectors such as Automotive.	1	25-08-2025		TLM1	
6.	Technologies in different sectors such as Aerospace, and Marine sectors.	1	26-08-2025		TLM1	
7.	Engineering Materials - Metals	1	28-08-2025		TLM1	
8.	Ferrous Metals	1	30-08-2025		TLM1	
9.	Non-ferrous Metals	1	01-09-2025		TLM1	
10.	Ceramics.	1	02-09-2025		TLM1	
11.	Composites.	1	04-09-2025		TLM1	
12.	Smart materials.	1	06-09-2025		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	08-09-2025		TLM1	
14.	Principles of Casting, Forming	1	09-09-2025		TLM1	
15.	Joining processes, Machining	1	11-09-2025		TLM2	
16.	Introduction to CNC machines,	1	13-09-2025		TLM2	
17.	3D printing, and Smart manufacturing.	1	15-09-2025		TLM2	
18.	Thermal Engineering- Working principle of Boilers	1	16-09-2025		TLM1	
19.	Working principle of Boilers	1	18-09-2025		TLM2	
20.	Otto cycle, Diesel cycle	1	20-09-2025		TLM1	
21.	Refrigeration and air-conditioning cycles	1	22-09-2025		TLM1	
22.	IC engines	1	23-09-2025		TLM2	
23.	2-Stroke and 4-Stroke engines	1	25-09-2025		TLM1	
24.	SI/CI Engines	1	27-09-2025		TLM1	
25.	Components of Electric and Hybrid Vehicles.	1	06-10-2025		TLM2	
No. of classes required to complete UNIT-II: 13				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
26.	Power plants – Working principle of Steam power plants, Diesel power plants	1	07-10-2025		TLM1	
27.	Power plants – Working principle of Hydro power plants	1	11-10-2025		TLM1	
28.	Power plants – Working principle of nuclear power plants	1	13-10-2025		TLM1	
29.	Mechanical Power Transmission - Belt Drives, Chain, Rope drives.	1	14-10-2025		TLM1	
30.	Gear Drives and their applications.		14-10-2025			
31.	Introduction to Robotics- Joints & links.	1	16-10-2025		TLM1	
32.	Configurations and applications of robotics.	1	18-10-2025		TLM2	
I-Mid Exams			**20-10-2025 to 25-10-2025**			
No. of classes required to complete UNIT-III: 07				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II &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
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. Y. Praveen Kumar
Course Name & Code : IT Workshop Lab & 23IT51
L-T-P Structure :0-0-2 **Credits:**1
Program/Sem/Sec : B.Tech - CSE/I/E **A.Y.:** 2025-26

PREREQUISITE : NIL

COURSE OBJECTIVES:

- To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables
- To demonstrate configuring the system as 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 the 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, the student will be able to

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC .**(Apply-L3)**
CO2	Develop presentation /documentation using Office tools and LaTeX. **(Apply-L3)**
CO3	Build dialogs and documents using ChatGPT. **(Apply-L3)**
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. **(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	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	23/08/2025		DM5	
2.	Task-2	3	30/08/2025		DM5	
3.	Task-3	3	30/08/2025		DM5	
4.	Task-4	3	06/09/2025		DM5	
5.	Task-5	3	13/09/2025		DM5	
Internet & World Wide Web						
6.	Task-1	3	20/09/2025		DM5	
7.	Task-2	3	27/09/2025		DM5	
8.	Task-3	3	27/09/2025		DM5	
9.	Task-4	3	27/09/2025		DM5	
LaTex and WORD						
10.	Task-1	3	04/10/2025		DM5	
11.	Task-2	3	04/10/2025		DM5	
12.	Task-3	3	11/10/2025		DM5	
13.	Task-4	3	18/10/2025		DM5	
EXCEL						
14.	Task-1	3	25/10/2025		DM5	
15.	Task-2	3	1/11/2025		DM5	

LOOKUP/VLOOKUP						
16.	Task-1	3	08/11/2025		DM5	
POWER POINT						
17.	Task-1	3	15/11/2025		DM5	
18.	Task-2	3	22/11/2025		DM5	
19.	Task-3	3	29/11/2025		DM5	
AI TOOLS – ChatGPT						
20.	Task-1	3	06/12/2025		DM5	
21.	Task-2	3	13/12/2025		DM5	
22.	Task-3	3	20/12/2025		DM5	
23.	Internal exam	3	08/01/2026		DM5	

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

PART-C

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. Y. Praveen Kumar**	**Mr. N.Srikanth**	**Dr. D. Venkata Subbaiah**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Srinivasa Rao Mekala
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech. – CSE / I Sem / A A.Y. : 2025-26

PRE-REQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- 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 –Level 2
CO2:	Understand the features of C programming language	Understand –Level 2
CO3:	Interpret the problem and develop an algorithm to solve it	Apply – Level 3
CO4:	Implement various algorithms using the C programming language.	Apply – Level 3
CO5:	Develop skills required for problem-solving and optimizing the code	Apply – Level 3

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**	**2**	**-**
CO2	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**2**
CO3	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**2**
CO4	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**2**
CO5	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**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
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, Rema Theraja, 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 COs and CEOs, History of Computers	1	18-08-2025			
2.	Basic organization of a computer	1	20-08-2025			
3.	Introduction to Programming Languages	1	21-08-2025			
4.	Algorithms and Pseudo code	1	22-08-2025			
5.	Tutorial -1	1	23-08-2025			
6.	Flowcharts	1	25-08-2025			
7.	Structure of 'C' program	1	28-08-2025			
8.	Introduction to Compilation and Execution	1	29-08-2025			
9.	Tutorial -2	1	30-08-2025			
10.	Data Types	2	01-09-2025 03-09-2025			
11.	Variables and Constants	1	04-09-2025			
12.	Tutorial -3	1	06-09-2025			
13.	Operators	2	8-09-2025 10-09-2025			
14.	Basic I/O Operations	1	11-09-2025			
15.	Type Conversion and Casting	1	12-09-2025			
16.	**Problem Solving Strategies:** Top-Down Approach, Bottom-Up Approach	1	15-09-2025			
17.	Time and space complexities of Algorithms	1	17-09-2025			
No. of classes required to complete UNIT – I:19				**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
18.	**Simple Sequential Programs:** Conditional Statements	1	18-09-2025			
19.	Two-way selection statements	1	19-09-2025			
20.	Tutorial -4	1	20-09-2025			
21.	Multi-way selection statements	2	22-09-2025 24-09-2025			
22.	Example programs on Decision Making and Branching	2	25-09-2025 26-09-2025			
23.	Tutorial -5	1	27-09-2025			
24.	**Loops:** while Loop with Examples	2	06-10-2025 08-10-2025			
25.	do-while Loop with Examples	2	09-10-2025 10-10-2025			
26.	for Loop with Examples	2	13-10-2025 15-10-2025			
27.	Break and Continue Statement	1	16-10-2025			
28.	Example programs	1	17-10-2025			
29.	Tutorial -5	1	18-10-2025			
No. of classes required to complete UNIT – II: 17				**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
30.	**Arrays:** Introduction to 1D-Arrays, Declaration, and Initialization	1	27-10-2025			
31.	1D-Array Indexing, Accessing Elements of 1D-Array	1	29-10-2025			
32.	Programs on 1D-Arrays	2	30-10-2025			
33.	Introduction to 2D-Arrays, Declaration, and Initialization	1	31-10-2025			
34.	Tutorial -6	1	1-11-2025			
35.	2D-Array Indexing, Accessing Elements of 2D-Array	1	03-11-2025			
36.	Programs on 2D-Arrays	2	05-11-2025 06-11-2025			
37.	Introduction to Strings	1	07-11-2025			
38.	String manipulation	1	10-11-2025			
39.	String Handling Functions	1	12-11-2025			
40.	Programs on Strings	2	13-11-2025 14-11-2025			
41.	Tutorial -7	1	15-11-2025			
No. of classes required to complete UNIT – III:15				**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
42.	**Pointers:** Introduction to Pointers	1	17-11-2025			
43.	Dereferencing and Address Operators	1	19-11-2025			
44.	Pointer and Address Arithmetic	2	20-11-2025 21-11-2025			
45.	Tutorial -8	1	22-11-2025			
46.	Array Manipulation using Pointers	1	24-11-2025			
47.	**User-defined Data Types:** Structure, Declaration, and Initialization	2	26-11-2025 27-11-2025			
48.	Concepts of Structures	1	28-11-2025			
49.	Tutorial -8	1	29-11-2025			
50.	Programs on Structures	1	01-12-2025			
51.	Union, Declaration, and Initialization	1	03-12-2025			
52.	Concepts of Union	1	04-12-2025			
53.	Programs on Union	1	05-12-2025			
54.	Tutorial -9	1	06-12-2025			
No. of classes required to complete UNIT – IV:15				**No. of classes taken:**		

UNIT – V: Functions & 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
55.	**Functions:** Introduction, Function Declaration and Definition	1	08-12-2025			
56.	Function Call – Return Types and Arguments	1	10-12-2025			
57.	Modifying parameters inside functions using pointers	1	11-12-2025			
58.	Arrays as parameters	1	12-12-2025			
59.	Recursion and Example	1	15-12-2025			
60.	Scope and Lifetime of Variables	1	17-12-2025			
61.	**File Handling:** Introduction to Files, Basics of File Handling	1	18-12-2025			
62.	File Operations	1	19-12-2025			
63.	Tutorial -10	1	20-12-2025			
64.	Example Programs on File Handling	2	22-12-2025 24-12-2025			
No. of classes required to complete UNIT – V:11				**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
65.	Searching and sorting	1	26-12-2025			

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
Assignmenton Cycle – I(Units-I, II)	A1=5
MID – IDescriptiveExamination (Units-I, II)	M1=15
MID – I Objective /QuizExamination (Units-I, II)	Q1=10
Mid – I Total Marks: A1 + M1 + Q1	MT1 = 30
Assignment on Cycle – II(Unit-III, IV & V)	A2=5
MID – II Descriptive Examination (UNIT-III, IV & V)	M2=15
MID – II Objective / Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid – II Total Marks: A2 + M2 + Q2	MT2 = 30
ContinuousInternal Evaluation (CIE): 80% of Max (MT1, MT2) + 20% of Min (MT1, MT2)	C = 30
Semester End Examination (SEE): S	S = 70
Total Marks (T) = C + S	T = 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
PO6	**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
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 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 engage in 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 develo using open-source programming environment for the success of organization.**
PSO2	**The ability to design and develop computer programs in networking, web applications and l 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. M. Srinivasa Rao**	**Dr. M. Srinivasa Rao**	**Dr. Y.V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

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

PRE-REQUISITE: Mathematics, Basic Computer Terminology

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-L2)**
CO2:	Apply the right control structure for solving the problem	**(Apply-L3)**
CO3:	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, pointers and files in C	**(Apply-L3)**
CO4:	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	-	-	3	-	-	-	-	-	-	-	3	3	3
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
CO4	-	-	-	-	-	-	-	2	2	2	-	-			
	1 – Low **2 –** Medium **3 –** High														

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week – 1	06	20/08/25 03/09/25		DM5
2.	Week – 2	03	10/09/25		DM5
3.	Week – 3	03	17/09/25		DM5
4.	Week – 4	03	24/09/25		DM5
5.	Week – 5	03	08/10/25		DM5
6.	Week – 6	03	15/10/25		DM5
7.	Week – 7	03	29/10/25		DM5
8.	Week – 8	03	05/11/25		DM5
9.	Week – 9	03	12/11/25		DM5
10.	Week – 10	03	19/11/25		DM5
11.	Week – 11	03	26/11/25		DM5
12.	Week – 12	03	03/12/25		DM5
13.	Week – 13	03	10/12/25		DM5
14.	Week – 14	03	17/12/25		DM5
15.	Internal Lab Exam	03	24/12/25		DM4

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):

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
PO6	**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
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 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 engage in 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 organiz**
PSO2	**The ability to design and develop computer programs in networking, web application 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. M. Srinivasa Rao**	**Dr. M. Srinivasa Rao**	**Dr. Y.V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

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

PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	19/08/25 20/08/25		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	22/08/25 26/08/25		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	29/08/25 02/09/25		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	03/09/25 05/09/25		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	09/09/25		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	10/09/25 12/09/25		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 11						**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	16/09/25 17/09/25		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	19/09/25 23/09/25		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	24/09/25 26/09/25		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	02	07/10/25 08/10/25		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	01	10/10/25		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	01	14/10/25		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 10						**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	15/10/25 17/10/25		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	28/10/25 29/10/25		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	28/10/25 31/10/25		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	03/11/25 04/11/25		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	07/11/25		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	10/11/25 11/11/25		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	14/11/25 17/11/25		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	18/11/25 21/11/25		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	24/11/24 25/11/25		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	28/11/25		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	01/12/25 02/12/25		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	02	05/12/25 08/12/25		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	02	09/12/25		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	12/12/25		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	15/12/25		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 08						**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	16/12/25		TLM2 &5	
2.	**One-word substitutes**	01	19/12/25		TLM2 &5	
3.	**Technical vocabulary**	01	22/12/25		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	**K. Raju**	**Dr. R. Padma VENKAT**	**Dr. R. Padma VENKAT**	**Dr. T. Satyanarayana**
Signature				

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

DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.Vijaya Dasaradha
Course Name & Code :Chemistry&23FE02
L-T-P Structure :3-0-0 **Credits:03**
Program/Sem/Sec : IB.Tech./I-Sem/CSE-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): CSE-B

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 Fundamentals of Quantum Mechanics	2	04-08-2025 to 16-08-2025		TLM1	
2.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	18-08-2025		TLM1	
3.	Particle in one dimensional box	1	20-08-2025		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	21-08-2025 & 23-08-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	2	25-08-2025 & 28-08-2025		TLM1	
6.	Energy level diagrams-Summary	1	30-08-2025		TLM1	
7.	π-molecular orbitals of butadiene	1	01-09-2025		TLM1	
8.	π-molecular orbitals ofbenzene	1	03-09-2025		TLM1	
9.	Calculation of Bondorder	1	04-09-2025		TLM1	
10.	Revision and assignment	1	06-09-2025		TLM1	
No. of classes required to complete UNIT-I: 13				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	08-09-2025		TLM1	
2.	Semiconductors - Basic concept	1	10-09-2025		TLM1	
3.	Semiconductors applications	1	11-09-2025		TLM1	
4.	Super conductors - Introduction	1	13-09-2025		TLM1	
5.	Super conductors - Basic concept&Properties	1	15-09-2025		TLM1	
6.	Super conductors - applications	1	17-09-2025		TLM1	
7.	Supercapacitors - Introduction, Basic concept	1	18-09-2025		TLM1	
8.	Supercapacitors - classifications	1	20-09-2025		TLM1	
9.	Supercapacitors - applications	1	22-09-2025		TLM1	
10.	Nano materials - Introduction	1	24-09-2025		TLM2	
11.	Nano materials - classification	2	25-09-2025 & 27-09-2025		TLM2	
12.	Nano materials - properties and applications of fullerenes	2	06-10-2025 & 08-10-2025		TLM2	
13.	Nano materials - carbon nanotubes and graphene nanoparticles	2	09-10-2025 & 11-10-2025		TLM2	
14.	Revision and assignment	4	13,15-10-2025 & 16,18-10-2025		TLM1	
No. of classes required to complete UNIT-II: 20				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	1	27-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	29-10-2025 & 30-10-2025		TLM1	

3.	Potentiometry-potentiometric titrations (redox titrations)	1	01-11-2025		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	03-11-2025		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	05-11-2025		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	06-11-2025 & 08-11-2025		TLM1	
7.	Fuel cells, hydrogen-oxygenfuel cell– working of the cells	1	10-11-2025		TLM1	
8.	PolymerElectrolyte Membrane Fuel cells (PEMFC)	1	12-11-2025		TLM1	
9.	Revision and assignment	2	13-11-2025 & 15-11-2025		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	19-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	20-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	22-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	24-11-2025 & 26-11-2025		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	1	29-11-2025		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	01-12-2025		TLM1	
9.	Revision and assignment	2	03-12-2025 & 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	06-12-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	08-12-2025		TLM1	
3.	UV-Visible Spectroscopy	1	10-12-2025		TLM1	
4.	electronic transition, Instrumentation	1	11-12-2025		TLM1	
5.	IR spectroscopy, fundamental modes	1	13-12-2025		TLM1	
6.	selection rules, Instrumentation	1	15-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	17-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	18-12-2025 & 20-12-2025		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.	2	24-12-2025 & 27-12-2025		TLM1	

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., CSE-B
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : K. N. V. 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 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 16-08-2025	04-08-2025 To 16-08-2025	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	20-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	25-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	25-08-2025		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-08-2025		TLM1	CO1	T1,T2	
10.	Homogeneous System of Equations	1	30-08-2025		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	01-09-2025		TLM1	CO1	T1,T2	
12.	**TUTORIAL I**	1	01-09-2025		TLM3	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	05-09-2025		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	06-09-2025		TLM1	CO1	T1,T2	
16.	Jacobi Iteration Method	1	08-09-2025		TLM1	CO1	T1,T2	
17.	**TUTORIAL II**	1	08-09-2025		TLM3	CO1	T1,T2	
18.	Gauss-Seidel Method	1	10-09-2025		TLM1	CO1	T1,T2	
19.	Gauss-Seidel Method	1	12-09-2025		TLM1	CO1	T1,T2	
20.	Problems	1	15-09-2025		TLM1	CO1	T1,T2	
21.	**TUTORIAL III**	1	15-09-2025		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	17-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	19-09-2025		TLM1	CO2	T1,T2	
24.	Eigen values, Eigen vectors	1	20-09-2025		TLM1	CO2	T1,T2	

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

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

UNIT-III: Calculus (Mean Value theorems)

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
40.	Introduction to Unit III	1	28-10-2025		TLM1	CO3	T1,T2	
41.	Rolle's theorem	1	29-10-2025		TLM1	CO3	T1,T2	
42.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
43.	**TUTORIAL VII**	1	30-10-2025		TLM3	CO3	T1,T2	
44.	Lagrange's mean value theorem	1	31-10-2025		TLM1	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
46.	Cauchy's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
47.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
48.	**TUTORIAL VIII**	1	06-11-2025		TLM3	CO3	T1,T2	
49.	Taylor's theorem	1	07-11-2025		TLM1	CO3	T1,T2	
50.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
51.	Maclaurin's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
52.	Problems and applications	1	13-11-2025		TLM1	CO3	T1,T2	
53.	**TUTORIAL IX**	1	13-11-2025		TLM3	CO3	T1,T2	
54.	Problems	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
55.	Introduction to Unit IV	1	18-11-2025		TLM1	CO4	T1,T2	
56.	Functions of several variables, Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
57.	Partial Derivatives	1	20-11-2025		TLM1	CO4	T1,T2	
58.	**TUTORIAL X**	1	20-11-2025		TLM3	CO4	T1,T2	
59.	Total derivatives, Chain rule, Directional Derivative	1	21-11-2025		TLM1	CO4	T1,T2	
60.	Taylor's Series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
61.	Maclaurin's series expansion	1	26-11-2025		TLM1	CO4	T1,T2	
62.	Jacobian	1	27-11-2025		TLM1	CO4	T1,T2	
63.	**TUTORIAL XI**	1	27-11-2025		TLM3	CO4	T1,T2	
64.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
65.	Functional Dependence	1	02-12-2025		TLM1	CO4	T1,T2	
66.	Maxima and Minima	1	03-12-2025		TLM1	CO4	T1,T2	
67.	Lagrange Multiplier Method	1	04-12-2025		TLM1	CO4	T1,T2	
68.	**TUTORIAL XII**	1	04-12-2025		TLM3	CO4	T1,T2	
69.	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
70.	Introduction to Unit-V	1	09-12-2025		TLM1	CO5	T1,T2	
71.	Double Integrals - Cartesian coordinates	1	10-12-2025		TLM1	CO5	T1,T2	
72.	Double Integrals- Polar co ordinates	1	11-12-2025		TLM1	CO5	T1,T2	
73.	**TUTORIAL XIII**	1	11-12-2025		TLM3	CO5	T1,T2	
74.	Triple Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
75.	Triple Integrals - Spherical coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
76.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
77.	Change of order of Integration	1	18-12-2025		TLM1	CO5	T1,T2	
78.	**TUTORIAL XIV**	1	18-12-2025		TLM3	CO5	T1,T2	
79.	Change of variables	1	19-12-2025		TLM1	CO5	T1,T2	

80.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	
81.	Finding Volume by double and triple Integral	1	24-12-2025		TLM1	CO5	T1,T2	
No. of classes required to complete UNIT-V		12			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
82.	Other applications of double integral	1	26-12-2025		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (29-12-2025 TO 03-01-2025)								

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

Mrs. K. N. V. Lakshmi	**Dr. 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

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.A.PRATYUSH
Course Name & Code : BC&ME, 23CM01
L-T-P Structure : **5-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I-Sem/**B-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:

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

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

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

REFERENCE BOOKS:

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Mechanical Engineering	1	18-08-2025		TLM1	
2.	Role of Mechanical Engineering in Industries and Society	1	19-08-2025		TLM2	
3.	Technologies in different sectors such as Energy.	1	21-08-2025		TLM1	
4.	Technologies in different sectors such as Manufacturing.	1	23-08-2025		TLM1	
5.	Technologies in different sectors such as Automotive.	1	25-08-2025		TLM1	
6.	Technologies in different sectors such as Aerospace, and Marine sectors.	1	26-08-2025		TLM1	
7.	Engineering Materials - Metals	1	28-08-2025		TLM1	
8.	Ferrous Metals	1	30-08-2025		TLM1	
9.	Non-ferrous Metals	1	01-09-2025		TLM1	
10.	Ceramics.	1	02-09-2025		TLM1	
11.	Composites.	1	04-09-2025		TLM1	
12.	Smart materials.	1	06-09-2025		TLM1	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Manufacturing Processes	1	08-09-2025		TLM1	
14.	Principles of Casting,	1	09-09-2025		TLM1	
15.	Forming,	1	11-09-2025		TLM1	
16.	joining processes,	1	13-09-2025		TLM1	
17.	Machining,	1	15-09-2025		TLM1	
18.	Introduction to CNC machines,	1	16-09-2025		TLM2	
19.	3D printing, and Smart manufacturing.	1	18-09-2025		TLM1	
20.	Thermal Engineering- Working principle of Boilers	1	20-09-2025		TLM1	
21.	Working principle of Boilers	1	22-09-2025		TLM1	
22.	Otto cycle	1	23-09-2025		TLM1	

23	Diesel cycle	1	25-09-2025		TLM1	
24	Refrigeration and air-conditioning cycles	1	27-09-2025		TLM2	
25	IC engines		27-09-2025		TLM2	
26	2-Stroke and 4-Stroke engines	1	06-10-2025		TLM1	
27	2-Stroke and 4-Stroke engines		06-10-2025		TLM1	
28	SI/CI Engines	1	07-10-2025		TLM1	
29	Components of Electric and Hybrid Vehicles.		07-10-2025		TLM2	
No. of classes required to complete UNIT-II: 14				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30	Power plants – Working principle of Steam power plants	1	09-10-2025		TLM1	
31	Power plants – Working principle of Diesel power plants	1	11-10-2025		TLM1	
32	Power plants – Working principle of Hydro power plants		11-10-2025		TLM1	
33	Power plants – Working principle of Nuclear power plants	1	13-10-2025		TLM2	
34	Mechanical Power Transmission - Belt Drives.		13-10-2025		TLM2	
35	Chain, Rope drives.	1	14-10-2025		TLM1	
36	Gear Drives and their applications.		14-10-2025		TLM1	
37	Introduction to Robotics- Joints & links.	1	16-10-2025		TLM1	
38	Configurations and applications of robotics.	1	18-10-2025		TLM2	
I-Mid Exams			20-10-2025 to 25-10-2025			
No. of classes required to complete UNIT-III: 06				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge:
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr.A.Pratyush**			**Dr.P.Lovaraju**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Y. Vijay Bhaskar Reddy

Course Name & Code : Introduction to Programming (23CS01)

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

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

PRE-REQUISITE: NIL

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 –Level 2
CO2:	Understand the features of C language	Understand – Level 2
CO3:	Interpret the problem and develop an algorithm to solve it.	Understand – Level 2
CO4:	Implement various algorithms using the C programming language.	Apply –Level 3
CO5:	Develop skills required for problem-solving and optimizing the code	Apply – Level 3

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	2	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	2	2	2
CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	2	2
CO4	3	2	2	-	-	-	-	-	-	-	-	-	2	2	2

CO5	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**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

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, Rema Theraja, 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 COs and CEOs, History of Computers	1	18-08-25		TLM3	
2.	Basic organization of a computer: ALU, Input- Output Units	1	19-08-25		TLM2	
3.	Memory, Program Counter	1	20-08-25		TLM2	
4.	Introduction to Programming Languages	1	21-08-25		TLM2	
5.	Basics of a Computer Program – Algorithms	1	23-08-25		TLM2	
6.	Flowcharts (Using Dia Tool), Pseudo Code	1	25-08-25		TLM3	
7.	Introduction to Compilation and Execution	1	26-08-25		TLM2	
8.	Primitive Data Types	1	28-08-25		TLM2	
9.	Variables and Constants	1	30-08-25		TLM2	
10.	Basic Input and Output Operations	2	01-09-25		TLM3	
11.	Type Conversion and Casting	1	03-09-25		TLM2	
12.	**Problem Solving Techniques:** Algorithmic Approach, Characteristics of Algorithm	2	04-09-25		TLM2	
13.	**Problem Solving Strategies:** Top-Down Approach, Bottom-Up Approach	1	08-09-25		TLM3	
14.	Time and space complexities of Algorithms	1	09-09-25		**TLM5**	
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	10-09-25		TLM2	
16.	if, if-else	1	11-09-25		**TLM5**	
17.	switch	1	15-09-25		TLM3	

18.	Example programs on Decision Making and Branching	1	16-09-25		TLM2	
19.	**Loops:** while Loop with Examples	2	17-09-25		TLM2	
20.	do-while Loop with Examples	2	20-09-25		TLM2	
21.	for Loop with Examples	2	23-09-25		TLM3	
22.	Break Statement	1	25-09-25		TLM2	
23.	Continue Statement	1	27-09-25		TLM2	
No. of classes required to complete UNIT – II: 12				**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
24.	**Arrays:** Introduction to 1D-Arrays, Declaration, and Initialization	1	06-10-25		TLM3	
25.	1D-Array Indexing, Accessing Elements of 1D-Array	1	07-10-25		**TLM5**	
26.	Memory Model, Programs on 1D-Arrays	2	08-10-25		TLM2	
27.	Introduction to 2D-Arrays, Declaration, and Initialization	1	09-10-25		TLM2	
28.	2D-Array Indexing, Accessing Elements of 2D-Array	1	11-10-25		TLM2	
29.	Programs on 2D-Arrays	2	13-10-25		TLM3	
30.	Introduction to Strings	1	15-10-25		TLM2	
31.	Reading and Writing Operations on Strings	1	16-10-25		TLM2	
32.	String Handling Functions	1	18-10-25		TLM2	
33.	Programs on Strings	2	27-10-25		TLM3	
No. of classes required to complete UNIT – III:13				**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
34.	**Pointers:** Introduction to Pointers	1	29-10-25			
35.	Dereferencing and Address Operators	1	30-10-25		**TLM5**	
36.	Pointer and Address Arithmetic	1	01-11-25		TLM2	
37.	Array Manipulation using Pointers	2	03-11-25		TLM3	
38.	**User-defined Data Types:** Structure, Declaration, and Initialization	2	05-11-25		TLM2	
39.	Concepts of Structures	2	08-11-25		TLM2	
40.	Programs on Structures	2	11-11-25		TLM3	
41.	Union, Declaration, and Initialization	1	13-11-25		TLM2	
42.	Concepts of Union	2	15-11-25		TLM2	
43.	Programs on Union	2	18-11-25		TLM3	
No. of classes required to complete UNIT – IV:16				**No. of classes taken:**		

UNIT – V: Functions & 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
44.	**Functions:** Introduction, Function Declaration and Definition	2	20-11-25		TLM2	
45.	Function Call – Return Types and Arguments	2	24-11-25		TLM3	

46.	Modifying parameters inside functions using pointers	2	26-11-25		TLM2	
47.	Arrays as parameters	2	29-11-25		TLM2	
48.	Recursion and Example	2	02-12-25		TLM3	
49.	Scope and Lifetime of Variables	2	04-12-25		**TLM5**	
50.	**File Handling:** Introduction to Files, Basics of File Handling	2	08-12-25		TLM3	
51.	File Operations	2	10-12-25		TLM2	
52.	Example Programs on File Handling	2	15-12-25		TLM3	
53.	Revision of Concepts	2	17-12-25		TLM2	
No. of classes required to complete UNIT – V:20				**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
54.	Introduction to Data Structures	2	20-12-25		TLM2	
55.	Types of Data Structures&	1	23-12-25		TLM3	
56.	Applications	3	24-12-25		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 (R23 Regulation):

Evaluation Task	Marks
Assignmenton Cycle – I(Units-I, II)	A1=5
MID – IDescriptiveExamination (Units-I, II)	M1=15
MID – I Objective /QuizExamination (Units-I, II)	Q1=10
Mid – I Total Marks: A1 + M1 + Q1	MT1 = 30
Assignment on Cycle – II(Unit-III, IV & V)	A2=5
MID – II Descriptive Examination (UNIT-III, IV & V)	M2=15
MID – II Objective / Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid – II Total Marks: A2 + M2 + Q2	MT2 = 30
ContinuousInternal Evaluation (CIE): 80% of Max (MT1, MT2) + 20% of Min (MT1, MT2)	C = 30
Semester End Examination (SEE): S	S = 70
Total Marks (T) = C + S	T = 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
PO6	**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
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 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 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. Y.V. Bhaskar Reddy**	**Dr. M. Srinivasa Rao**	**Dr. Y.V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. P. Mary Kamala Kumari
Course Name & Code :IT WORKSHOP Lab &23IT51
L-T-P Structure :0-0-2 **Credits:1**
Program/Sem/Sec : B.Tech. - CSE/I/B **A.Y.:**2025-26
PREREQUISITE : **NIL**

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC. (Understand)
CO2	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO3	Build dialogs and documents using ChatGPT. (Apply)
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. (Apply)

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	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low **2** –Medium **3** –High

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 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.	Task-1	3	20-08-2025		**DM5**	
2.	Task-2	3	03-09-2025		**DM5**	
3.	Task-3	3	10-09-2025		**DM5**	
4.	Task-4	3	10-09-2025		**DM5**	
5.	Task-5	3	10-09-2025		**DM5**	
Internet & World Wide Web						
6.	Task-1	3	17-09-2025		**DM5**	
7.	Task-2	3	17-09-2025		**DM5**	
8.	Task-3	3	24-09-2025		**DM5**	
9.	Task-4	3	08-10-2025		**DM5**	
LaTex and WORD						
10.	Task-1	3	15-10-2025		**DM5**	
11.	Task-2	3	15-10-2025		**DM5**	
12.	Task-3	3	29-10-2025		**DM5**	
13.	Task-4	3	29-10-2025		**DM5**	
EXCEL						
14.	Task-1	3	05-11-2025		**DM5**	
15.	Task-2	3	05-11-2025		**DM5**	
LOOKUP/VLOOKUP						
16.	Task-1	3	12-11-2025		**DM5**	
POWER POINT						
17.	Task-1	3	19-11-2025		**DM5**	
18.	Task-2	3	26-11-2025		**DM5**	
19.	Task-3	3	03-12-2025		**DM5**	
AI TOOLS – ChatGPT						
20.	Task-1	3			**DM5**	

21.	Task-2	3	10-12-2025		**DM5**	
22.	Task-3	3	17-12-2025		**DM5**	
23.	Internal exam	3	24-12-2025		**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):

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	Mrs. P. Mary Kamala Kumari	Mr. N. Srikanth	Dr. D. Venkata Subbaiah	Dr. S. Nagarjuna Reddy
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: K. Raju
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech / 1st/ CSE-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	21/08/25		TLM4	
2.	Vowels & Consonants	06	28/08/25 04/09/25		TLM1 TLM5	
3.	Neutralization	03	11/09/25		TLM1, TLM5	
4.	Accent rules	03	18/09/25		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	25/09/25 09/10/25		TLM4	

6.	Role Play-I (Formal and Informal)	06	16/10/25 30/10/25		TLM4	
7.	e-mail Writing,	03	06/11/25		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	13/11/25		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	20/11/25		TLM4, TLM6	
10.	Debate: methods & Practice	03	27/11/25		TLM4, TLM6	
11.	PPT Presentation	06	04/12/25		TLM2, TLM4	
12.	Poster Presentation	03	11/12/25		TLM2, TLM4	
13.	Mock Interviews	03	18/12/25		TLM1, TLM6	
14.	Lab Internal Exam	03	08/12/25			
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	**K. Raju**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T.Satyanarayana**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with "A" Grade &NBAfor ASE, CE, CSE, ECE, EEE & IT (Under Tier - I)

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

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

DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.Vijaya Dasaradha&Ms.K.Sri Lakshmi

Course Name & Code **:** Chemistry Lab&23FE52

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

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

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 andindustrial 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): CSE-B

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	22-08-2025		TLM1	CO1	
2	Explanation of chemicals and glassware	3	29-08-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	12-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	19-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	26-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	10-10-2025		TLM4	CO3	
7.	Determination of Alkalinity of a given water sample	3	17-10-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	31-10-2025		TLM4	CO1	
9.	Estimation of Ferrous ion by Dichrometry	3	07-11-2025		TLM4	CO4	
10.	Estimation of total hardeness of given water sample	3	14-11-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	21-11-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	28-11-2025		TLM4	CO1	
13.	Additional experiment	3	05-12-2025		TLM4	CO1	
14.	Additional experiment/repeat	3	12-12-2025		TLM4	CO1	
15.	Additional experiment/repeat	3	19-12-2025		TLM4	CO1	
16.	Internal Exam	3	26-12-2025		TLM4	CO1	
	Total						

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:

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.
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 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.S.Vijaya Dasaradha	**Dr.V.Parvathi**	**Dr.V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

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hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. Y. Vijay Bhaskar Reddy /Ms. M. Kamala Kumari

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

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

Program/Sem/Sec : B.Tech. –CSE(B) / I Sem. 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.	Apply – Level 3
CO2:	Apply the right control structure for solving the problem.	Apply – Level 3
CO3:	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, pointers and files in C.	Apply – Level 3
CO4:	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	-	-	3	-	-	-	-	-	-	-	3	3	3
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
CO4	-	-	-	-	-	-	-	2	2	2					
1 – Low **2 –**Medium **3 –** High															

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week – 1 and Week – 2	06	19/08/25 26/08/25		DM5
2.	Week – 3	03	02/09/25		DM5
3.	Week – 4 and Week – 5	03	09/09/25		DM5
4.	Week – 6	03	16/09/25		DM5
5.	Week – 7	03	23/09/25		DM5
6.	Week – 8	03	07/10/25		DM5
7.	Week – 9	03	14/10/25		DM5
8.	Week – 10	03	28/10/25		DM5
9.	Week – 11	03	04/11/25		DM5
10.	Week – 12	03	11/11/25		DM5
11.	Week – 13	06	18/11/25 25/11/25		DM5
12.	Week – 14	06	02/12/25 09/12/25		DM5
13.	Revision	03	16/12/25		
14.	Internal Lab Exam	03	23/12/25		DM4

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):

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
PO6	**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
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 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 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. Y.V. Bhaskar Reddy**	**Dr. M. Srinivasa Rao**	**Dr. Y.V. Bhaskar Reddy**	**Dr.S.Nagarjuna Reddy**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. B. Sreenivasa Reddy
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem ...I .CSE -C.....
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	20-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23-08-2025 28-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	30-08-2025 03-09-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	04-09-2025 06-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	10-09-2025 11-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	13-09-2025 17-09-2025		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	18-09-2025 20-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	01	24-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	01	27-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	01	08-10-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	02	09-10-2025 11-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	02	15-10-2025 18-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 09						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	Text Book followed	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	29-10-2025 30-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	05-11-2025 06-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	08-11-2025 12-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	13-11-2025 15-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	19-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	20-11-2025 22-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	26-11-2025 27-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	29-11-2025 03-12-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	04-12-2025 06-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	10-12-2025		TLM2 TLM5	CO4	T1,T2	

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

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	01	11-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	13-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	17-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	18-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	20-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 05						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Word Analogy**	01	24-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	27-12-2025		TLM2 &5	
3.	**Technical vocabulary**		27-12-2025		TLM2 &5	
No. of classes required to complete UNIT-V:				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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

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DEPARTMENT OF FRESHMANENGINEERING

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/ CSE C **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	19 -08-2025		TLM1	
2.		1	20-08-2025		TLM1	
3.		1	22-08-2025		TLM1	
4.		1	23-08-2025		TLM1	
5.	Fundamentals Of Quantum Mechanics	1	26-08-2025		TLM1	
6.	Fundamentals Of Quantum Mechanics	1	29-08-2025		TLM1	
7.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules	1	30-08-2025		TLM1	
8.	Practice of examples	1	02-09-2025		TLM1	
9.	Practice of examples	1	03-09-2025		TLM1	
10	Energy level diagrams of O_2 and CO	1	05-09-2025		TLM1	
11	Practice of examples	1	O6-09-2025		TLM1	
12	π-molecular orbitals of butadiene	1	09-09-2025		TLM1	
13	π-molecular orbitals of benzene	1	10-09-2025		TLM1	
14	π-molecular orbitals of benzene cond … with practice	1	12-09-2025		TLM1	
15	Schrodinger Wave Equation & Significance of Ψ and Ψ^2	1	16-09-2025		TLM1	
16	Particle In one dimensional box	1	17-09-2025		TLM1	
No. of classes required to complete UNIT-I: 16				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	19-09-2025		TLM1	
2.	Semiconductors - Basic concept&applications	1	20-09-2025		TLM1	
3.	Super conductors - Introduction	1	23-09-2025		TLM1	
4.	Super conductors - Basic concept&applications	1	24-09-2025		TLM1	
5.	Supercapacitors - Introduction	1	26-09-2025		TLM2	
6.	Supercapacitors - Basic concept- classification	1	27-09-2025		TLM2	
7.	Cont… Clasiification	1	07-10-2025		TLM2	
8.	Applications of super capacitors.	1	08-10-2025		TLM2	
9.	Nano materials - Introduction	1	10-10-2025		TLM2	
10.	Nano materials - classification	1	14-10-2025		TLM2	
11.	Nano materials - properties and applications of fullerenes	1	15-10-2025		TLM2	
12.	Nano materials - carbon nano tubes and graphene nanoparticles	1	17-10-2025		TLM2	
13.	Revision of unit 2	1	18-10-2025		TLM2	
No.of classes required to complete UNIT-II: 13				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	28-10-2025		TLM2	
2.	Electrochemical cell and basic concepts of electrochemistry.	1	29-10-2025		TLM1	
3.	Cell potential calculations and numerical problems	1	31-11-2025		TLM1	
4.	Continue...numerical problems.	1	01-11-2025		TLM1	

5.	Potentiometry-potentiometric titrations (redox titrations)	1	04-11-2025		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	07-11-2025		TLM1	
8.	Primary cells – Zinc-air battery, Secondary cells – - working of the batteries including cell reactions	1	11-11-2025		TLM1	
9.	lithium-ion batteries working of the batteries including cell reactions	1	12-11-2025		TLM1	
10.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells, Polymer electrolyte membrane fuel cells (PEMFC)	1	14-11-2025		TLM1	
11.	Practise of making and cell reactions of above batteries.	1	15-11-2025		TLM1	
12.	Nernst equation and problems	1	18-11-2025		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	19-11-2025		TLM1	
2.	Thermo and Thermosetting plastics, types of polymerisation with examples.	1	21-11-2025		TLM1	
3.	Mechanisms of addition polymerisation Mechanism of step growth polymerization.	1	22-11-2025		TLM1	
4.	Mechanism coordination polymerization, with specific example.	1	25-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon.	1	26-11-2025		TLM1	

6.	Preparation, properties and applications of Nylon-6,6, carbon fibres	1	28-11-2025		TLM1	
7.	Preparation, properties and applications of Bakelite,	1	29-11-2025		TLM1	
8.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	02-12-2025		TLM1	
9.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	03-12-2025		TLM1	
10.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	05-12-2025		TLM1	
No. of classes required to complete UNIT-IV: 10				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	06-12-2025		TLM2	
2.	Absorption of radiation: Beer-Lambert's law	1	09-12-2025		TLM2	
3.	UV-Visible Spectroscopy	1	10-12-2025		TLM2	
4.	electronic transition, Instrumentation	1	12-12-2025		TLM2	
5.	IR spectroscopies, fundamental modes	1	16-12-2025		TLM2	
6.	selection rules, Instrumentation of IR spectroscopy	1	17-12-2025		TLM2	
7.	Applications of IR spectroscopy	1	19-12-2025		TLM2	
8.	Chromatography-Basic Principle	1	20-12-2025		TLM2	
9	Classification-HPLC: Principle, Instrumentation and Applications	1	23-12-2025		TLM2	
10	Cont… chromatography	1	24-12-2025		TLM2	
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		TLM2	
2	Applications of polymers in advanced technologies .	1	27-12-2025		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.Sayanarayana**
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.
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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., CSE-C
ACADEMIC YEAR	**:** 2025-26
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 4-1-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Dr. K. Jhansi Rani
COURSE COORDINATOR	**:** Dr. 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. RajnishVerma, "*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	19-08-2025		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-08-2025		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	22-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	26-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	29-08-2025		TLM1	CO1	T1,T2	
9.	**TUTORIAL I**	1	30-08-2025		TLM3	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	02-09-2025		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	03-09-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
13.	Homogeneous System of Equations	1	05-09-2025		TLM1	CO1	T1,T2	
14.	Non-Homogeneous System of Equations	1	09-09-2025		TLM1	CO1	T1,T2	
15.	Gauss Elimination Method	1	10-09-2025		TLM1	CO1	T1,T2	
16.	**TUTORIAL II**	1	06-09-2025		TLM3	CO1	T1,T2	
17.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	12-09-2025		TLM1	CO1	T1,T2	
19.	Gauss-Seidel Method	1	16-09-2025		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	17-09-2025		TLM1	CO1	T1,T2	
21.	**TUTORIAL III**	1	13-09-2025		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		21			No. of classes taken:			

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

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

27.	Properties	1	24-09-2025		TLM1	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	26-09-2025		TLM1	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	07-10-2025		TLM1	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	08-10-2025		TLM1	CO2	T1,T2	
31.	**TUTORIAL V**	1	27-09-2025		TLM3	CO2	T1,T2	
32.	Diagonalization of a matrix	1	08-10-2025		TLM1	CO2	T1,T2	
33.	Diagonalization of a matrix	1	10-10-2025		TLM1	CO2	T1,T2	
34.	Quadratic Forms, Nature of Quadratic Forms	1	14-10-2025		TLM1	CO2	T1,T2	
35.	Quadratic Forms, Nature of Quadratic Forms	1	15-10-2025		TLM1	CO2	T1,T2	
36.	**TUTORIAL VI**	1	15-10-2025		TLM3	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	13-10-2025		TLM1	CO2	T1,T2	
38.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
39.	**TUTORIAL VII**	1	18-10-2025		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		18			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
40.	Introduction to Unit III	1	28-10-2025		TLM1	CO3	T1,T2	
41.	Mean Value theorem	1	29-10-2025		TLM1	CO3	T1,T2	
42.	Rolle's theorem	1	29-10-2025		TLM3	CO3	T1,T2	
43.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
44.	**TUTORIAL VIII**	1	01-11-2025		TLM3	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
46.	Lagrange's mean value theorem	1	05-11-2025		TLM3	CO3	T1,T2	
47.	Cauchy's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
48.	Cauchy's mean value theorem	1	07-11-2025		TLM1	CO3	T1,T2	
49.	**TUTORIAL IX**	1	08-11-2025		TLM3	CO3	T1,T2	
50.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
51.	Taylor's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
52.	Maclaurin's theorem	1	12-11-2025		TLM3	CO3	T1,T2	
53.	Problems and applications	1	14-11-2025		TLM1	CO3	T1,T2	
54.	**TUTORIAL X**	1	15-11-2025		TLM3	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.	Topics to be	No. of	Tentative	Actual	Teaching	Learning	Text	HOD

No.	covered	Classes Required	Date of Completion	Date of Completion	Learning Methods	Outcome COs	Book followed	Sign Weekly
55.	Introduction to Unit IV	1	18-11-2025		TLM1	CO4	T1,T2	
56.	Functions of several variables, Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
57.	Partial Derivatives	1	19-11-2025		TLM1	CO4	T1,T2	
58.	Total derivatives, Chain rule, Directional Derivative	1	21-11-2025		TLM1	CO4	T1,T2	
59.	**TUTORIAL XI**	1	22-11-2025		TLM3	CO4	T1,T2	
60.	Taylor's Series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
61.	Maclaurin's series expansion	1	26-11-2025		TLM1	CO4	T1,T2	
62.	Jacobian	1	26-11-2025		TLM1	CO4	T1,T2	
63.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
64.	**TUTORIAL XII**	1	29-11-2025		TLM3	CO4	T1,T2	
65.	Functional Dependence	1	02-12-2025		TLM1	CO4	T1,T2	
66.	Maxima and Minima	1	03-12-2025		TLM1	CO4	T1,T2	
67.	Lagrange Multiplier Method	1	03-12-2025		TLM3	CO4	T1,T2	
68.	Lagrange Multiplier Method	1	05-12-2025		TLM1	CO4	T1,T2	
69.	**TUTORIAL XIII**	1	06-12-2025		TLM3	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
70.	Introduction to Unit-V	1	09-12-2025		TLM1	CO5	T1,T2	
71.	Double Integrals - Cartesian coordinates	1	10-12-2025		TLM1	CO5	T1,T2	
72.	Double Integrals- Polar co ordinates	1	10-12-2025		TLM1	CO5	T1,T2	
73.	Triple Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
74.	**TUTORIAL XIV**	1	13-12-2025		TLM3	CO5	T1,T2	
75.	Triple Integrals - Spherical coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
76.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
77.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
78.	**TUTORIAL XV**	1	19-12-2025		TLM3	CO5	T1,T2	
79.	Change of variables	1	20-12-2025		TLM1	CO5	T1,T2	
80.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	

81.	Finding Volume by double and triple Integral	1	24-12-2025		TLM1	CO5	T1,T2	
82.	**TUTORIAL XVI**	1	27-12-2025		TLM3	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
83.	Other applications of double integral	2	24-12-2025 26-12-2 025		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.T. K. Jhansi Rani	**Dr. K. Bhanu Lakshmi**	**Dr. A. Rami Reddy**	**Dr.T.Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

Department of Mechanical Engineering

COURSE HANDOUT

PART-A

Course Name & Code : BASIC MECHANICAL ENGINEERING & 23CM01

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

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

Name Of Course Instructor : Dr. Murahari Kolli

Name of Course Coordinator : Dr. Siva Sankara Babu

Prerequisite Subject: Nil

Course Educational Objectives: 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 introduce basics of robotics and its applications.

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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	1	1	1										1	
CO2	1	1											1	
CO3	1	1											1	1
CO4	1	1											1	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 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

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Introduction to Mechanical Engineering: - Course Educational Objective & Course Outcomes	01	18/8/2025		**TLM1**	CO1	T3,R6	
2.	Define Engineering, Role of Engineering.	01	20/8/2025		**TLM1**	CO1	T3,R6	
3.	Role of Mechanical Engineering in Industries and Society	01	21/8/2025		**TLM1**	CO1	T3	
4.	Technologies in different sectors such as Energy	01	23/8/2025		**TLM1**	CO1	T3	
5.	Technologies in different sectors such as Manufacturing	01	25/8/2025		**TLM1**	CO1	T3	
6.	Technologies in different sectors such as Automotive	01	28/8/2025		**TLM1**	CO1	T2,R1,R3	
7.	Technologies in different sectors such as Aerospace	01	30/8/2025		**TLM1**	CO1	T2,R1,R3	
8.	Technologies in different sectors such as Marine sectors	01	01/9/2025		**TLM1**	CO1	T3,R1	
9.	Engineering Materials	01	03/9/2025		**TLM1**	CO1	T2,R1	
10.	Metals-Ferrous and Non-ferrous,	01	04/9/2025		**TLM1**	CO1	T2,R1	
11.	Ceramics, Composites,	01	06/9/2025		**TLM1**	CO1	T2,R1	
12.	Smart materials	01	08/9/2025		**TLM1**	CO1	T2,R1	
No. of classes required to complete UNIT-I		**12**			**No. of classes taken:**			
UNIT – II Manufacturing Processes &Thermal Engineering								
13.	Principles of Casting	01	10/9/2025		**TLM1**	CO2	T2,R1	
14.	Forming,	01	12/9/2025		**TLM1**	CO2	T2,R1	
15.	Joining processes,	01	13/9/2025		**TLM1**	CO2	T2,R1	
16.	Machining	01	15/9/2025		**TLM1**	CO2	T2,R1	
17.	Introduction to CNC machines	01	17/9/2025		**TLM1**	CO2	T2,R1	
18.	3D printing, and Smart manufacturing	01	18/9/2025		**TLM1**	CO2	T2,R1	
19.	Working principle of Boilers	01	20/9/2025		**TLM1**	CO2	T2,R1	

20.	Otto cycle, Diesel cycle	01	22/9/2025		**TLM1**	CO2	T2,R1	
21.	Refrigeration and air-conditioning cycles,	01	24/9/2025		**TLM1**	CO2	T2,R1	
22.	IC engines, 2-Stroke and 4-Stroke engines, SI/CI Engines	01	25/9/2025		**TLM1**	CO2	T2,R1	
23.	Components of Electric and Hybrid Vehicles.	01	27/9/2025		**TLM1**	CO2	-	
No. of classes required to complete UNIT-II		**11**			**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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Working principle of Steam	01	06/10/2025		**TLM1**	CO3	T2,R6	
26.	Diesel, Hydro	01	08/10/2025		**TLM1**	CO3	T2,R6	
27.	Nuclear power plants	01	09/10/2025		**TLM1**	CO3	T1,T2,R1	
28.	Belt Drives, Chain	01	11/10/2025		**TLM1**	CO3	T1,T2,R1	
29.	Rope drives,	01	13/10/2025		**TLM1**	CO3	-	
30.	Gear Drives and their applications.	01	15/10/2025		**TLM1**	CO3	-	
31.	Joints & links	01	16/10/2025		**TLM1**	CO3	T2,R1	
32.	Configurations, Applications of robotics.	01	18/10/2025		**TLM1**	CO3	T2,R1	
No. of classes required to complete UNIT-III		**8**			**No. of classes taken:32**			

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	18/09/2025	18/10/2025	8
I Mid Examinations	20/10/2025	25/10/2025	1
II Phase of Instructions	27/10/2025	27/12/2025	9
II Mid Examinations	29/12/2025	03/01/2026	1
Preparation and Practical	05/01/2026	10/01/2026	1
Semester End Examinations	19/01/2029	31/01/2026	2

EVALUATION PROCESS:

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III BME Syllabus)	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-IV (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Units-IV, V & UNIT-VI CE Syllabus)	M2=15
II-Quiz Examination (UNIT-III (Units-IV, V & UNIT-VI CE Syllabus)	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):

WK1	A systematic, theory-based understanding of the natural sciences applicable to the discipline and awareness of relevant social sciences.
WK2	Conceptually-based mathematics, numerical analysis, data analysis, statistic sand formal aspects of computer and information science to support detailed analysis and modelling applicable to the discipline.
WK3	A systematic, theory-based formulation of engineering fundamentals required in the engineering discipline.
WK4	Engineering specialist knowledge that provides theoretical frameworks and bodies of knowledge for the accepted practice are as in the engineering discipline; much is at the fore front of the discipline.
WK5	Knowledge, including efficient resource use, environmental impacts, whole-life cost, re- use of resources, net zero carbon, and similar concepts, that supports engineering design and operations in a practice area.
WK6	Knowledge of engineering practice (technology)in the practice are as in the engineering discipline.
WK7	Knowledge of the role of engineering in society and identified issues in engineering practice in the discipline, such as the professional responsibility of an engineer to public safety and sustainable development.
WK8	Engagement with selected knowledge in the current research literature of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues.
WK9	Ethics, inclusive behavior and conduct. Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect.

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
PO 2	**Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
PO 3	**Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
PO 4	**Conduct Investigations of Complex Problems**: Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).
PO 5	**Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO 6	**The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal frame work, culture and environment. (WK1, WK5, and WK7).
PO 7	**Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO 8	**IndividualandCollaborativeTeamwork:**Functioneffectivelyasanindividual,and as a member or leader in diverse/multi-disciplinary teams
PO 9	**Communication:** Communicate effectively and inclusively within the engineering communityandsocietyatlarge,suchasbeingabletocomprehendandwriteeffective reportsanddesigndocumentation,makeeffectivepresentationsconsidering cultural, language, and learning differences
PO 10	**Project Management and Finance**: Apply knowledge and understanding of engineeringmanagementprinciplesandeconomicdecision-makingandapplytheseto one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO 11	**Long Learning:** Recognize the need for, and have the preparation and ability for i)independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. Murahari Kolli**	**Dr. CH.Siva Sankara Babu**	**Mr.J.Subba Reddy**	**Dr.M.B.S.S.Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(An Autonomous Institution since 2010)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	: Dr. K. Venkatrao	
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	18-08-2025		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	28-08-2025		TLM1	
7.	Flowcharts (Using Dia Tool), pseudo code.	1	29-08-2025		TLM1	
8.	Introduction to Compilation and Execution	1	30-08-2025		TLM1	
9.	Primitive Data Types	2	01-09-2025 01-09-2025		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	08-09-2025		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	15-09-2025 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	22-09-2025		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	06-10-2025		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	13-10-2025		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	27-10-2025		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	06-11-2025		TLM1	
42.	dereferencing and address operators	1	07-11-2025		TLM1	
43.	pointer and address arithmetic	1	08-11-2025		TLM1	
44. 45.	array manipulation using pointers	2	10-11-2025 12-11-2025		TLM1	
46.	User-defined data types	1	13-11-2025		TLM1	
47. 48.	Structures, Definition and Initialization	2	14-11-2025 15-11-2025		TLM1 TLM1	
49.	Example programs	1	17-11-2025		TLM1	
50. 51.	Unions	2	19-11-2025 20-11-2025		TLM1 TLM1	
52.	Example programs	1	21-11-2025		TLM1	
53.	Revision	1	22-11-2025		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	24-11-2025		TLM1	
55.	Function Declaration and Definition	1	26-11-2025		TLM1	
56.	Function call Return Types	1	27-11-2025		TLM1	
57.	Arguments	1	28-11-2025		TLM1	
58. 59.	modifying parameters inside functions using pointers	2	29-11-2025 01-12-2025		TLM1 TLM1	
60.	arrays as parameters	1	03-12-2025		TLM1	
61.	Scope and Lifetime of Variables	1	04-12-2025		TLM1	
62.	Storage classes examples	1	05-12-2025		TLM1	
63.	Introduction to Files	1	06-12-2025		TLM1	
64.	Basics of File Handling	1	08-12-2025		TLM1	
65.	Basics of File Handling examples	1	10-12-2025		TLM1	
66.	Operations on Files	1	11-12-2025		TLM1	
67.	Operations on Files examples	1	12-12-2025		TLM1	
68.	Revision	1	13-12-2025		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	15-12-2025		TLM1	
70.	Number based real time problems	1	17-12-2025		TLM1	
71.	Control structures real time problems	1	18-12-2025		TLM1	
72.	Control structures real time problems	1	19-12-2025		TLM1	
73.	Array based real time examples	1	20-12-2025		TLM1	
74.	Array based real time examples	1	22-12-2025		TLM1	
75.	Pattern based problems	1	24-12-2025		TLM1	
76.	String real world examples	1	25-12-2025		TLM1	
77.	Introduction to Data structures	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 (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. K. Venkatrao**	**Dr. M. Srinivasrao**	**Dr. Y. V. B. Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. P.Veera Swamy
Course Name & Code : IT Workshop Lab & 23IT51
L-T-P Structure : 0-0-2 **Credits:** 1
Program/Sem/Sec : B.Tech - CSE/I/C **A.Y.:** 2025-26

PREREQUISITE : NIL

COURSE OBJECTIVES:

- To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables
- To demonstrate configuring the system as 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 the 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, the student will be able to

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC .**(Apply-L3)**
CO2	Develop presentation /documentation using Office tools and LaTeX. **(Apply-L3)**
CO3	Build dialogs and documents using ChatGPT. **(Apply-L3)**
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. **(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	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

16.	Task-1	3	21-11-2025		DM5	
POWER POINT						
17.	Task-1	3	21-11-2025		DM5	
18.	Task-2	3	28-11-2025		DM5	
19.	Task-3	3	05-12-2025		DM5	
AI TOOLS – ChatGPT						
20.	Task-1	3	12-12-2025		DM5	
21.	Task-2	3	12-12-2025		DM5	
22.	Task-3	3	19-12-2025		DM5	
23.	Internal exam	3	26-12-2025		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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	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.P.Veera Swamy	Mr.N.Srikanth	Dr. D. Venkata Subbaiah	Dr. S.Nagarjuna Reddy
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. B. Sreenivasa Reddy
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech .....I .CSE-C.....
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	18-08-2025		TLM4	
2.	Vowels & Consonants	06	25-08-2025 01-09-2025		TLM1 TLM5	
3.	Neutralization	03	08-09-2025		TLM1, TLM5	
4.	Accent rules	03	15-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	22-09-2025 06-10-2025		TLM4	

6.	Role Play-I (Formal and Informal)	06	13-10-2025 27-10-2025		TLM4	
7.	e-mail Writing,	03	03-11-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	10-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	17-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	24-11-2025		TLM4, TLM6	
11.	PPT Presentation	03	01-12-2025		TLM2, TLM4	
12.	Poster Presentation	03	08-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	15-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	22-12-2025			
No. of classes required to complete Syllabus:				**No. of classes taken:**		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

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

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

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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. V.Parvathi & Dr D. Mallikarjuna Rao
Course Name & Code : Chemistry Lab & 23FE52
L-T-P Structure :0-0-3 **Credits:1.5**
Program/Sem/Sec : B.Tech/ I sem/ CSE C **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	21-08-2025		TLM1		
2.	Introduction to chemistry lab	**3**	28-08-2025		TLM4		
3.	General Introduction- Safety Rules, Glass wares and Chemicals explanation.	3	04-09-2025		TLM4		
4.	Volumetric Analysis- Glass wares, Chemicals, indicators and model titration.	3	11-09-2025		TLM4		
5.	Preparation of Bakelite	3	18-09-2025		TLM4	CO2	
6.	Determination of pH.	3	25-09-2025		TLM4	CO4	
7.	Model Experiment- Na_2CO_3 versus HCl	3	09-10-2025		TLM4	CO1	
8.	Determination of strength of acid in Lead acid battery.	3	16-10-2025		TLM4	CO3	
9	Determination of alkalinity of given water sample.	3	30-10-2025		TLM4	CO4	
10.	Permanganometry.	3	06-11-2025		TLM4	CO4	
11.	Dichrometry.	3	13-11-2025		TLM4	CO1	
12.	Complexometric titration using EDTA to find hardness of water.	3	20-11-2025		TLM4	CO1	
13	Conductometry- Strong acid versus strong base	3	27-11-5025		TLM4	CO1	
14	Conductometry- Weak acid versus strong base	3	04-12-2025		TLM4	CO1	
15	Additional Experiment/ revision / conducting lab to absentees.	3	11-12-2025		TLM4		
16	Internal Examination	3	18-12-2025				

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

COURSEHANDOUT

PART-A

Name of Course Instructor : Dr. K Venkatrao

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

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

Program/Sem/Sec : B.Tech.–CSE /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	18-08-2025		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	Revision	03	09-12-2025			
15.	Lab Internal Test	03	16-12-2025		TLM4	

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

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	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. K. Venkatrao	Dr. M. Srinivasarao	Dr. Y.Vijay Bhaskar Reddy	Dr. S. Nagarjuna Reddy
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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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. Y.Subbareddy
Course Name & Code : Chemistry Lab & 23FE52
L-T-P Structure : **0-0-3** **Credits: 1.5**
Program/Sem/Sec : I B.Tech./I Sem/CSE-D **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): CSE-D

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	20-08-2025		TLM1	CO1	
2.	Explanation of chemicals and glassware	3	03-09-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	10-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	17-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	24-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	08-10-2025		TLM4	CO3	
7.	Alkalinity of water sample	3	15-10-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	29-10-2025		TLM4	CO1	
9.	Estimation of Ferrous ion by Dichrometry	3	05-11-2025		TLM4	CO4	
10.	Estimation of total hardeness of given water sample	3	12-11-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	19-11-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	26-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	03-12-2025		TLM4	CO1	
14.	Additional experiment-Virtual Lab	3	10-12-2025		TLM4	CO3	
15.	Internal Exam	3	17-12-2025 & 24-12-2025		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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DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Lakshmi V R Babu Syamala & Mr. S. Vijaya Dasaradha

Course Name & Code : Chemistry & 23FE02

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

Program/Sem/Sec : I B.Tech./I Sem/CSE-D **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 (18,19,20,22)		TLM1	
2.	Fundamentals of Quantum Mechanics	2	25-08-2025 & 26-08-2025			
3.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	29-08-2025		TLM1	
4.	Particle in one dimensional box	1	01-09-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	02-09-2025 & 03-09-2025		TLM1	
6.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	1	05-09-2025		TLM1	
7.	Energy level diagrams-Summary	1	08-09-2025		TLM1	
8.	π-molecular orbitals of butadiene	1	09-09-2025		TLM1	
9.	π-molecular orbitals ofbenzene	1	10-09-2025		TLM1	
10.	Calculation of Bond order	1	12-09-2025		TLM1	
11.	Revision and assignment	1	15-09-2025		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	16-09-2025		TLM1	
2.	Semiconductors- Conduction mechanism & applications	1	17-09-2025		TLM1	
3.	Super conductors – Introduction, Basic concepts	1	19-09-2025		TLM1	
4.	Super conductors – Properties, Types and applications	2	22-09-2025 & 23-09-2025		TLM1	
5.	Super capacitors - Introduction, Basic concepts	1	24-09-2025		TLM1	
6.	Super capacitors - classification & applications	1	26-09-2025		TLM1	
7.	Nano materials - Introduction	1	06-10-2025		TLM2	
8.	Nano materials - classification	1	07-10-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	08-10-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	2	10-10-2025 & 13-10-2025		TLM2	
11.	Revision and assignment of U-II	2	14-10-2025 & 15-10-2025		TLM1	
12.	Mid-1 Preparation	1	17-10-2025			
No. of classes required to complete UNIT-II: 14+1				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 & 28-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	29-10-2025 & 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	04-11-2025		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	05-11-2025		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	11-11-2025		TLM1	
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	12-11-2025		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	18-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	19-11-2025		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 & 25-11-2025		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	26-11-2025		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	02-12-2025		TLM1	
9.	Revision and assignment	1	03-12-2025		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	09-12-2025		TLM1	
4.	electronic transition, Instrumentation	1	10-12-2025		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	16-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	17-12-2025 & 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.	3	23, 24 & 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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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., CSE-D
ACADEMIC YEAR	**:** 2025-26
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 4-1-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Sk.Haseena
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 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	19-08-2025		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	22-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	26-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	26-08-2025		TLM1	CO1	T1,T2	
9.	**TUTORIAL I**	1	29-08-2025		TLM3	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	30-08-2025		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	2-09-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	2-09-2025		TLM1	CO1	T1,T2	
13.	Homogeneous System of Equations	1	3-09-2025		TLM1	CO1	T1,T2	
14.	**TUTORIAL II**	1	6-09-2025		TLM3	CO1	T1,T2	
15.	Non-Homogeneous System of Equations	1	9-09-2025		TLM1	CO1	T1,T2	
16.	Gauss Elimination Method	1	9-09-2025		TLM1	CO1	T1,T2	
17.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	12-09-2025		TLM1	CO1	T1,T2	
19.	**TUTORIAL III**	1	13-09-2025		TLM3	CO1	T1,T2	
20.	Gauss-Seidel Method	1	16-09-2025		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	16-09-2025		TLM1	CO2	T1,T2	
22.	Eigen values, Eigen vectors	1	17-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	19-09-2025		TLM1	CO2	T1,T2	
24.	Properties	1	20-09-2025		TLM1	CO2	T1,T2	
25.	Properties	1	23-09-2025		TLM1	CO2	T1,T2	
26.	Cayley-Hamilton Theorem	1	23-09-2025		TLM1	CO2	T1,T2	

27.	Cayley-Hamilton Theorem	1	24-09-2025		TLM1	CO2	T1,T2	
28.	Finding Inverse and Powers of matrix	1	26-09-2025		TLM1	CO2	T1,T2	
29.	Diagonalization of a matrix	1	27-09-2025		TLM1	CO2	T1,T2	
30.	Diagonalization of a matrix	1	7-10-2025		TLM1	CO2	T1,T2	
31.	Quadratic Forms	1	7-10-2025		TLM1	CO2	T1,T2	
32.	Quadratic Forms	1	8-10-2025		TLM1	CO2	T1,T2	
33.	Nature of Quadratic Forms	1	10-10-2025		TLM1	CO2	T1,T2	
34.	**TUTORIAL IV**	1	11-10-2025		TLM3	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
36.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
37.	Orthogonal Transformation	1	15-10-2025		TLM1	CO2	T1,T2	
38.	Orthogonal Transformation	1	17-10-2025		TLM1	CO2	T1,T2	
39.	**TUTORIAL V**		18-10-2025		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		19			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
40.	Introduction to Unit III	1	28-10-2025		TLM1	CO3	T1,T2	
41.	Mean Value theorem	1	28-10-2025		TLM1	CO3	T1,T2	
42.	Rolle's theorem	1	29-10-2025		TLM1	CO3	T1,T2	
43.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
44.	Lagrange's mean value theorem	1	1-11-2025		TLM1	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	4-11-2025		TLM1	CO3	T1,T2	
46.	**TUTORIAL VI**	1	4-11-2025		TLM3	CO3	T1,T2	
47.	Cauchy's mean value theorem	1	5-11-2025		TLM1	CO3	T1,T2	
48.	Cauchy's mean value theorem	1	7-11-2025		TLM1	CO3	T1,T2	
49.	Taylor's theorem	1	8-11-2025		TLM1	CO3	T1,T2	
50.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
51.	**TUTORIAL VII**	1	11-11-2025		TLM3	CO3	T1,T2	
52.	Maclaurin's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
53.	Maclaurin's theorem	1	14-11-2025		TLM1	CO3	T1,T2	
54.	Problems and applications	1	15-11-2025		TLM1	CO3	T1,T2	
55.	**TUTORIAL VIII**	1	18-11-2025		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		16			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
56.	Introduction to Unit IV	1	18-11-2025		TLM1	CO4	T1,T2	
57.	Functions of several variables, Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
58.	Partial Derivatives	1	21-11-2025		TLM1	CO4	T1,T2	
59.	Total derivatives, Chain rule	1	22-11-2025		TLM1	CO4	T1,T2	
60.	Directional Derivative	1	25-11-2025		TLM1	CO4	T1,T2	
61.	Taylor's Series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
62.	Maclaurin's series expansion	1	26-11-2025		TLM1	CO4	T1,T2	
63.	Jacobian	1	28-11-2025		TLM1	CO4	T1,T2	
64.	**TUTORIAL IX**	1	29-11-2025		TLM3	CO4	T1,T2	
65.	Jacobian	1	2-12-2025		TLM1	CO4	T1,T2	
66.	Functional Dependence	1	2-12-2025		TLM1	CO4	T1,T2	
67.	Maxima and Minima	1	3-12-2025		TLM1	CO4	T1,T2	
68.	Lagrange Multiplier Method	1	5-12-2025		TLM1	CO4	T1,T2	
69.	**TUTORIAL X**		6-12-2025		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
70.	Introduction to Unit-V	1	9-12-2025		TLM1	CO5	T1,T2	
71.	Double Integrals - Cartesian coordinates	1	9-12-2025		TLM1	CO5	T1,T2	
72.	Double Integrals - Cartesian coordinates	1	10-12-2025		TLM1	CO5	T1,T2	
73.	Triple Integrals - Cartesian coordinates	1	12-12-2025		TLM1	CO5	T1,T2	
74.	**TUTORIAL XI**	1	13-12-2025		TLM3	CO5	T1,T2	
75.	Triple Integrals - Spherical coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
76.	Change of order of Integration	1	16-12-2025		TLM1	CO5	T1,T2	
77.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
78.	Change of variables	1	19-12-2025		TLM1	CO5	T1,T2	
79.	**TUTORIAL XII**	1	20-12-2025		TLM3	CO5	T1,T2	
80.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	
81.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	

82.	Finding Volume by double and triple Integral	1	24-12-2025		TLM1	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		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
84.	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 03-01-2026)								

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.

Sk.Haseena	**Dr. K.Bhanu Lakshmi**	**Dr. A. RAMI REDDY**	**Dr.T.Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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: Ms. K. Sridevi
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem I .CSE -D
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	18-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23-08-2025 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	28-08-2025 30-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	01-09-2025 04-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	06-09-2025 08-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	11-09-2025 15-09-2025		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	18-09-2025 20-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	01	22-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	25-09-2025 27-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	01	06-10-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	02	09-10-2025 13-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	02	15-10-2025 18-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 10						**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	27-10-2025 30-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	01	03-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	06-11-2025 10-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	13-11-2025 15-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	17-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 08						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	20-11-2025 22-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	01	24-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	27-11-2025 29-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	01-12-2025 04-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	06-12-2025		TLM2 TLM5	CO4	T1,T2	

No. of classes required to complete UNIT-IV: 08			No. of classes taken:

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	01	08-12-2025		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	15-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	18-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	20-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 05						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Word Analogy**	01	22-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	27-12-2025		TLM2 &5	
3.	**Technical vocabulary**		27-12-2025		TLM2 &5	
No. of classes required to complete UNIT-V:02				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

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	**Ms. K. Sridevi**	**Dr. R. Padma Venkat**	**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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. K. Sridevi
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech.I Sem.CSE-D
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	29-08-2025 05-09-2025		TLM1 TLM5	
3.	Neutralization	03	12-09-2025		TLM1, TLM5	
4.	Accent rules	03	19-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	26-09-2025 10-10-2025		TLM4	
6.	Role Play-I (Formal and Informal)	06	17-10-2025		TLM4	

			31-10-2025			
7.	e-mail Writing,	03	07-11-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	14-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	21-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	28-11-2025		TLM4, TLM6	
11.	PPT Presentation	03	05-12-2025		TLM2, TLM4	
12.	Poster Presentation	03	12-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	19-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	26-12-2025			
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.
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	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Ms. K. Sridevi**	**Dr. B. Samrajya Lakshmi**	**Dr. R. Padma Venkat**	**Dr. T.Satyanarayana**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. G.Minni
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech./I Sem./D Section. 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 Syllabus ,CEO's and CO's	1	19-08-2025		TLM1	
2.	What is computer, History of Computers, Evaluation of computers	1	20-08-2025		TLM1	
3.	Basic organization of a computer: CPU ALU,input-output units.	1	21-08-2025		TLM1 TLM1	
4.	Types of Memory, Register program counter	1	22-08-2025		TLM1	
5.	Introduction to Programming Languages,	1	23-08-2025		TLM1	
6.	Basics of a Computer Program-Algorithms	1	26-08-2025		TLM1	
7.	What is Flowcharts drawing FC (Using Dia Tool), pseudocode.	1	28-08-2025		TLM1	
8.	Introduction to Compilation and Execution	2	29-08-2025		TLM1	
9.	Primitive Data Types	1	30-08-2025		TLM1	
10.	Variables, and Constants, Basic Input and Output operations	1	02-09-2025		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	2	05-09-2025		TLM1	
14.	Time and space complexities of algorithms.	1	06-09-2025		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	09-09-2025		TLM1	
16.	Simple if, if-else	1	10-09-2025		TLM1	
17.	Else-if ladder, nested if	1	11-09-2025		TLM1	
18.	Switch syntax and example programs sample programs	2	12-09-2025		TLM1	
19.	Loops: while , Example programs	1	16-09-2025		TLM1 TLM1	
20.	Loops: do-while, Example programs	1	17-09-2025		TLM1	
21.	Loops: for, Example programs	1	18-09-2025		TLM1	
22.	Break , Example programs	2	19-09-2025		TLM1	
23.	Continue, Example programs	1	20-09-2025		TLM1	
24.	Goto Example programs	1	23-09-2025		TLM1	
25.	Example programs on loops	1	24-09-2025		TLM1	
26.	Example programs on loops	1	25-09-2025		TLM1	
27.	Revision	2	26-09-2025		TLM1	
28	Revision	1	27-09-2025		TLM1	
No. of classes required to complete UNIT – II: 17				**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	07-10-2025		TLM1	
30.	Array indexing, Accessing elements	1	08-10-2025		TLM1	
31.	memory model	1	09-10-2025		TLM1	
32.	Array index and bounds example programs	2	10-10-2025		TLM1	
33.	programs with array of integers	1	14-10-2025		TLM1	
34.	Introduction to two dimensional arrays	1	15-10-2025		TLM1	
35.	2D Array indexing, Accessing elements	1	16-10-2025		TLM1	
36.	programs with 2D arrays	2	17-10-2025		TLM1	
37.	Matrix addition, multiplication programs	1	18-10-2025		TLM1	
38.	Introduction to Strings	1	28-10-2025		TLM1	
39.	Reading and Writing Operations on Strings	1	29-10-2025		TLM1	
40.	String Handling Functions	1	30-10-2025		TLM1	
41.	Example Programs using Strings	2	31-10-2025		TLM1	
42.	Revision	1	01-11-2025		TLM1	
No. of classes required to complete UNIT – III: 18				**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
43.	Introduction to Pointers	1	04-11-2025		TLM1	
44.	Syntax of pointer declaration	1	05-11-2025		TLM1	
45.	Pointer initialization	1	06-11-2025		TLM1	
46.	dereferencing and address operators	2	07-11-2025		TLM1	
47.	pointer and address arithmetic Pointer to variables (int, float, char, etc.)	1	11-11-2025		TLM1 TLM1	
48	array manipulation using pointers	1	12-11-2025		TLM1	
49	User-defined data types	1	13-11-2025		TLM1 TLM1	
50	Structures, Definition andInitialization	2	14-11-2025		TLM1	
51	Example programs	1	15-11-2025		TLM1	
52	Unions	1	18-11-2025		TLM1	
53	Memory Allocation in Unions	1	19-11-2025		TLM1	
54	Example programs	1	20-11-2025		TLM1	
55	Revision	2	21-11-2025		TLM1	
No. of classes required to complete UNIT – IV: 16				**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
56	Introduction to Functions	1	22-11-2025		TLM1	
57	Function Declaration and Definition	1	25-11-2025		TLM1	
58	Function call Return Types	1	26-11-2025		TLM1	
59	Arguments	1	27-11-2025		TLM1	
60	modifying parameters inside functions	2	28-11-2025		TLM1	

	using pointers				TLM1	
61	arrays as parameters	1	29-11-2025		TLM1	
62	Scope and Lifetime of Variables	1	02-12-2025		TLM1	
63	Storage classes examples	1	03-12-2025		TLM1	
64	Introduction to Files	1	04-12-2025		TLM1	
65	Basics of File Handling	2	05-12-2025		TLM1	
66	Basics of File Handling examples	1	06-12-2025		TLM1	
67	Operations on Files	1	09-12-2025		TLM1	
68	Operations on Files examples	1	10-12-2025		TLM1	
69	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
73.	Memory layout of a C program (stack, heap, data, code segments)	1	12-12-2025		TLM1	
74.	Number based real time problems	1	13-12-2025		TLM1	
75.	Control structures real time problems	1	16-12-2025		TLM1	
76.	File pointer manipulation (fseek, ftell, rewind)	1	17-12-2025		TLM1	
77.	Arrays of function pointers	1	18-12-2025		TLM1	
78.	Array based real time examples	1	19-12-2025		TLM1	
79.	Pattern based problems	1	20-12-2025		TLM1	
80.	String real world examples	1	23-12-2025		TLM1	
81.	Introduction to Data structures	1	26-12-2025		TLM1	
82	File pointer manipulation (fseek, ftell, rewind)	1	27-12-2025		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.
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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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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.
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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. G. Minni**	**Dr. M. Srinivasrao**	**Dr. Y. V. B. Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSEHANDOUT

PART-A

Name of Course Instructor : Dr. G.Minni

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

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

Program/Sem/Sec : B.Tech.–CSE /I-Sem/D sec 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	18-08-2025		TLM4	
2.	Week2: Problem-solving using Algorithms and Flow charts.	03	25-08-2025		TLM4	
3.	Week3: Exercise Programs on Variable types and type conversions	03	01-09-2025		TLM4	
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03	08-09-2025		TLM4	
5.	Week5: Exercise Programs on Branching and logical expressions	03	15-09-2025		TLM4	
6.	Week6: Exercise Programs on Loops, while and for loops	03	22-09-2025		TLM4	
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03	06-10-2025		TLM4	
8.	Week8: ExerciseProgramson2 D arrays, sorting and Strings.	03	13-10-2025		TLM4	
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03	27-10-2025		TLM4	
10.	Week10: Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03	03-11-2025		TLM4	
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03	10-11-2025		TLM4	
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03	17-11-2025		TLM4	
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03	24-11-2025		TLM4	
14.	Week 14: Exercise Programs on File handling.	03	01-12-2025		TLM4	
15.	Lab Internal Test	03	08-12-2025		TLM4	

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

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	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. G. Minni	Dr. M. Srinivasarao	Dr. Y.Vijay Bhaskar Reddy	Dr. S. Nagarjuna Reddy
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, KRISHNA DIST., A.P.-521 230.

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE (CSE)

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. L. Prabhu
Course Name & Code **:** BC&ME, 23CM01
L-T-P Structure **: 5-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I-Sem/D-**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:

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

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

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

REFERENCE BOOKS:

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Mechanical Engineering	1	18-08-25		TLM1	
2.	Role of Mechanical Engineering in Industries and Society	1	19-08-25		TLM1	
3.	Technologies in different sectors such as Energy	1	21-08-25		TLM1	
4.	Technologies in different sectors such as Manufacturing	1	23-08-25		TLM1	
5.	Technologies in different sectors such as Automotive	1	25-08-25		TLM1	
6.	Technologies in different sectors such as Aerospace, and Marine sectors	1	26-08-25		TLM1	
7.	Engineering Materials - Metals	1	28-08-25		TLM1	
8.	Ferrous Metals, Non-ferrous Metals	1	30-08-25		TLM1	
9.	Ceramic	1	01-09-25		TLM1	
10.	Composites,	1	02-09-25		TLM1	
11.	Smart Materials	1	04-09-25		TLM1	
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	HOD Sign Weekly
12.	Manufacturing Processes, Principles of Casting	1	06-09-25		TLM1	
13.	Forming, joining processes	1	08-09-25		TLM1	
14.	Introduction to CNC machines	1	09-09-25		TLM1	
15.	3D printing, and Smart manufacturing	1	11-09-25		TLM2	
16.	Thermal Engineering- Working principle of Boilers	1	15-09-25		TLM1	
17.	Otto cycle,	1	16-09-25		TLM2	
18.	Diesel cycle	1	18-09-25		TLM2	
19.	Refrigeration and air-conditioning cycles	1	20-09-25		TLM1	
20.	IC engines, 2-Stroke and 4-Stroke engines	1	22-09-25		TLM2	
21.	Components of Electric and Hybrid Vehicles	1	23-09-25		TLM1	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Power plants – Working principle of Steam power plants	1	25-09-25		TLM1	
23.	Power plants – Working principle of Diesel power plants	1	27-09-25		TLM1	
24.	Power plants – Working principle of Hydro power plants	1	06-10-25		TLM1	
25.	Power plants – Working principle of nuclear power plants	1	07-10-25		TLM1	
26.	Mechanical Power Transmission - Belt Drives	1	09-10-25		TLM1	
27.	Chain, Rope drives,	1	10-10-25		TLM1	
28.	Gear Drives and their applications	1	13-10-25		TLM2	
29.	Introduction to Robotics- Joints & links,	1	14-10-25		TLM2	
30.	Robot configurations	1	16-10-25		TLM2	
31.	Application of robotics	1	18-10-25		TLM2	
I-Mid Exams			20-10-2025 To 25-10-2025			
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 (R17 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
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor Course Coordinator Module Coordinator HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

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

PREREQUISITE : NIL

COURSE OBJECTIVES:

- To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables
- To demonstrate configuring the system as 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 the 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, the student will be able to

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC .**(Apply-L3)**
CO2	Develop presentation /documentation using Office tools and LaTeX. **(Apply-L3)**
CO3	Build dialogs and documents using ChatGPT. **(Apply-L3)**
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. **(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	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	21-08-2025		DM5	
2.	Task-2	2	28-08-2025		DM5	
3.	Task-3	1	28-08-2025		DM5	
4.	Task-4	2	04-09-2025		DM5	
5.	Task-5	1	04-09-2025		DM5	
Internet & World Wide Web						
6.	Task-1	2	11-09-2025		DM5	
7.	Task-2	1	11-09-2025		DM5	
8.	Task-3	1	18-09-2025		DM5	
9.	Task-4	2	18-09-2025		DM5	
LaTex and WORD						
10.	Task-1	3	25-09-2025		DM5	
11.	Task-2	3	09-10-2025		DM5	
12.	Task-3	2	16-10-2025		DM5	
13.	Task-4	1	16-10-2025		DM5	
EXCEL						
14.	Task-1	3	30-10-2025		DM5	
15.	Task-2	3	06-11-2025		DM5	

LOOKUP/VLOOKUP					
16.	Task-1	3	13-11-2025		DM5
POWER POINT					
17.	Task-1	3	20-11-2025		DM5
18.	Task-2	2	27-11-2025		DM5
19.	Task-3	1	27-11-2025		DM5
AI TOOLS – ChatGPT					
20.	Task-1	3	04-12-2025		DM5
21.	Task-2	2	11-12-2025		DM5
22.	Task-3	1	11-12-2025		DM5
23.	Internal exam	3	18-12-2025		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 Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr. P. Rajasekhar	Mr.N.Srikanth	Dr. D. Venkata Subbaiah	Dr. S Nagarjuna Reddy
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. A. S. R. C. Murthy
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 4-1-0 Credits: 3
Program/Sem/Sec : B.Tech./I/E-Sec. A.Y.: 2025-26

PRE-REQUISITE: Mathematics.

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, the concept of algorithms and flowcharts.	Understand – Level 2
CO2:	Understand the features of C language.	Analyze – Level 4
CO3:	Interpret the problem and develop an algorithm to solve it.	Apply – Level 3
CO4:	Implement various algorithms using the C programming language.	Understand – Level 2
CO5:	Develop skills required for problem-solving and optimize the code.	Apply – Level 3

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, 1988dition, 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	18-08-2025			
2.	History of Computers	1	19-08-2025			
3.	Basic organization of a computer: ALU, input-output units.	2	20-08-2025 08-08-2025			
4.	Memory, program counter	1	21-08-2025			
5.	Introduction to Programming Languages,	1	21-08-2025			
6.	Basics of a Computer Program-Algorithms	1	25-08-2025			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	26-08-2025			
8.	Introduction to Compilation and Execution	1	28-08-2025			
9.	Primitive Data Types	2	01-09-2025 02-09-2025			
10.	Variables, and Constants, Basic Input and Output operations	1	03-09-2025			
11.	Type Conversion, and Casting	1	04-09-2025			
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	04-09-2025			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	08-09-2025			
14	Time and space complexities of algorithms.	1	09-09-2025			
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			
16.	if, if-else, else if ladder	3	11-09-2025 11-09-2025 15-09-2025			
17.	switch.	2	16-09-2025 17-09-2025			
	Example programs on Decision					

18.	Making and Branching	1	18-09-2025			
19.	Loops: while , Example programs	3	18-09-2025 22-09-2025 23-09-2025			
20.	do-while, for, Example programs	2	24-09-2025 25-09-2025			
21.	on Loops	3	06-10-2025 07-10-2025 08-10-2025			
22.	Break and Continue	1	09-10-2025			
23.	Example programs on Loops	3	09-10-2025 13-10-2025 14-10-2025			
24.	Revision	3	15-10-2025 16-10-2025 16-10-2025			
No. of classes required to complete UNIT – II: 22				**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
25.	Arrays Introduction, Declaration	1	27-10-2025			
26.	Array indexing, Accessing elements	1	28-10-2025			
27.	memory model	1	29-10-2025			
28.	programs with array of integers	1	30-10-2025			
29.	Introduction to two dimensional arrays	1	03-11-2025			
30.	2D Array indexing, Accessing elements	1	04-11-2025			
31.	programs with 2D arrays	1	05-11-2025			
32.	Introduction to Strings	1	06-11-2025			
33.	Reading and Writing Operations on Strings	1	06-11-2025			
34.	String Handling Functions	1	10-11-2025			
35.	Example Programs using Strings	1	11-11-2025			
No. of classes required to complete UNIT – III: 11				**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
36.	Introduction to Pointers	1	12-11-2025			
37.	dereferencing and address operators	1	13-11-2025			
38.	pointer and address arithmetic	1	13-11-2025			
39.	array manipulation using pointers	2	17-11-2025 18-11-2025			
40.	User-defined data types	1	19-11-2025			
41.	Structures , Definition and Initialization	2	20-11-2025 20-11-2025			
42.	Example programs	1	24-11-2025			
43.	Unions	2	25-11-2025 26-11-2025			
44.	Example programs	1	26-11-2025			
45.	Revision	1	27-11-2025			
No. of classes required to complete UNIT – IV: 13				**No. of classes taken:**		

UNIT – V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Functions	2	27-11-2025 01-12-2025			
47.	Function Declaration and Definition	2	02-12-2025 03-12-2025			
48.	Function call Return Types	2	04-12-2025 08-12-2025			
49.	Arguments	2	09-12-2025 10-12-2025			
50.	modifying parameters inside functions using pointers	2	11-12-2025 11-12-2025			
51.	arrays as parameters	2	15-12-2025 16-12-2025			
52.	Scope and Lifetime of Variables	2	17-12-2025 18-12-2025			
53.	Introduction to Files	1	18-12-2025			
54.	Basics of File Handling	1	22-12-2025			
55.	Operations on Files	2	23-12-2025 24-12-2025			
No. of classes required to complete UNIT – V: 18				**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
56.	Application Development using C	1	26-12-2025			
57.	Introduction to Data Structures	1	27-12-2025			

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 engineeringproblems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complexengineering 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 dataand synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, andmodern 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 to assess societal, health, safety, legal and cultural issues, and the consequent responsibilitiesrelevant to the professional engineering practice
PO7	**Environment and sustainability**: Understand the impact of the professional engineeringsolutions in societal and environmental contexts, and demonstrate the knowledge of, andneed for sustainable development.
PO8	**Ethic**s: Apply ethical principles and commit to professional ethics andresponsibilities andnorms of the engineering practice.
PO9	**Individual and teamwork**: Function effectively as an individual, and as a member orleader 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 asper 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	**A S R C MURTHY**	**Dr. M. Srinivas Rao**	**Dr. Y. V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

LAKIREDDYBALIREDDYCOLLEGEOFENGINEERING

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DEPARTMENT OF COMPUTERSCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : A. S. R. C. Murthy

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

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

Program/Sem/Sec : B.Tech.–CSE/ISem-E 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.

COURSEOUTCOMES(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.	

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	-	-
C05	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-
1 –Low								**2** –Medium					**3**– High		

PART-B

COURSEDELIVERYPLAN (LESSONPLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		20-08-2025	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		03-09-2025	DM5
3.	Week3:Exercise Programs on Variable types and type conversions	03		10-09-2025	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		17-09-2025	DM5
5.	Week5:Exercise Programs on Branching and logical expressions	03		24-09-2025	DM5
6.	Week6:Exercise Programs on Loops, while and for loops	03		08-10-2025	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		15-10-2025	DM5
8.	Week8:ExerciseProgramson 2 D arrays, sorting and Strings.	03		29-10-2025	DM5
9.	Week9: ExerciseProgramsonPointers, structures and dynamic memory allocation	03		05-11-2025	DM5
10.	Week10:ExerciseProgramso n Bit fields, Self-Referential Structures, Linked lists	03		12-11-2025	DM5
11.	Week 11:ExerciseProgramson Functions, call by value, scope and extent.	03		19-11-2025	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	06		26-11-2025 03-12-2025	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		10-12-2025	DM5
14.	Week 14: Exercise Programs on File handling.	03		17-11-2025	DM5
15.	Lab Internal	03		24-12-2025	DM5

DeliveryMethods			
DM1	ChalkandTalk	**DM4**	Assignment/Test/Quiz
DM2	ICTTools	**DM5**	Laboratory/FieldVisit
DM3	Tutorial	**DM6**	Web-basedLearning

PART-C

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
PO6	**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
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 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 projectdevelopmentusingopen-sourceprogrammingenvironmentforthesuccessoforganization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT asper the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**HOD**
Name of the Faculty	**A S R C Murthy**	**Dr. M. Srinivas Rao**	**Dr. Y.V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: **Mr.B.MohanTeja**
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem , CSC-E
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 (LESSON PLAN PLAN):

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

1.	Bridge Course	2 Weeks	04-08-2025 TO 16-08-2025		TLM1	CO1		
2.	Introduction to the course				TLM1	CO1		
3.	Course Outcomes, Program Outcomes				TLM2	CO1		

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Human Values: Gift of Magi**	02	18-08-2025& 19-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	22-08-2025& 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	26-08-2025& 29-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	01-09-2025& 02-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	05-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	08-09-2025& 09-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 11						**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	12-09-2025 & 15-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	16-09-2025& 19-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	22-09-2025& 23-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	02	26-09-2025& 06-10-2025		TLM2 TLM6	CO2	T1,T2	
5.	**Use of Articles and zero article, Prepositions**	01	07-10-2025		TLM2 TLM6	CO2	T1,T2	

6.	**Homophones, Homographs, Homonyms**	01	10-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 10						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	13-10-2025& 14-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	17-10-2025& 27-10-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	28-10-2025& 31-10-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	03-11-2025& 04-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	07-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 09						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	10-11-2025& 11-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	14-11-2025& 17-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	18-11-2025& 21-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	24-11-2025& 25-11-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	28-11-2025		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 09						**No. of classes taken:**		

UNIT-V:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Motivation: The Power of Interpersonal Communication**	02	01-12-2025& 02-12-2025		TLM1 TLM 6	CO5	T1,T2	

2.	**Reading Comprehension**	02	05-12-2025& 08-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	02	09-12-2025& 15-12-2025		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	19-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 08						**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	22-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	23-12-2025		TLM2 &5	
3.	**Technical vocabulary**	01	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
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.B.Mohan Teja
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech .CSC-E
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
7.	Introduction to syllabus	03	18-08-2025		TLM4	
8.	Vowels & Consonants	06	25-08-2025& 01-09-2025		TLM1 TLM5	
9.	Neutralization	03	08-09-2025		TLM1, TLM5	
10.	Accent rules	03	15-09-2025		TLM1, TLM5	
11.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	22-09-2025 &06-10-2025		TLM4	
12.	Role Play-I (Formal and Informal)	06	13-10-2025& 27-10-2025		TLM4	
13.	e-mail Writing,	03	03-11-2025		TLM1, TLM5	
14.	Resume writing, Cover letter, SOP	03	10-11-2025		TLM1, TLM5	
15.	Group Discussion: methods & Practice	03	17-11-2025		TLM4, TLM6	
16.	Debate: methods & Practice	03	24-11-2025		TLM4, TLM6	
17.	PPT Presentation	03	01-12-2025		TLM2, TLM4	
18.	Poster Presentation	03	08-12-2025		TLM2, TLM4	
19.	Mock Interviews	03	15-12-2025		TLM1, TLM6	
20.	Lab Internal Exam	03	22-12-2025			
No. of classes required to complete Syllabus: 51				**No. of classes taken:**		

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

Laboratory Examination:

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

PROGRAMME OUTCOMES (POs):

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

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

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., CSE-E
ACADEMIC YEAR : 2025-26
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Ms.P. KALMA BEGUM
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 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 16-08-2025	04-08-2025 To 16-08-2025	TLM1			

2.	Introduction to the course Course Outcomes, Program Outcomes	1	19-08-2025		TLM1,2			

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
3.	Introduction to Unit I, Matrices, Rank of a matrix	1	20-08-2025		TLM1	CO1	T1,T2	
4.	Echelon form	1	21-08-2025		TLM1	CO1	T1,T2	
5.	Normal form	1	23-08-2025		TLM1	CO1	T1,T2	
6.	Cauchy-Binet formulae	1	26-08-2025		TLM3	CO1	T1,T2	
7.	Inverse by Gauss-Jordan method	1	28-08-2025		TLM1	CO1	T1,T2	
8.	**TUTORIAL I**	1	30-08-2025		TLM1	CO1	T1,T2	
9.	System of Linear Equations	1	02-09-2025		TLM3	CO1	T1,T2	
10.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
12.	Non-Homogeneous System of Equations	1	04-09-2025		TLM1	CO1	T1,T2	
13.	**TUTORIAL II**	1	06-09-2025		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	09-09-2025		TLM3	CO1	T1,T2	
15.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
16.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
17.	Gauss-Seidel Method	1	11-09-2025		TLM1	CO1	T1,T2	
18.	**TUTORIAL III**	1	13-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Introduction to Unit II	1	16-09-2025		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	17-09-2025		TLM1	CO2	T1,T2	
21.	Eigen values, Eigen vectors	1	17-09-2025		TLM1	CO2	T1,T2	
22.	Properties	1	18-09-2025		TLM1	CO2	T1,T2	
23.	**TUTORIAL IV**	1	20-09-2025		TLM3	CO2	T1,T2	
24.	Properties	1	23-09-2025		TLM1	CO2	T1,T2	
25.	Cayley-Hamilton Theorem	1	24-09-2025		TLM1	CO2	T1,T2	
26.	Finding Inverse and Powers of matrix	1	24-09-2025		TLM1	CO2	T1,T2	
27.	Finding Inverse and Powers of matrix	1	25-09-2025		TLM1	CO2	T1,T2	
28.	**TUTORIAL V**	1	27-09-2025		TLM3	CO2	T1,T2	
29.	Diagonalization of a matrix	1	06-10-2025		TLM1	CO2	T1,T2	
30.	Diagonalization of a matrix	1	07-10-2025		TLM1	CO2	T1,T2	
31.	Quadratic Forms, Nature of Quadratic Forms	1	09-10-2025		TLM1	CO2	T1,T2	
32.	Quadratic Forms, Nature of Quadratic Forms	1	09-10-2025		TLM1	CO2	T1,T2	
33.	**TUTORIAL VI**	1	11-10-2025		TLM3	CO2	T1,T2	

34.	Reduction of Quadratic form to Canonical form	1	13-10-2025		TLM1	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
36.	Orthogonal Transformation	1	16-10-2025		TLM1	CO2	T1,T2	
37.	Orthogonal Transformation	1	16-10-2025		TLM1	CO2	T1,T2	
38.	**TUTORIAL VII**	1	18-10-2025		TLM3	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
39.	Introduction to Unit III	1	28-10-2025		TLM1	CO3	T1,T2	
40.	Mean Value theorem	1	29-10-2025		TLM1	CO3	T1,T2	
41.	Rolle's theorem	1	29-10-2025		TLM3	CO3	T1,T2	
42.	Rolle's theorem	1	30-10-2025		TLM1	CO3	T1,T2	
43.	**TUTORIAL VIII**	1	01-11-2025		TLM3	CO3	T1,T2	
44.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
45.	Lagrange's mean value theorem	1	05-11-2025		TLM3	CO3	T1,T2	
46.	Cauchy's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
47.	Cauchy's mean value theorem	1	06-11-2025		TLM1	CO3	T1,T2	
48.	**TUTORIAL IX**	1	08-11-2025		TLM3	CO3	T1,T2	
49.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
50.	Taylor's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
51.	Maclaurin's theorem	1	12-11-2025		TLM3	CO3	T1,T2	
52.	Problems and applications	1	13-11-2025		TLM1	CO3	T1,T2	
53.	**TUTORIAL X**	1	15-11-2025		TLM3	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
54.	Introduction to Unit IV	1	18-11-2025		TLM1	CO4	T1,T2	
55.	Functions of several variables, Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
56.	Partial Derivatives	1	19-11-2025		TLM1	CO4	T1,T2	
57.	Total derivatives, Chain rule, Directional Derivative	1	20-11-2025		TLM1	CO4	T1,T2	
58.	**TUTORIAL XI**	1	22-11-2025		TLM3	CO4	T1,T2	
59.	Taylor's Series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
60.	Maclaurin's series expansion	1	26-11-2025		TLM1	CO4	T1,T2	

61.	Jacobian	1	26-11-2025		TLM1	CO4	T1,T2	
62.	Jacobian	1	27-11-2025		TLM1	CO4	T1,T2	
63.	**TUTORIAL XII**	1	29-11-2025		TLM3	CO4	T1,T2	
64.	Functional Dependence	1	02-12-2025		TLM1	CO4	T1,T2	
65.	Maxima and Minima	1	03-12-2025		TLM1	CO4	T1,T2	
66.	Lagrange Multiplier Method	1	03-12-2025		TLM3	CO4	T1,T2	
67.	Lagrange Multiplier Method	1	04-12-2025		TLM1	CO4	T1,T2	
68.	**TUTORIAL XIII**	1	06-12-2025		TLM3	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
69.	Introduction to Unit-V	1	09-12-2025		TLM1	CO5	T1,T2	
70.	Double Integrals - Cartesian coordinates	1	10-12-2025		TLM1	CO5	T1,T2	
71.	Double Integrals- Polar co ordinates	1	10-12-2025		TLM1	CO5	T1,T2	
72.	Triple Integrals - Cartesian coordinates	1	11-12-2025		TLM1	CO5	T1,T2	
73.	**TUTORIAL XIV**	1	13-12-2025		TLM3	CO5	T1,T2	
74.	Triple Integrals - Spherical coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
75.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
76.	Change of order of Integration	1	17-12-2025		TLM1	CO5	T1,T2	
77.	Change of variables	1	18-12-2025		TLM3	CO5	T1,T2	
78.	**TUTORIAL XV**	1	20-12-2025		TLM1	CO5	T1,T2	
79.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	
80.	Finding Volume by double and triple Integral	1	24-12-2025		TLM1	CO5	T1,T2	
81.	**TUTORIAL XVI**	1	27-12-2025		TLM3	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
82.	Other applications of double integral	1	24-12-2025		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.

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. 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/CSE-E **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-G

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	2	19-08-2025 & 21-08-2025			
2.	Introduction to chemistry course, CO's &PO's Fundamentals of Quantum Mechanics	2	22-08-2025 & 23-08-2025		TLM1	
3.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	26-08-2025		TLM1	
4.	Particle In one dimensional box	2	28-08-2025 & 29-08-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	30-08-2025 & 02-09-2025		TLM1	
6.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	2	04-09-2025 & 05-09-2025		TLM1	
7.	Energy level diagrams-Summary	1	06-09-2025		TLM1	
8.	π-molecular orbitals of butadiene	1	09-09-2025		TLM1	
9.	π-molecular orbitals ofbenzene	1	11-09-2025		TLM1	
10.	Calculation of Bond order	1	12-09-2025		TLM1	
11.	Revision and assignment	2	13-09-2025 & 16-09-2025		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	20-09-2025		TLM1	
4.	Super conductors - Basic concept & applications	1	23-09-2025		TLM1	
5.	Super capacitors - Introduction, Basic concept	1	25-09-2025		TLM1	
6.	Super capacitors - classification & applications	1	26-09-2025		TLM1	
7.	Nano materials - Introduction	1	27-09-2025		TLM2	
8.	Nano materials - classification	1	07-10-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	09-10-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	3	10-10-2025 11-10-2025 & 14-10-2025		TLM2	
11.	Revision and assignment	3	16-10-2025 17-10-2025 & 18-10-2025		TLM1	
No. of classes required to complete UNIT-II: 15				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	1	28-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	30-10-2025 & 31-10-2025		TLM1	
3.	Potentiometry-potentiometric titrations (redox titrations)	1	01-11-2025		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	04-11-2025		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples,	1	06-11-2025		TLM1	

	amperometric sensors with examples					
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	07-11-2025 & 08-11-2025		TLM1	
7.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells	1	11-11-2025		TLM1	
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	13-11-2025		TLM1	
9.	Revision and assignment	2	14-11-2025 & 15-11-2025		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	18-11-2025		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	20-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	21-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	22-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	25-11-2025 & 27-11-2025		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	28-11-2025		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	29-11-2025		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	02-12-2025		TLM1	
9.	Revision and assignment	2	04-12-2025 & 05-12-2025		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	06-12-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	09-12-2025		TLM1	
3.	UV-Visible Spectroscopy	1	11-12-2025		TLM1	
4.	electronic transition, Instrumentation	2	12-12-2025 & 13-12-2025		TLM1	
5.	IR spectroscopies, fundamental modes	1	16-12-2025		TLM1	
6.	selection rules, Instrumentation	1	18-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	19-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	20-12-2025		TLM1	
9.	Revision and assignment	1	23-12-2025		TLM1	
No. of classes required to complete UNIT-V: 11				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.	2	26-12-2025 & 27-12-2025		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

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. D. Mallikharjuna Rao**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. T. Satyanarayana**
Signature				

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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT
PART-A

Name of Course Instructors: Dr. Mallikharjuna Rao D & Dr. Y. Subbareddy
Course Name & Code **:** Chemistry Lab & 23FE52
L-T-P Structure **:**0-0-3 **Credits:** 1.5
Program/Sem/Sec : I-B.Tech./I-Sem/CSE-E **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: After completion of the course, the students will be able to,

CO1: Distinguish different types of titrations in volumetric analysis after performing theexperiments 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: Determine the cell constant and conductance of solutions. (Apply)
CO5: Analyze organic compounds by using UV-Visible and IR spectroscopy. (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): I CSE, Section-G

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	22-08-2025		TLM1		
	Explanation of chemicals and glassware	3	29-08-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	05-09-2025		TLM4	CO1	
4.	Determination of amount of HCl using standard Na_2CO_3 solution	3	12-09-2025		TLM4	CO1	
5.	Determination of Strength of an acid in Pb-Acid battery	3	19-09-2025		TLM4	CO3	
6.	Estimation of Ferrous Iron by Dichrometry	3	26-09-2025		TLM4	CO1	
7.	Estimation of Ferrous Iron by permanganometry	3	10-10-2024		TLM4	CO1	
8.	Estimation of total hardeness of given water sample	3	17-10-2024		TLM4	CO1	
9.	Alkalinity of water sample	3	31-10-2024		TLM4	CO1	
10.	Conductometric titration of strong acid vs. strong base	3	07-11-2025		TLM4	CO3	
11.	Conductometric titration of weak acid vs. strong base	3	14-11-2025		TLM4	CO3	
12.	Measuring of pH of water sample	3	21-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	28-11-2025		TLM4	CO	
14.	Additional experiment/repeat	6	05-12-2025 & 12-12-2025		TLM4	CO	
16.	Internal Exam	3	19-12-2025 & 26-12-2025		TLM4		
	Total						

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:

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	**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. D. Mallikharjuna Rao**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. T. Satyanarayana**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE (CSE)

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. L. Prabhu
Course Name & Code **:** BC&ME, 23CM01
L-T-P Structure **: 5-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I-Sem/D-**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:

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

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

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

REFERENCE BOOKS:

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Mechanical Engineering	1	18-08-25		TLM1	
2.	Role of Mechanical Engineering in Industries and Society	1	19-08-25		TLM1	
3.	Technologies in different sectors such as Energy	1	21-08-25		TLM1	
4.	Technologies in different sectors such as Manufacturing	1	22-08-25		TLM1	
5.	Technologies in different sectors such as Automotive	1	25-08-25		TLM1	
6.	Technologies in different sectors such as Aerospace, and Marine sectors	1	26-08-25		TLM1	
7.	Engineering Materials - Metals	1	28-08-25		TLM1	
8.	Ferrous Metals, Non-ferrous Metals	1	29-08-25		TLM1	
9.	Ceramic	1	01-09-25		TLM1	
10.	Composites,	1	02-09-25		TLM1	
11.	Smart Materials	1	04-09-25		TLM1	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Manufacturing Processes, Principles of Casting	1	05-09-25		TLM1	
13.	Forming, joining processes	1	08-09-25		TLM1	
14.	Introduction to CNC machines	1	09-09-25		TLM1	
15.	3D printing, and Smart manufacturing	1	11-09-25		TLM2	
16.	Thermal Engineering- Working principle of Boilers	1	12-09-25		TLM1	
17.	Otto cycle,	1	15-09-25		TLM2	
18.	Diesel cycle	1	16-09-25		TLM2	
19.	Refrigeration and air-conditioning cycles	1	18-09-25		TLM1	
20.	IC engines, 2-Stroke and 4-Stroke engines	1	19-09-25		TLM2	
21.	Components of Electric and Hybrid Vehicles	1	22-09-25		TLM1	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Power plants – Working principle of Steam power plants	1	23-09-25		TLM1	
23.	Power plants – Working principle of Diesel power plants	1	25-09-25		TLM1	
24.	Power plants – Working principle of Hydro power plants	1	26-09-25		TLM1	
25.	Power plants – Working principle of nuclear power plants	1	06-10-25		TLM1	
26.	Mechanical Power Transmission - Belt Drives	1	07-10-25		TLM1	
27.	Chain, Rope drives,	1	09-10-25		TLM1	
28.	Gear Drives and their applications	1	10-10-25		TLM2	
29.	Introduction to Robotics- Joints & links,	1	13-10-25		TLM2	
30.	Robot configurations	1	14-10-25		TLM2	
31.	Application of robotics	1	16-10-25		TLM2	
32.	Revision	1	17-10-25		TLM1	
I-Mid Exams			20-10-2025 To 25-10-2025			
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 (R17 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
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor Course Coordinator Module Coordinator HOD

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. K. Sridevi
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem I .CSE -F
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	20-08-2025 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 27-08-2025		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	03-09-2025 04-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	05-09-2025 10-09-2025		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	17-09-2025 18-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	01	19-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	24-09-2025 25-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	02	26-09-2025 08-10-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	02	09-10-2025 10-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	03	15-10-2025 16-10-2025 17-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 12						**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	27-10-2025 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 05-11-2025		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	12-11-2025 13-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	02	14-11-2025 19-11-2025		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 10						**No. of classes taken:**		

UNIT-IV:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	20-11-2025 21-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	01	26-11-2025		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	03-12-2025 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: 08			No. of classes taken:

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Motivation: The Power of Interpersonal Communication**	02	10-12-2025 11-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	12-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	17-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	18-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	19-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 06						**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	24-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	25-12-2025		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	**Ms. K. Sridevi**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with "A" Grade & NBA for ASE, CE, CSE, ECE, EEE & IT (Under Tier - I)

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L.B. Reddy Nagar, Mylavaram, NTR Dist., Andhra Pradesh-521 230.

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

DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Sri Lakshmi
Course Name & Code : Chemistry & 23FE02
L-T-P Structure : **3-0-0** **Credits: 03**
Program/Sem/Sec : I B.Tech./I Sem/CSE-F **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-F

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 Fundamentals of Quantum Mechanics	2	19-08-2025 & 19-08-2025		TLM1	
2.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	21-08-2025		TLM1	
3.	Particle in one dimensional box	1	23-08-2025		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	26-08-2025 & 26-08-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	1	28-08-2025		TLM1	
6.	Energy level diagrams-Summary	1	30-08-2025		TLM1	
7.	π-molecular orbitals of butadiene	1	02-09-2025		TLM1	
8.	π-molecular orbitals ofbenzene	1	02-09-2025		TLM1	
9.	Calculation of Bond order	1	04-09-2025		TLM1	
10.	Revision and assignment	1	06-09-2025		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	1	09-09-2025		TLM1	
2.	Semiconductors - Basic concept & applications	1	09-09-2025		TLM1	
3.	Super conductors - Introduction	1	11-09-2025		TLM1	
4.	Super conductors - Basic concept & applications	1	23-09-2025		TLM1	
5.	Super capacitors - Introduction, Basic concept	1	23-09-2025		TLM1	
6.	Super capacitors - classification & applications	1	25-09-2025		TLM1	
7.	Nano materials - Introduction	1	27-09-2025		TLM2	
8.	Nano materials - classification	2	07-10-2025 & 07-10-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	09-10-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	2	14-10-2025 & 14-10-2025		TLM2	
11.	Revision and assignment	2	16-10-2025 & 18-10-2025		TLM1	
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.	Electrochemical cell, Nernst equation	1	28-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	28-10-2025 & 30-10-2025		TLM1	
3.	Potentiometry-potentiometric titrations (redox titrations)	1	09-10-2025		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	04-11-2025		TLM1	

5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	04-11-2025		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	06-11-2025 & 11-11-2025		TLM1	
7.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells	1	11-11-2025		TLM1	
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	13-11-2025		TLM1	
9.	Revision and assignment	1	15-11-2025		TLM1	
No. of classes required to complete UNIT-III: 11				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	18-11-2025		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	18-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	20-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	22-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	25-11-2025 & 25-11-2025		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	1	29-11-2025		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	02-12-2025		TLM1	
9.	Revision and assignment	1	04-12-2025		TLM1	

No. of classes required to complete UNIT-IV: 10	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	06-12-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	09-12-2025		TLM1	
3.	UV-Visible Spectroscopy	1	09-12-2025		TLM1	
4.	electronic transition, Instrumentation	1	11-12-2025		TLM1	
5.	IR spectroscopy, fundamental modes	1	16-12-2025		TLM1	
6.	selection rules, Instrumentation	1	16-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	18-11-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	20-12-2025		TLM1	
9.	Revision and assignment	1	23-12-2025		TLM1	
No. of classes required to complete UNIT-V: 09				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.	2	23-12-2025 & 27-08-2025		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	**Mrs. K. Sri Lakshmi**	**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., CSE-F
ACADEMIC YEAR	**:** 2025-26
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 4-1-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Mrs K.Naga 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 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 16-08-2025	04-08-2025 To 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	23-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		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.	**TUTORIAL I**	1	30-08-2025		TLM3	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	30-08-2025		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	01-09-2025		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	02-09-2025		TLM1	CO1	T1,T2	
13.	Homogeneous System of Equations	1	03-09-2025		TLM1	CO1	T1,T2	
14.	**TUTORIAL II**	1	06-09-2025		TLM1	CO1	T1,T2	
15.	Non-Homogeneous System of Equations	1	06-09-2025		TLM1	CO1	T1,T2	
16.	Gauss Elimination Method	1	08-09-2025		TLM1	CO1	T1,T2	
17.	Jacobi Iteration Method	1	09-09-2025		TLM1	CO1	T1,T2	
18.	Jacobi Iteration Method	1	10-09-2025		TLM1	CO1	T1,T2	
19.	**TUTORIAL III**	1	13-09-2025		TLM3	CO1	T1,T2	
20.	Gauss-Seidel Method	1	13-09-2025		TLM1	CO1	T1,T2	
21.	Gauss-Seidel Method	1	15-09-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		21			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	16-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	17-09-2025		TLM1	CO2	T1,T2	
24.	**TUTORIAL IV**	1	20-09-2025		TLM3	CO2	T1,T2	
25.	Eigen values, Eigen vectors	1	20-09-2025		TLM1	CO2	T1,T2	
26.	Properties	1	22-09-2025		TLM1	CO2	T1,T2	

27.	Properties	1	23-09-2025		TLM1	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	24-09-2025		TLM1	CO2	T1,T2	
29.	**TUTORIAL V**	1	27-09-2025		TLM3	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	27-09-2025		TLM1	CO2	T1,T2	
31.	Finding Inverse and Powers of matrix	1	06-10-2025		TLM1	CO2	T1,T2	
32.	Diagonalization of a matrix	1	07-10-2025		TLM1	CO2	T1,T2	
33.	Diagonalization of a matrix	1	08-10-2025		TLM1	CO2	T1,T2	
34.	**TUTORIAL VI**	1	11-10-2025		TLM3	CO2	T1,T2	
35.	Quadratic Forms, Nature of Quadratic Forms	1	11-10-2025		TLM1	CO2	T1,T2	
36.	Quadratic Forms, Nature of Quadratic Forms	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.	Reduction of Quadratic form to Canonical form	1	15-10-2025		TLM1	CO2	T1,T2	
39.	**TUTORIAL VII**	1	18-10-2025		TLM3	CO2	T1,T2	
40.	Orthogonal Transformation	1	18-10-2025		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.	Mean Value theorem	1	29-10-2025		TLM1	CO3	T1,T2	
44.	**TUTORIAL VIII**	1	01-11-2025		TLM3	CO3	T1,T2	
45.	Rolle's theorem	1	01-11-2025		TLM1	CO3	T1,T2	
46.	Rolle's theorem	1	03-11-2025		TLM1	CO3	T1,T2	
47.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
48.	Lagrange's mean value theorem	1	05-11-2025		TLM1	CO3	T1,T2	
49.	**TUTORIAL IX**	1	08-11-2025		TLM3	CO3	T1,T2	
50.	Cauchy's mean value theorem	1	08-11-2025		TLM1	CO3	T1,T2	
51.	Cauchy's mean value theorem	1	10-11-2025		TLM1	CO3	T1,T2	
52.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
53.	Taylor's theorem	1	12-11-2025		TLM1	CO3	T1,T2	
54.	**TUTORIAL X**	1	15-11-2025		TLM3	CO3	T1,T2	
55.	Maclaurin's theorem	1	15-11-2025		TLM1	CO3	T1,T2	
56.	Problems and applications	1	17-11-2025		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
57.	Introduction to Unit IV	1	18-11-2025		TLM1	CO4	T1,T2	
58.	Functions of several variables, Continuity and Differentiability	1	19-11-2025		TLM1	CO4	T1,T2	
59.	**TUTORIAL XI**	1	22-11-2025		TLM3	CO4	T1,T2	
60.	Partial Derivatives	1	22-11-2025		TLM1	CO4	T1,T2	
61.	Total derivatives, Chain rule, Directional Derivative	1	24-11-2025		TLM1	CO4	T1,T2	
62.	Taylor's Series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
63.	Maclaurin's series expansion	1	26-11-2025		TLM1	CO4	T1,T2	
64.	**TUTORIAL XII**	1	29-11-2025		TLM3	CO4	T1,T2	
65.	Jacobian	1	29-12-2025		TLM1	CO4	T1,T2	
66.	Jacobian	1	01-12-2025		TLM1	CO4	T1,T2	
67.	Functional Dependence	1	02-12-2025		TLM1	CO4	T1,T2	
68.	Maxima and Minima	1	03-12-2025		TLM1	CO4	T1,T2	
69.	**TUTORIAL XIII**	1	06-12-2025		TLM3	CO4	T1,T2	
70.	Lagrange Multiplier Method	1	06-12-2025		TLM1	CO4	T1,T2	
71.	Lagrange Multiplier Method	1	08-12-2025		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
72.	Introduction to Unit-V	1	09-12-2025		TLM1	CO5	T1,T2	
73.	Double Integrals - Cartesian coordinates	1	10-12-2025		TLM1	CO5	T1,T2	
74.	**TUTORIAL XIV**	1	13-12-2025		TLM3	CO5	T1,T2	
75.	Double Integrals- Polar co ordinates	1	13-12-2025		TLM1	CO5	T1,T2	
76.	Triple Integrals - Cartesian coordinates	1	16-12-2025		TLM1	CO5	T1,T2	
77.	Triple Integrals - Spherical coordinates	1	17-12-2025		TLM1	CO5	T1,T2	
78.	**TUTORIAL XV**	1	20-12-2025		TLM3	CO5	T1,T2	
79.	Change of order of Integration	1	20-12-2025		TLM1	CO5	T1,T2	
80.	Change of order of Integration	1	22-12-2025		TLM1	CO5	T1,T2	
81.	Change of variables	1	23-12-2025		TLM1	CO5	T1,T2	

82.	Finding area by double Integral	1	24-12-2025		TLM1	CO5	T1,T2	
83.	Finding Volume by double and triple Integral	1	27-12-2025		TLM1	CO5	T1,T2	
84.	**TUTORIAL XVI**	1	27-12-2025		TLM3	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
85.	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.

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: K. V. VISWANADH
Course Name & Code : BASIC CIVIL AND MECHANICAL ENGINEERING&23CM01
L-T-P Structure : 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech/I/F-CSE **A.Y.:** 2025-26

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- 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 introduce basics of robotics and its applications.

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

CO1	Understand the different manufacturing processes.
CO2	Explain the basics of thermal engineering and its applications.
CO3	Describe the working of different mechanical power transmission systems and power plants.
CO4	Describe the basics of robotics and its applications.

TEXTBOOKS:

T1 Internal Combustion Engines by V.Ganesan, By Tata McGraw Hill publications (India) Pvt. Ltd.
T2 A text book of Theory of Machines by S.S. Rattan, Tata McGraw Hill Publications, (India) Pvt. Ltd. 3. An introduction to Mechanical Engg by Jonathan Wicker and Kemper Lewis, Cengage learning India Pvt. Ltd.

REFERENCE BOOKS:

1. G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, Tata McGraw Hill publications (India) Pvt. Ltd
2. Thermal Engineering by Mahesh M Rathore Tata McGraw Hill publications (India) Pvt. Ltd.
3. 3D printing & Additive Manufacturing Technology- L. Jyothish Kumar, Pulak M Pandey, Springer publications 4. 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.	Role of Mechanical Engineering in Industries and Society	1	18/08/2025		TLM1	
2.	Technologies in different sectors such as Energy	1	19/08/2025		TLM2	
3.	Technologies in different sectors Manufacturing, Automotive	1	20/08/2025		TLM1	
4.	Technologies in different sectors Aerospace, and Marine	1	23/08/2025		TLM1	
5.	Metals-Ferrous and Non-ferrous	1	25/08/2025		TLM2	
6.	Ceramics	1	26/08/2025		TLM2	
7.	Composite	1	30/08/2025		TLM1	
8.	Smart materials	1	01/09/2025		TLM1	
No. of classes required to complete UNIT-I: 8				**No. of classes taken:**		

UNIT-II: MANUFACTURING PROCESS&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
9.	Principles of Casting, Forming	1	02/09/2025		TLM1	
10.	joining processes, Machining	1	03/09/2025		TLM2	
11.	Introduction to CNC machines	1	06/09/2025		TLM1	
12.	3D printing	1	08/09/2025		TLM1	
13.	Smart manufacturing	1	09/09/2025		TLM2	
14.	Working principle of Boilers, Otto cycle, Diesel cycle	1	10/09/2025		TLM1	
15.	Refrigeration and air-conditioning cycles	1	13/09/2025		TLM1	
16.	IC engines, 2-Stroke and 4-Stroke engines	1	15/09/2025		TLM2	
17.	SI/CI Engines	1	16/09/2025		TLM1	
18.	Components of Electric and Hybrid Vehicles	1	17/09/2025		TLM1	
No. of classes required to complete UNIT-II: 10				**No. of classes taken:**		

UNIT-III: POWERPLANTS,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
19.	Working principle of Steam power plant	1	20/09/2025		TLM2	
20.	Working principle of Diesel, Hydro, Nuclear power plants	1	22/09/2025		TLM2	
21.	Belt Drives	1	23/09/2025		TLM1	
22.	Chain, Rope drives	1	24/09/2025		TLM1	
23.	Gear Drives and their applications	1	27/09/2025		TLM1	
24.	Introduction to Robotics	1	06/10/2025		TLM2	
25.	Joints & links	1	07/10/2025		TLM1	
26.	configurations	1	08/10/2025		TLM1	
27.	applications of robotics.	1	11/10/2025		TLM2	
28.	Beyond Syllabus	1	13/10/2025		TLM2	

29.	Revision	1	14/10/2025		TLM2	
30.	Revision	1	15/10/2025		TLM2	
31.	Revision	1	18/10/2025		TLM2	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Complete Mechanical Part)	A1=5
I-Descriptive Examination (Complete Mechanical Part)	M1=15
I-Quiz Examination (Complete Mechanical Part)	Q1=10
Assignment-II (Complete Civil Part)	A2=5
II- Descriptive Examination (Complete Civil Part)	M2=15
II-Quiz Examination (Complete Civil Part)	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 knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.
PO 2	**Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)
PO 3	**Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)
PO 4	**Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

PO 5	Engineering Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)
PO 6	The Engineer and The World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).
PO 7	Ethics: Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)
PO 8	Individual and Collaborative Team work: Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.
PO 9	Communication: Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences
PO 10	Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.
PO 11	Life-Long Learning: Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**K. V. VISWANADH**	**Dr.S.RAMI REDDY**	**Dr.P.VIJAY KUMAR**	**Dr.M.B.S.S REDDY**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. BONDALA ANIL KUMAR
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 4-1-0 Credits: 3
Program/Sem/Sec : B.Tech./I/F-Sec. A.Y.: 2025-26

PRE-REQUISITE: Mathematics.

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, the concept of algorithms and flowcharts.	Understand – Level 2
CO2:	Understand the features of C language.	Analyze – Level 4
CO3:	Interpret the problem and develop an algorithm to solve it.	Apply – Level 3
CO4:	Implement various algorithms using the C programming language.	Understand – Level 2
CO5:	Develop skills required for problem-solving and optimize the code.	Apply – Level 3

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, 1988dition, 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	18-08-2025			
2.	History of Computers	1	19-08-2025			
3.	Basic organization of a computer: ALU, input-output units.	2	19-08-2025 21-08-2025			
4.	Memory, program counter	1	22-08-2025			
5.	Introduction to Programming Languages,	1	23-08-2025			
6.	Basics of a Computer Program-Algorithms	1	25-08-2025			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	26-08-2025			
8.	Introduction to Compilation and Execution	1	28-08-2025			
9.	Primitive Data Types	2	29-08-2025 30-09-2025			
10.	Variables, and Constants, Basic Input and Output operations	1	01-09-2025			
11.	Type Conversion, and Casting	1	02-09-2025			
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	04-09-2025			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	06-09-2025			
14	Time and space complexities of algorithms.	1	06-09-2025			
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	08-09-2025			
16.	if, if-else, else if ladder	3	09-09-2025 11-09-2025 12-09-2025			
17.	switch.	2	15-09-2025 16-09-2025			

18.	Example programs on Decision Making and Branching	1	18-09-2025			
19.	Loops: while , Example programs	3	19-09-2025 20-09-2025 2-209-2025			
20.	do-while, for, Example programs	2	23-09-2025 25-09-2025			
21.	on Loops	3	26-09-2025 06-10-2025 07-10-2025			
22.	Break and Continue	1	09-10-2025			
23.	Example programs on Loops	3	10-10-2025 13-10-2025 14-10-2025			
24.	Revision	3	16-10-2025 17-10-2025 21-10-2025			
No. of classes required to complete UNIT – II: 22				**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
25.	Arrays Introduction, Declaration	1	23-10-2025			
26.	Array indexing, Accessing elements	1	24-10-2025			
27.	memory model	1	25-10-2025			
28.	programs with array of integers	1	27-10-2025			
29.	Introduction to two dimensional arrays	1	28-10-2025			
30.	2D Array indexing, Accessing elements	1	30-10-2025			
31.	programs with 2D arrays	1	31-10-2025			
32.	Introduction to Strings	1	03-11-2025			
33.	Reading and Writing Operations on Strings	1	04-11-2025			
34.	String Handling Functions	1	06-11-2025			
35.	Example Programs using Strings	1	07-11-2025			
No. of classes required to complete UNIT – III: 11				**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
36.	Introduction to Pointers	1	10-11-2025			
37.	dereferencing and address operators	1	11-11-2025			
38.	pointer and address arithmetic	1	13-11-2025			
39.	array manipulation using pointers	2	14-11-2025 15-11-2025			
40.	User-defined data types	1	17-11-2025			
41.	Structures , Definition and Initialization	2	18-11-2025 20-11-2025			
42.	Example programs	1	21-11-2025			
43.	Unions	2	24-11-2025 25-11-2025			
44.	Example programs	1	27-11-2025			
45.	Revision	1	28-11-2025			
No. of classes required to complete UNIT – IV: 13				**No. of classes taken:**		

UNIT – V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Functions	2	01-12-2025 02-12-2025			
47.	Function Declaration and Definition	2	04-12-2025 05-12-2025			
48.	Function call Return Types	2	06-12-2025 08-12-2025			
49.	Arguments	2	09-12-2025 11-12-2025			
50.	modifying parameters inside functions using pointers	2	12-12-2025 13-12-2025			
51.	arrays as parameters	2	15-12-2025 16-12-2025			
52.	Scope and Lifetime of Variables	2	18-12-2025 19-12-2025			
53.	Introduction to Files	1	20-12-2025			
54.	Basics of File Handling	1	22-12-2025			
55.	Operations on Files	2	23-12-2025 25-12-2025			
No. of classes required to complete UNIT – V: 18				**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
56.	Application Development using C	1	26-12-2025			
57.	Introduction to Data Structures	1	27-12-2025			

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 engineeringproblems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complexengineering 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 dataand synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, andmodern 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 to assess societal, health, safety, legal and cultural issues, and the consequent responsibilitiesrelevant to the professional engineering practice
PO7	**Environment and sustainability**: Understand the impact of the professional engineeringsolutions in societal and environmental contexts, and demonstrate the knowledge of, andneed for sustainable development.
PO8	**Ethic**s: Apply ethical principles and commit to professional ethics andresponsibilities andnorms of the engineering practice.
PO9	**Individual and teamwork**: Function effectively as an individual, and as a member orleader 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 asper 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	**BONDALA ANIL KUMAR**	**Dr. M. SRINIVASA RAO**	**Dr. Y. V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. N. Venkata Padmavathi
Course Name & Code : IT WORKSHOP Lab &23IT51
L-T-P Structure : 0-0-2 **Credits:1**
Program/Sem/Sec : B.Tech. - CSE/I/F **A.Y.:**2025-26
PREREQUISITE : **NIL**

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

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

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC. (Understand)
CO2	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO3	Build dialogs and documents using ChatGPT. (Apply)
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. (Apply)

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	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low **2 –**Medium **3 –**High

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 3rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited, PearsonEducation,2012, 2nd edition.
R4	PC Hardware - A Handbook, Kate J. Chase, PHI (Microsoft).
R5	LaTeX Companion, Leslie Lamport, PHI/Pearson.

R6	IT Essentials PC Hardware and Software Companion Guide, David 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.	Introduction	3	21-08-2025		**DM5**	
2.	Task-1	3	28-08-2025		**DM5**	
3.	Task-2	3	04-09-2025		**DM5**	
4.	Acitivity Based Learning	3	04-09-2025			
5.	Task-3	3	11-09-2025		**DM5**	
6.	Task-4	3	18-09-2025		**DM5**	
7.	Task-5	3	25-09-2025		**DM5**	
Internet & World Wide Web						
8.	Task-1	3	09-10-2025		**DM5**	
9.	Task-2	3	16-10-2025		**DM5**	
10.	Task-3	3	30-10-2025		**DM5**	
11.	Task-4	3	06-11-2025		**DM5**	
LaTex and WORD						
12.	Task-1	3	13-11-2025		**DM5**	
13.	Task-2	3	13-11-2025		**DM5**	
14.	Task-3	3	20-11-2025		**DM5**	
15.	Task-4	3	20-11-2025		**DM5**	
EXCEL						
16.	Task-1	3	27-11-2025		**DM5**	
17.	Task-2	3	27-11-2025		**DM5**	
LOOKUP/VLOOKUP						
18.	Task-1	3	04-12-2025		**DM5**	
POWER POINT						
19.	Task-1	3	11-12-2025		**DM5**	
20.	Task-2	3	11-12-2025		**DM5**	

21.	Task-3	3	11-12-2025		**DM5**	
AI TOOLS – ChatGPT						
22.	Task-1	3	18-12-2025		**DM5**	
23.	Task-2	3	18-12-2025		**DM5**	
24.	Task-3	3	18-12-2025		**DM5**	
25.	Internal exam	3	08-01-2026		**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):

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	**Mrs N.V.Padmavathi**	**Mr. N. Srikanth**	**Dr. D. Venkata Subbaiah**	**Dr. S. Nagarjuna Reddy**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. K. Sridevi
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech.I Sem.CSE-F
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	18-08-2025		TLM4	
2.	Vowels & Consonants	06	25-08-2025 01-09-2025		TLM1 TLM5	
3.	Neutralization	03	08-09-2025		TLM1, TLM5	
4.	Accent rules	03	15-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	22-09-2025 06-10-2025		TLM4	
6.	Role Play-I (Formal and Informal)	06	13-10-2025		TLM4	

			27-10-2025			
7.	e-mail Writing,	03	03-11-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	10-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	17-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	24-11-2025		TLM4, TLM6	
11.	PPT Presentation	03	01-12-2025		TLM2, TLM4	
12.	Poster Presentation	03	08-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	15-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	22-12-2025			
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.
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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	**Ms. K. Sridevi**	**Dr. B. Samrajya Lakshmi**	**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: Mrs. K. Sri Lakshmi &Dr. Y. Subbareddy

Course Name & Code **:** Chemistry Lab&23FE52

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

Program/Sem/Sec : I B.Tech./I Sem/CSE-F **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 andindustrial 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): CSE-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	20-08-2025		TLM1	CO1	
2	Explanation of chemicals and glassware	3	03-09-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	10-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	17-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	24-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	08-10-2025		TLM4	CO3	
7.	Estimation of Ferrous ion by Dichrometry	3	15-10-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	29-10-2025		TLM4	CO1	
9.	Estimation of total hardeness of given water sample	3	05-11-2025		TLM4	CO4	
10.	Alkalinity of water sample	3	12-11-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	19-11-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	26-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	03-12-2025		TLM4	CO1	
14.	Additional experiment/repeat	3	10-12-2025		TLM4	CO	
15.	Additional experiment/repeat	3	17-12-2025		TLM4	CO	
16.	Internal Exam	3	24-12-2025		TLM4		
	Total						

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:

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	**Mrs. K. Sri Lakshmi**	**Dr.V.Parvathi**	**Dr.V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

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DEPARTMENT OF COMPUTERSCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : BONDALA ANIL KUMAR

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

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

Program/Sem/Sec : B.Tech.–CSE/I Sem-F 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.

COURSEOUTCOMES (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.	

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	-	-
C05	-	-	-	-	-	-	-	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		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		22-08-2025	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		29-09-2025	DM5
3.	Week3:Exercise Programs on Variable types and type conversions	03		12-09-2025	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		19-09-2025	DM5
5.	Week5:Exercise Programs on Branching and logical expressions	03		26-09-2025	DM5
6.	Week6:Exercise Programs on Loops, while and for loops	03		10-10-2025	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		17-10-2025	DM5
8.	Week8:ExerciseProgramson 2 D arrays, sorting and Strings.	03		31-10-2025	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		07-11-2025	DM5
10.	Week10:ExerciseProgramso n Bit fields, Self-Referential Structures, Linked lists	03		14-11-2025	DM5
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03		21-11-2025	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	06		28-11-2025 05-12-2025	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		12-12-2025	DM5
14.	Week 14: Exercise Programs on File handling.	03		19-11-2025	DM5
15.	Lab Internal	03		26-12-2025	DM5

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

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
PO6	**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
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 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 projectdevelopmentusingopen-sourceprogrammingenvironmentforthesuccessoforganization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT asper the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**HOD**
Name of the Faculty	**BONDALA ANIL KUMAR**	**Dr. M. SRINIVASA RAO**	**Dr. Y. V. Bhaskar Reddy**	**Dr. S. Nagarjuna Reddy**
Signature				

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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 .CSE -G.....
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 22-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23-08-2025 26-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	29-08-2025 30-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	02-09-2025 05-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	06-09-2025 09-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	12-09-2025 13-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 12						**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Nature: The Brook by Alfred Tennyson**	02	16-09-2025 19-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	01	20-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	01	23-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	01	26-09-2025		TLM2 TLM6	CO2	T1,T2	

5.	**Use of Articles and zero article, Prepositions**	02	27-09-2025 07-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	02	10-10-2025 11-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 09						**No. of classes taken:**		

UNIT-III:

S. No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	Text Book followed	**HOD Sign Weekly**
1.	**Biography: Elon Musk**	02	14-10-2025 17-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	18-10-2025 28-10-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	31-10-2025 01-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	04-11-2025 07-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	11-11-2025		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	14-11-2025 15-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	18-11-2025 21-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	22-11-2025 25-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	28-11-2025 29-11-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	02-12-2025		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	05-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	06-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	09-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	12-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	13-12-2025		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	16-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	19-12-2025		TLM2 &5	
3.	**Technical vocabulary**		20-12-2025		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
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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.
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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DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Y. Subbareddy
Course Name & Code : Chemistry & 23FE02
L-T-P Structure : **3-0-0** **Credits: 03**
Program/Sem/Sec : I B.Tech./I Sem/CSE-G **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-G

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	1	18-08-2025		TLM1	
2.	Fundamentals of Quantum Mechanics	1	20-08-2025			
3.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	22-08-2025		TLM1	
4.	Particle in one dimensional box	1	23-08-2025		TLM1	
5.	Molecular Orbital Theory	1	25-08-2025		TLM1	
6.	Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	1	29-08-2025			
7.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	1	30-08-2025		TLM1	
8.	Energy level diagrams-Summary	1	01-09-2025		TLM1	
9.	π-molecular orbitals of butadiene	1	03-09-2025		TLM1	
10.	π-molecular orbitals of benzene	1	06-09-2025		TLM1	
11.	Calculation of Bond order	1	08-09-2025		TLM1	
12.	Revision and assignment	1	10-09-2025		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	1	12-09-2025		TLM1	
2.	Semiconductors - Basic concept & applications	2	13-09-2025 & 15-09-2025		TLM1	
3.	Super conductors - Introduction	1	17-09-2025		TLM1	
4.	Super conductors - Basic concept & applications	1	19-09-2025		TLM1	
5.	Super capacitors - Introduction, Basic concept	2	20-09-2025 & 22-09-2025		TLM1	
6.	Super capacitors - classification & applications	2	24-09-2025 & 26-09-2025		TLM1	
7.	Nano materials - Introduction	1	27-09-2025		TLM2	
8.	Nano materials - classification	1	06-10-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	08-10-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	3	10-10-2025 & 11-10-2025 & 13-10-2025		TLM2	
11.	Revision and assignment	3	15-10-2025 & 17-10-2025 & 18-10-2025		TLM1	
No. of classes required to complete UNIT-II: 18				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	1	27-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	29-10-2025 & 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	05-11-2025		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	07-11-2025		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	08-11-2025 & 10-11-2025		TLM1	
7.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells	1	12-11-2025		TLM1	
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	14-11-2025		TLM1	
9.	Revision and assignment	2	15-11-2025 & 17-11-2025		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	19-11-2025		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	21-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	22-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	24-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	26-11-2025 & 28-11-2025		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	29-11-2025		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	01-12-2025		TLM1	

8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	03-12-2025		TLM1	
9.	Revision and assignment	2	05-12-2025 & 06-12-2025		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	08-12-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	10-12-2025		TLM1	
3.	UV-Visible Spectroscopy	1	12-12-2025		TLM1	
4.	electronic transition, Instrumentation	1	13-12-2025		TLM1	
5.	IR spectroscopy, fundamental modes	1	15-12-2025		TLM1	
6.	selection rules, Instrumentation	1	17-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	19-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	20-12-2025 & 22-12-2025		TLM1	
9.	Revision and assignment	1	24-12-2025 &		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.	2	26-12-2025 & 27-12-2025		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	**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. Y. Subbareddy**	**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
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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., CSE - G
ACADEMIC YEAR	**:** 2025-26
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 4-1-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Dr. D. Vijaya Kumar
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 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 16-08-2025	04-08-2025 To 16-08-2025	TLM1			
2.	Introduction to the course	1	19-08-2025		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	21-08-2025		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-08-2025		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-08-2025		TLM1	CO1	T1,T2	
7.	Normal form	1	26-08-2025		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	26-08-2025		TLM3	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	30-08-2025		TLM3	CO1	T1,T2	
12.	Homogeneous System of Equations	1	02-09-2025		TLM1	CO1	T1,T2	
13.	**TUTORIAL I**	1	02-09-2025		TLM1	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	06-09-2025		TLM3	CO1	T1,T2	
17.	Jacobi Iteration Method	1	09-09-2025		TLM1	CO1	T1,T2	
18.	**TUTORIAL II**	1	09-09-2025		TLM1	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	
21.	**TUTORIAL III**	1	16-09-2025		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		21			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	Introduction to Unit II	1	13-09-2025		TLM1	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	16-09-2025		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.	Properties	1	20-09-2025		TLM3	CO2	T1,T2	

27.	Cayley-Hamilton Theorem	1	23-09-2025		TLM1	CO2	T1,T2	
28.	**TUTORIAL IV**	1	23-09-2025		TLM1	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	27-09-2025		TLM3	CO2	T1,T2	
32.	Diagonalization of a matrix	1	07-10-2025		TLM1	CO2	T1,T2	
33.	**TUTORIAL V**	1	07-10-2025		TLM1	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	11-10-2025		TLM3	CO2	T1,T2	
37.	Reduction of Quadratic form to Canonical form	1	14-10-2025		TLM1	CO2	T1,T2	
38.	**TUTORIAL VI**	1	14-10-2025		TLM1	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	
41.	Revision	1	18-10-2025		TLM3	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
42.	Introduction to Unit III	1	28-10-2025		TLM1	CO3	T1,T2	
43.	Mean Value theorem	1	28-10-2025		TLM1	CO3	T1,T2	
44.	Rolle's theorem	1	30-10-2025		TLM3	CO3	T1,T2	
45.	Rolle's theorem	1	31-10-2025		TLM1	CO3	T1,T2	
46.	Lagrange's mean value theorem	1	01-11-2025		TLM3	CO3	T1,T2	
47.	Lagrange's mean value theorem	1	04-11-2025		TLM1	CO3	T1,T2	
48.	**TUTORIAL VII**	1	04-11-2025		TLM3	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.	Taylor's theorem	1	08-11-2025		TLM3	CO3	T1,T2	
52.	Taylor's theorem	1	11-11-2025		TLM1	CO3	T1,T2	
53.	**TUTORIAL VIII**	1	11-11-2025		TLM1	CO3	T1,T2	
54.	Maclaurin's theorem	1	13-11-2025		TLM3	CO3	T1,T2	
55.	Problems and applications	1	14-11-2025		TLM1	CO3	T1,T2	
56.	Problems and applications	1	15-11-2025		TLM3	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
57.	Introduction to Unit IV, Functions of several variables, Continuity and Differentiability	1	18-11-2025		TLM1	CO4	T1,T2	
58.	**TUTORIAL IX**	1	18-11-2025		TLM1	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	22-11-2025		TLM3	CO4	T1,T2	
62.	Maclaurin's series expansion	1	25-11-2025		TLM1	CO4	T1,T2	
63.	**TUTORIAL X**	1	25-11-2025		TLM1	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	29-11-2025		TLM3	CO4	T1,T2	
67.	Maxima and Minima	1	02-12-2025		TLM1	CO4	T1,T2	
68.	**TUTORIAL XI**	1	02-12-2025		TLM1	CO4	T1,T2	
69.	Lagrange Multiplier Method	1	04-12-2025		TLM3	CO4	T1,T2	
70.	Lagrange Multiplier Method	1	05-12-2025		TLM1	CO4	T1,T2	
71.	Lagrange Multiplier Method	1	06-12-2025		TLM3	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
72.	Introduction to unit 5 Double Integrals - Cartesian coordinates	1	09-12-2025		TLM1	CO5	T1,T2	
73.	**TUTORIAL XII**	1	09-12-2025		TLM1	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	13-12-2025		TLM3	CO5	T1,T2	
77.	Change of order of Integration	1	16-12-2025		TLM1	CO5	T1,T2	
78.	**TUTORIAL XIII**	1	16-12-2025		TLM1	CO5	T1,T2	
79.	Change of order of Integration	1	18-12-2025		TLM1	CO5	T1,T2	

80.	Change of variables	1	19-12-2025		TLM3	CO5	T1,T2	
81.	Finding area by double Integral	1	23-12-2025		TLM1	CO5	T1,T2	
82.	**TUTORIAL XIV**	1	23-12-2025		TLM1	CO5	T1,T2	
83.	Finding Volume by double and triple Integral	1	26-12-2025		TLM1	CO5	T1,T2	
84.	Revision	1	27-12-2025		TLM3	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
85.	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. D. Vijaya Kumar	**Dr. K. Bhanu Lakshmi**	**Dr. A. Rami Reddy**	**Dr. T. Satyanarayana**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE (CSE)

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. L. Prabhu
Course Name & Code **:** BC&ME, 23CM01
L-T-P Structure **: 5-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/I-Sem/G-**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:

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

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

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

REFERENCE BOOKS:

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Mechanical Engineering	1	20-08-25		TLM1	
2.	Role of Mechanical Engineering in Industries and Society	1	21-08-25		TLM1	
3.	Technologies in different sectors such as Energy	1	22-08-25		TLM1	
4.	Technologies in different sectors such as Manufacturing	1	23-08-25		TLM1	
5.	Technologies in different sectors such as Automotive	1	28-08-25		TLM1	
6.	Technologies in different sectors such as Aerospace, and Marine sectors	1	29-08-25		TLM1	
7.	Engineering Materials - Metals	1	30-08-25		TLM1	
8.	Ferrous Metals, Non-ferrous Metals	1	03-09-25		TLM1	
9.	Ceramic	1	04-09-25		TLM1	
10.	Composites, Smart Materials	1	05-09-25		TLM1	
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	HOD Sign Weekly
11.	Manufacturing Processes, Principles of Casting	1	06-09-25		TLM1	
12.	Forming, joining processes	1	10-09-25		TLM1	
13.	Introduction to CNC machines	1	11-09-25		TLM1	
14.	3D printing, and Smart manufacturing	1	12-09-25		TLM2	
15.	Thermal Engineering- Working principle of Boilers	1	17-09-25		TLM1	
16.	Otto cycle,	1	18-09-25		TLM2	
17.	Diesel cycle	1	19-09-25		TLM2	
18.	Refrigeration and air-conditioning cycles	1	20-09-25		TLM1	
19.	IC engines, 2-Stroke and 4-Stroke engines	1	24-09-25		TLM2	
20.	Components of Electric and Hybrid Vehicles	1	25-09-25		TLM1	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	Power plants – Working principle of Steam power plants	1	26-09-25		TLM1	
22.	Power plants – Working principle of Diesel power plants	1	27-09-25		TLM1	
23.	Power plants – Working principle of Hydro power plants	1	08-10-25		TLM1	
24.	Power plants – Working principle of nuclear power plants	1	09-10-25		TLM1	
25.	Mechanical Power Transmission - Belt Drives	1	10-10-25		TLM1	
26.	Chain, Rope drives,	1	15-10-25		TLM1	
27.	Gear Drives and their applications		16-10-25			
28.	Introduction to Robotics- Joints & links,	1	17-10-25		TLM2	
29.	Application of robotics	1	18-10-25		TLM2	
I-Mid Exams			20-10-2025 To 25-10-2025			
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 (R17 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
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor Course Coordinator Module Coordinator HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. S Srinivasa Reddy
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech./I/G A.Y.: 2025-26

PRE-REQUISITE: NIL

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 – Level 2
CO2:	Understand the features of C language	Analyze – Level 4
CO3:	Interpret the problem and develop an algorithm to solve it.	Apply – Level 3
CO4:	Implement various algorithms using the C programming language.	Understand – Level 2
CO5:	Develop skills required for problem-solving and optimizing the code	Apply – Level 3

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

TEXTBOOKS:

T1: The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall, 1988dition, 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	18-08-2025		TLM 1/2	
2.	History of Computers	1	20-08-2025		TLM 1/2	
3.	Basic organization of a computer: ALU, input-output units.	2	21-08-2025 22-08-2025		TLM 1/2	
4.	Memory, program counter	1	23-08-2025		TLM 1/2	
5.	Introduction to Programming Languages,	1	25-08-2025		TLM 1/2	
6.	Basics of a Computer Program-Algorithms	1	28-08-2025		TLM 1/2	
7.	Flowcharts (Using Dia Tool), pseudo code.	1	29-08-2025		TLM 1/2	
8.	Introduction to Compilation and Execution	1	30-08-2025		TLM 1/2	
9.	Primitive Data Types	2	01-09-2025 03-09-2025		TLM 1/2	
10.	Variables, and Constants, Basic Input and Output operations	1	04-09-2025 06-09-2025		TLM 1/2	
11.	Type Conversion, and Casting	1	08-09-2025		TLM 1/2	
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	10-09-2025 11-09-2025		TLM 1/2	
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	12-09-2025		TLM 1/2	
14	Time and space complexities of algorithms.	1	15-09-2025		TLM 1/2	
No. of classes required to complete UNIT – I: 15				**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	17-09-2025		TLM 1/2	
16.	if, if-else	1	18-09-2025 19-09-2025		TLM 1/2	
17.	Else-if ladder, nested if	1	20-09-2025		TLM 1/2	
18.	Switch, sample programs	1	22-09-2025		TLM 1/2	
19.	Example programs on DecisionMaking and Branching	2	24-09-2025 25-09-2025		TLM 1/2	

20.	Loops: while , Example programs	2	26-09-2025 27-09-2025		TLM 1/2	
21.	Loops: do-while, Example programs	1	06-10-2025		TLM 1/2	
22.	Loops: for, Example programs	1	08-10-2025		TLM 1/2	
23.	Break , Example programs	1	09-10-2025		TLM 1/2	
24.	Continue, Example programs	1	10-10-2025 13-10-2025		TLM 1/2/3	
25.	Goto Example programs	1	15-10-2025		TLM 1/2/3	
26.	Example programs on loops	1	16-10-2025		TLM 1/2/3	
27.	Example programs on loops	1	17-10-2025		TLM 1/2/3	
28.	Revision	1	18-10-2025		TLM 1/2/3	
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	27-10-2025		TLM 1/2	
30.	Array indexing, Accessing elements	1	29-10-2025		TLM 1/2	
31.	memory model	1	30-10-2025		TLM 1/2	
32.	programs with array of integers	1	31-10-2025		TLM 1/2	
33.	Introduction to two dimensional arrays	1	01-11-2025		TLM 1/2	
34.	2D Array indexing, Accessing elements	1	03-11-2025		TLM 1/2	
35.	programs with 2D arrays	1	05-11-2025		TLM 1/2	
36.	Introduction to Strings	1	06-11-2025		TLM 1/2	
37.	Reading and Writing Operations on Strings	1	07-11-2025		TLM 1/2	
38.	String Handling Functions	1	10-11-2025		TLM 1/2	
39.	Example Programs using Strings	1	12-11-2025		TLM 1/2/3	
No. of classes required to complete UNIT – III: 11				**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
40.	Introduction to Pointers	1	13-11-2025		TLM 1/2	
41.	dereferencing and address operators	1	14-11-2025		TLM 1/2	
	pointer and address arithmetic	1	15-11-2025		TLM 1/2	
42. 43.	array manipulation using pointers	2	17-11-2025 19-11-2025		TLM 1/2	
	User-defined data types	1	20-11-2025		TLM 1/2	
44. 45.	Structures , Definition and Initialization	2	21-11-2025 22-11-2025		TLM 1/2	
46.	Example programs	1	24-11-2025		TLM 1/2/3	
47. 48.	Unions	2	26-11-2025 27-11-2025		TLM 1/2	
49.	Example programs	1	28-11-2025		TLM 1/2/3	
50.	Revision	1	29-11-2025		TLM 1/2/3	
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
51.	Introduction to Functions	1	01-12-2025		TLM 1/2	
52.	Function Declaration and Definition	1	03-12-2025 04-12-2025		TLM 1/2	
53.	Function call Return Types	1	05-12-2025 06-12-2025		TLM 1/2	
54.	Arguments	1	08-12-2025		TLM 1/2	
55.	modifying parameters inside functions using pointers	2	10-12-2025 11-12-2025		TLM 1/2	
56.	arrays as parameters	1	12-12-2025		TLM 1/2	
57.	Scope and Lifetime of Variables	1	15-12-2025 17-12-2025		TLM 1/2	
58.	Introduction to Files	1	18-12-2025 19-12-2025		TLM 1/2	
59.	Basics of File Handling	1	20-12-2025		TLM 1/2	
60.	Operations on Files	1	22-12-2025		TLM 1/2	
No. of classes required to complete UNIT – V: 11				**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
61.	Application Development using C	1	23-12-2025			
62.	Introduction to Data Structures	1	24-12-2025			
63.	Introduction to Data Structures	1	26-12-2025			

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):

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
PO6	**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
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	**Ethics**: 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 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	To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.
PSO2	To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.
PSO3	To provide a concrete foundation and enrich their abilities for Employment and Higher studies in Artificial Intelligence and Data science with ethical values.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	S. Srinivasa Reddy	Dr. M. Srinivasa Rao	Dr. Y. Vijaya Bhaskar Reddy	Dr. S. Nagarjuna Reddy
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. Mohammed Sajeena
Course Name & Code : IT Workshop Lab & 23IT51
L-T-P Structure : 0-0-2 **Credits:** 1
Program/Sem/Sec : B.Tech - CSE/I/G **A.Y.:** 2025-26
PREREQUISITE : NIL

COURSE OBJECTIVES:

- To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables
- To demonstrate configuring the system as 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 the 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, the student will be able to

CO1	Identify the components of a PC and troubleshooting the malfunctioning of PC .**(Apply-L3)**
CO2	Develop presentation /documentation using Office tools and LaTeX. **(Apply-L3)**
CO3	Build dialogs and documents using ChatGPT. **(Apply-L3)**
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. **(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	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low **2** –Medium **3** –High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
PC Hardware & Software Installation						
1.	Task-1	3	19-08-2025		DM5	
2.	Task-2	3	19-08-2025		DM5	
3.	Task-3	3	26-08-2025		DM5	
4.	Task-4	3	26-08-2025		DM5	
5.	Task-5	3	02-09-2025		DM5	
Internet & World Wide Web						
6.	Task-1	3	09-09-2025		DM5	
7.	Task-2	3	09-09-2025		DM5	
8.	Task-3	3	16-09-2025		DM5	
9.	Task-4	3	16-09-2025		DM5	
LaTex and WORD						
10.	Task-1	3	23-09-2025		DM5	
11.	Task-2	3	23-09-2025		DM5	
12.	Task-3	3	07-10-2025		DM5	
13.	Task-4	3	14-10-2025		DM5	
EXCEL						
14.	Task-1	3	28-10-2025		DM5	
15.	Task-2	3	04-11-2025		DM5	

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

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

PART-C

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Ms. Md. Sajeena	Mr. N. Srikanth	Dr. D. Venkata Subbaiah	Dr. S. Nagarjuna Reddy
Signature				

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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 : CE LAB, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech .....I .CSE-G.....
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	20-08-2025		TLM4	
2.	Vowels & Consonants	06	03-09-2025 10-09-2025		TLM1 TLM5	
3.	Neutralization	03	17-09-2025		TLM1, TLM5	
4.	Accent rules	03	24-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	01-10-2025 08-10-2025		TLM4	

6.	Role Play-I (Formal and Informal)	06	15-10-2025 29-10-2025		TLM4	
7.	e-mail Writing,	03	05-11-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	12-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	19-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	26-11-2025		TLM4, TLM6	
11.	PPT Presentation	03	03-12-2025		TLM2, TLM4	
12.	Poster Presentation	03	10-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	17-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	24-12-2025			
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				

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

DIVISION OF CHEMISTRY

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Y. Subbareddy & Ms. K. Sri Lakshmi

Course Name & Code : Chemistry Lab & 23FE52

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

Program/Sem/Sec : I B.Tech./I Sem/CSE-G **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): CSE-G

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	21-08-2025		TLM1	CO1	
2	Explanation of chemicals and glassware	3	28-08-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	04-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	11-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	18-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	11-09-2025		TLM4	CO3	
7.	Estimation of Ferrous ion by Dichrometry	3	18-09-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	25-09-2025		TLM4	CO1	
9.	Estimation of total hardeness of given water sample	3	09-10-2025		TLM4	CO4	
10.	Alkalinity of water sample	3	16-10-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	30-10-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	06-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	13-11-2025		TLM4	CO1	
14.	Additional experiment/repeat	3	20-11-2025 & 27-11-2025		TLM4	CO	
15.	Additional experiment/repeat	3	04-12-2025		TLM4	CO	
16.	Internal Exam	3	11-12-2025 & 18-12-2025		TLM4		
	Total						

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:

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
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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. Y. Subbareddy**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSEHANDOUT

PART-A

Name of Course Instructor : S. SRINIVASA REDDY

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

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

Program/Sem/Sec : B.Tech.–CSE/I Sem-G 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.

COURSEOUTCOMES(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)	Understand – Level1
CO2	Apply the right control structure for solving the problem. (Apply)	Apply–Level3
CO3	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (Apply).	Apply–Level3
CO4	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	-	-	3	-	-	-	-	-	-	-	3	3	3
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
C04	-	-	-	-	-	-	-	2	2	2			-	-	-

1 –Low **2 –**Medium **3–** High

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		18-08-2025	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		25-08-2025	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		01-09-2025	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		08-09-2025	DM5
5.	Week5: Exercise Programs on Branching and logical expressions	03		15-09-2025	DM5
6.	Week6: Exercise Programs on Loops, while and for loops	03		22-09-2025	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		06-10-2025	DM5
8.	Week8: Exercise Programs on2 D arrays, sorting and Strings.	03		13-10-2025	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		27-10-2025	DM5
10.	Week10: Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03		03-11-2025	DM5
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03		10-11-2025	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		17-11-2025	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		24-11-2025	DM5
14.	Week 14: Exercise Programs on File handling.	03		01-12-2025	DM5
15.	Lab Internal	03		08-12-2025	DM5

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

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMMEOUTCOMES(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.
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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.

PROGRAMMESPECIFICOUTCOMES(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 asper 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	**S. SRINIVASA REDDY**	**Dr. M. SRINIVASA RAO**	**Dr. Y. VIJAYA BHASKAR REDDY**	**Dr. S. NAGARJUNA REDDY**
Signature				