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: Dr. R. Padma
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech IT-A- I SEM
A.Y. : 2024-25

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

List of Activities:

1. 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	07/8/2024		TLM4	
2.	Vowels & Consonants	06	14/8/2024& 21/8/2024		TLM1 TLM5	
3.	Neutralization	03	28/8/2024		TLM1, TLM5	
4.	Accent rules	03	04/9/2024		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	11/9/2024& 18/9/2024		TLM4	

6.	Role Play-I (Formal and Informal)	06	25/9/2024& 09/10/2024		TLM4	
7.	e-mail Writing,	03	16/10/2024		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	23/10/2024		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	30/10/2024		TLM4, TLM6	
10.	Debate: methods & Practice	03	06/11/2024		TLM4, TLM6	
11.	PPT Presentation	06	13/11/2024 & 20/11/2024		TLM2, TLM4	
12.	Poster Presentation	03	27/11/2024		TLM2, TLM4	
13.	Mock Interviews	03	04/12/2024		TLM1, TLM6	
14.	Lab Internal Exam	03	11/12/2024			
No. of classes required to complete Syllabus: 54				**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	**Dr. R. Padma**	**Dr. R. Padma**	**Dr. R. Padma**	**Dr. A. Rami Reddy**
Signature				

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: M Karthik Kumar

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

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

Program/Sem/Sec : B.Tech, I SEM, IT-A **A.Y.:** 2024-25

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

Textbooks:

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

Reference Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction CO's & PO's, Subject	1	05/08/2024		TLM2	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	06/08/2024		TLM2	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	08/08/2024		TLM2	
4.	Geo-technical Engineering- Transportation Engineering	1	09/08/2024		TLM2	
5.	Hydraulics and Water Resources Engineering	1	12/08/2024		TLM2	
6.	Environmental Engineering- Scope of each discipline - Building Construction and Planning-	1	13/08/2024		TLM1	
7.	Construction Materials	1	16/08/2024		TLM2	
8.	Introduction to Prefabricated construction Techniques	1	19/08/2024		TLM2	
9.	Over view- Prefabricated construction	1	20/8/2024		TLM4	
No. of classes required to complete UNIT-I: 9				**No. of classes taken:**		

UNIT-II: Surveying

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
10.	Objectives of Surveying Horizontal Measurements	1	22/8/2024		TLM2	
11.	Angular Measurements	1	23/8/2024		TLM2	
12.	Compass Surveying overview-	1	27/8/2024		TLM2	
13.	Introduction to Bearings	1	29/8/2024		TLM2	
14.	Levelling introduction-	1	29/8/2024		TLM2	
15.	Levelling instruments used for levelling	1	02/9/2024		TLM2	
16.	Simple problems on bearings	1	03/9/2024		TLM1	
17.	Simple problems on levelling	1	05/9/2024		TLM1	
18.	Rise and fall/ HI method	1	06/9/2024		TLM2	
19.	Problems	1	09/9/2024		TLM3	
20.	Contour mapping	1	10/9/2024		TLM2	
No. of classes required to complete UNIT-II:11				**No. of classes taken:**		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	**Transportation Engineering** Importance of Transportation in Nation's economic development	1	12/9/2024		TLM2	
22.	Types of Highway Pavements	1	13/9/2024		TLM2	
23.	Flexible Pavements - Basics of Harbour, Tunnel,- Rigid Pavements Simple Differences	1	17/9/2024		TLM2	
24.	Basics of Airport, and Railway Engineering	1	19/9/2024		TLM2	
25.	**Water Resources and Environmental Engineering** Introduction, Sources of water-	1	20/9/2024		TLM2	
26.	Quality of water- Specifications	1	23/9/2024		TLM2	
27.	Introduction to Hydrology	1	24/9/2024		TLM2	
28.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	26/9/2024		TLM2	
29.	(Simple introduction to Dams and Reservoirs).	1	27/9/2024		TLM2	
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Signature				
Name of the Faculty	M Karthik Kumar	.B.Rama Krishna	Dr.C.Rajamallu	Dr.J.V.R

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : **Mrs M.HEMALATHA**
Course Name & Code : **Introduction to Programming (23CS01)**
L-T-P Structure : **3-0-0** **Credits: 3**
Program/Sem/Sec : **B.Tech.–IT /I Sem-A** **A.Y.: 2024-25**

PRE-REQUISITE: Fundamentals of 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 algorithm and algorithmic thinking.	Understand – Level 2
CO2:	Analyze a problem and develop an algorithm to solve it.	Analyze – Level 4
CO3:	Implement various algorithms using the C programming language.	Apply – Level 3
CO4:	Understand more advanced features of C language.	Understand – Level 2
CO5:	Develop problem-solving skills and the ability to debug 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	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO5	3	-	-	-	-	-	-	-	-	-	-	-	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	06-08-24		**TLM1**	
2.	History of Computers	1	07-08-24		**TLM1**	
3.	Basic organization of a computer: ALU, input-output units.	1	09-08-24		**TLM1**	
4.	Memory, program counter	1	13-08-24		**TLM1**	
5.	Introduction to Programming Languages,	1	14-08-24		**TLM1**	
6.	Basics of a Computer Program-Algorithms	1	16-08-24		**TLM1**	
7.	Flowcharts (Using Dia Tool)	1	17-08-24		**TLM1**	
8	pseudo code	1	20-08-24		**TLM1**	
9.	Introduction to Compilation and Execution	1	21-08-24		**TLM1**	
10.	Primitive Data Types	1	23-08-24		**TLM1**	
11.	Variables, and Constants, Basic Input and Output operations	1	24-08-24		**TLM4**	
12	Operators	1	27-08-24		**TLM 4**	
13.	Type Conversion, and Casting	1	28-08-24		**TLM1**	
14.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm.	1	30-08-24		**TLM2**	
15.	Problem solving strategies: Top-down approach, Bottom-up approach	1	31-08-24		**TLM1**	
16	Time and space complexities of algorithms.	1	03-09-24		**TLM2**	
17	Tutorial - I	1	04-09-24		**TLM 3 & 5**	
No. of classes required to complete UNIT – I: 17				**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.	Conditional Statements	1	06-09-24		**TLM1**	
19	if, if-else, nested if-else , else-if ladder	1	10-09-24		**TLM1**	
20.	switch	1	11-09-24		**TLM1**	
21.	Example programs on Decision Making and Branching	2	13-09-24 14-09-24		**TLM4**	
22.	Loops: while , Example programs	2	17-09-24 18-09-24		**TLM4**	
23.	do-while, for	1	20-09-24		**TLM1**	
24.	Example programs on Loops	2	21-09-24		**TLM4**	
25.	Break and Continue	1	24-09-24		**TLM1**	
26.	Example programs on Patterns	2	25-09-24 27-09-24		**TLM4**	
27.	Tutorial - II	1	28-09-24		**TLM 3 & 5**	
No. of classes required to complete UNIT – II: 14				**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	8-10-24		TLM1	
26.	Array indexing, Accessing elements, memory model	1	9-10-24		TLM1	
27.	programs with array of integers	1	15-10-24		TLM4	
28.	Introduction to two dimensional arrays	1	16-10-24		TLM1	
29.	2D Array indexing, Accessing elements	1	18-10-24		TLM2	
30.	programs with 2D arrays	1	19-10-24		TLM4	
31.	Introduction to Strings	1	22-10-24		TLM1	
32.	Reading and Writing Operations on Strings	1	23-10-24		TLM1	
33.	String Handling Functions	1	25-10-24		TLM2	
34.	String Handling Functions Example Programs using Strings	1	26-10-24		TLM4	
	Tutorial-III	1	29-10-24		TLM3 & 5	
No. of classes required to complete UNIT – III: 10				**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	30-10-24		TLM1	
37.	dereferencing and address operators	1	2-11-24		TLM1	
38.	pointer and address arithmetic	1	5-11-24		TLM1	
39.	array manipulation using pointers	1	6-11-24		TLM1	
40.	User-defined data types	1	8-11-24		TLM1	
41.	Structures , Definition and Initialization	2	12-11-24 13-11-24		TLM1	
42.	Example programs	1	15-11-24		TLM4	
43.	Unions	1	16-11-24		TLM1	
44.	Example programs	1	19-11-24		TLM4	
45.	Tutorial -IV	1	20-11-24		TLM3 & 5	
No. of classes required to complete UNIT – IV: 11				**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	1	22-11-24		TLM1	
47.	Function Declaration and Definition	1	23-11-24		TLM1	
48.	Function call Return Types	1	26-11-24		TLM1	
49.	Arguments	1	27-11-24		TLM1	
50.	modifying parameters inside functions using pointers	1	29-11-24		TLM1	
51.	arrays as parameters	1	30-11-24		TLM1	
52.	Scope and Lifetime of Variables	1	03-12-24		TLM1	
53.	Introduction to Files	1	04-12-24		TLM1	
54.	Basics of File Handling	1	06-12-24		TLM2	

55.	Operations on Files	1	07-12-24		**TLM4**	
56	Tutorial - V	1	10-12-24		**TLM3 & 5**	
No. of classes required to complete UNIT – V: 10				**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
57.	Application Development using C	1	11-12-24		**TLM2**	
58.	Introduction to Data Structures	1	13-12-24		**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):

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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO2	Design, Implement and evaluate a computer-based system to meet desired needs.
PSO3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	**Mrs M. Hema Latha**	**Dr Y.Viajaya Bhaskar Reddy**	**Dr. K. Phaneendra**	**Dr. B. Srinivas Rao**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSEHANDOUT

PART-A

NameofCourse Instructor	: Mr K.Rajasekhar, Mrs.K.Lakshmi Devi, Mr.B.RavindraChantiBabu		
CourseName&Code	:ITWORKSHOP(23IT51)		
L-T-PStructure	:--2	**Credit**	:01
Program/Sem/Sec	:B.Tech / IT –I /B	**A.Y**	:2024-25

PRE-REQUISITE:NIL

Course Educational Objectives: In this course, the students will learn

➢ Tointroducetheinternalpartsofacomputer,peripherals,I/O ports,connecting cables.
➢ Todemonstrateconfiguring thesystemasDualboot bothWindowsand otherOperatingSystems Viz.Linux,BOSS.
➢ Toteachbasiccommandlineinterfacecommands onLinux.
➢ TointroduceCompression,MultimediaandAntivirustoolsandOfficeToolssuchas Wordprocessors,SpreadsheetsandPresentationtools.
➢ ToteachtheusageofInternetforproductivityandself-pacedlife-longlearning.

COURSEOUTCOMES:

At the end of the course

CO1	Identifythecomponents ofaPCandtroubleshootingthemalfunctioningofPC
CO2	Developpresentation/documentationusingOfficetoolsandLaTeX
CO3	Builddialogsand documentsusingChatGPT
CO4	Improveindividual/ teamworkskills,communicationandreport writingskillswithethical Values

COURSEARTICULATIONMATRIX(CorrelationbetweenCOs&POs):

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

Note:EnterCorrelation Levels1or2or3. If thereisnocorrelation, put'-'

1-Low **2–**Medium **3 –** High

REFERENCEBOOKS:

R1	ComdexInformatiion Technology course tool kit, VikasGupta,Wiley Dream Tech ,2003
R2	TheCompleteComputerupgradeandrepairbook,CherylASchmidt,WILEYDreamtech,2013,3rd edition.
R3	Introduction to Information Technology, ITL Education Solutions limited,PearsonEducation,2012,2ndedition.
R4	PCHardware-AHandbook,KateJ.Chase,PHI(Microsoft).
R5	LaTeXCompanion,Leslie Lamport,PHI/Pearson.
R6	ITEssentialsPCHardwareandSoftwareCompanionGuide, DavidAnfinsonandKouame. –CISCO Press,PearsonEducation,3rdedition.
R7	ITEssentialsPCHardwareandSoftwareLabsandStudyGuide,PatrickRegan–CISCOPress, PearsonEducation,3rdedition.

PART-B

S. No.	Topicsto becovered	No. ofClassesRequired	TentativeDateofCompletion	Actual Dateof Completion	TeachingLearningMethods	HOD Sign Weekly
1.	IntroductionofComputer	3	06/8/2024		**TLM5/TLM6**	
2.	Identify the peripherals of a computer, components in a CPU and its functions	6	13/8/2024 & 20/8/2024		**TLM5/TLM6**	
3.	Disassemble and Assemble the PC back to working condition	6	27/8/2024 & 03/9/2024		**TLM5/TLM6**	
4.	InstallationofMSwindowson thepersonalcomputer	3	10/9/2024		**TLM5/TLM6**	
5.	Installation of Linux and Windows on the computer using VMware	6	17/9/2024 & 24/09/2024		**TLM5/TLM6**	
6.	Installation of BOSS configured as dual boo (VMWare) with Both Windows and BOSS	6	01/10/2024 & 08/10/2024		**TLM5/TLM6**	
7.	Working on Internet &WorldWideWeb	6	15/10/2024 & 22/10/2024		**TLM5/TLM6**	
8.	Demonstration and Practice of LaTeX and WORD	3	05/11/2024		**TLM5/TLM6**	
9.	Demonstration and Practice of Power, Microsoft-Excel	6	12/11/2024 & 19/11/2024		**TLM5/TLM6**	
10.	Demonstration And Practice AITOOLS– ChatGPT	3	26/11/2024		**TLM5/TLM6**	

TeachingLearningMethods			
TLM1	Chalkand Talk	**TLM4**	Demonstration(Lab/FieldVisit)
TLM2	PPT	**TLM5**	ICT(NPTEL/Swayam Prabha/MOOCS) -16
TLM3	Tutorial	**TLM6**	GroupDiscussion/Project

PART-C

EVALUATION PROCESS (R23 Regulations):

Evaluation Task	**Marks**
Day-to-day work	D1=10
Record	R1=05
Internal Test	IT1=15
Continuous Internal Evaluation(CIE)=D1+R1+IT1	**30**
Procedure/Algorithm	P1=20
Experimentation/Program execution	E1=10
Observations/Calculations/Validation	O1=10
Result/Inference	R1=10
Viva voce	V1=20
Semester End Examination (SEE)= P1+ E1+ O1+ V1	**70**
Total Marks = CIE+SEE	**100**

PROGRAMME OUTCOMES(POs):

PO1	**Engineeringknowledge:**Applytheknowledgeofmathematics,science,engineeringfundamentals,andanengineeringspecializationtothesolutionofcomplexengineering problems.
PO2	**Problemanalysis:**Identify,formulate,reviewresearchliterature,andanalyzecomplex engineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics,naturalsciences,andengineeringsciences.
PO3	**Design/developmentofsolutions:**Designsolutionsforcomplexengineeringproblemsanddesignsystemcomponentsorprocessesthatmeetthespecifiedneedswith appropriateconsiderationforthepublichealthandsafety,andthecultural,societal,andenvironmentalconsiderations.
PO4	**Conductinvestigationsofcomplexproblems:**Useresearch-basedknowledgeandresearch methods including design of experiments, analysis and interpretation of data,andsynthesisoftheinformationtoprovidevalidconclusions.
PO5	**Moderntoolusage:**Create,select,andapplyappropriatetechniques,resources,andmodernengineeringandITtoolsincludingpredictionandmodellingtocomplex engineeringactivitieswithanunderstandingofthelimitations
PO6	**Theengineerandsociety:Apply**reasoninginformedbythecontextualknowledgeto assesssocietal,health,safety,legalandculturalissuesandtheconsequentresponsibilitiesrelevanttotheprofessionalengineeringpractice
PO7	**Environmentandsustainability:**Understandtheimpactoftheprofessionalengineeringsolutions in societal and environmental contexts, and demonstrate the knowledge of, andneedforsustainabledevelopment.
PO8	**Ethics:**Applyethicalprinciplesandcommittoprofessionalethicsandresponsibilitiesand normsoftheengineeringpractice.
PO9	**Individual and team work:**Functioneffectively asanindividual, andasa member orleaderindiverseteams,andin multidisciplinarysettings.

PO10	**Communication:**Communicateeffectivelyoncomplexengineeringactivitieswiththeengineering communityandwithsocietyatlarge,suchas,being ableto
PO11	**Projectmanagementandfinance:**Demonstrateknowledgeandunderstandingofthe engineeringandmanagementprinciplesandapplythesetoone'sownwork,asamemberand leaderin ateam,tomanageprojects andin multidisciplinaryenvironments.
PO12	**Life-longlearning:**Recognizetheneedfor,andhavethepreparationandabilitytoengage inindependentandlife-longlearninginthebroadestcontextoftechnologicalchange.

PROGRAMMESPECIFICOUTCOMES(PSOs):

PSO 1	Organize, Analyze, and interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	**CourseInstructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr K.Rajasekhar	Mr.P Veera swamy	Mr.G.Rajendra	Mr.Dr.B.SrinivasaRao
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : **Mrs M.HEMALATA**

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

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

Program/Sem/Sec : **B.Tech.–IT /I Sem-A** **A.Y. : 2024-25**

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.	

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 (LESSON PLAN):

INDEX					
Week	Expected Date of execution	IDX	PROGRAM	Completion date	Sign
1	**12-08-24 & 17-08-24**	**Familiarization with programming environment**			
		0	Codeblocks Introduction , Working with online Ediotrs		
		1.1	Area and perimeter of Rectangle		
		1.2	Area and perimeter of Circle		
		1.3	Display Decimal No in Different Forms		
		1.4	Express the expenses in percentages		
		1.5	Arithmetic operations		
		1.6	Area of a triangle		
		1.7	Find size of char, int, float , double		
		1.8	calculate the sum of the first n natural numbers, odd numbers, even numbers		
		1.9	Find the volume of a sphere $volume = \frac{4}{3} * \pi * radious^3$		
		1.10	Find the nth term of Arithmetic series		
2	**19-08-24 & 24-08-24**	**Converting Algorithms/flow charts into C source code**			
		2.1	Sum and Average of 3 numbers		
		2.2	Conversion of Fahrenheit to Celsius and vice versa		
		2.3	Simple interest calculation		
		2.4	Find different category of tickets sold		
		2.5	Find average show rating		
		2.6	Find the total people attended the show		
		2.7	Swap two numbers without temporary variable.		
		2.8	Find the volume of a cylinder $Volume = \pi * Radious^2 * Height$		
		2.9	Find roots of quadratic equation		
		2.10	convert a given time in Seconds into hours, minutes, and seconds.		
3		**Simple computational problems using arithmetic expressions.**			
		3.1	Finding the square root of a given number		
		3.2	Finding compound interest		
		3.3	Area of a triangle using heron's formulae		
		3.4	Distance travelled by an object		
		3.5	calculate the sum of digits of a four digits positive integer num		

	26-08-24 & 31-08-24	**3.6**	$$cfrac = x + \cfrac{1}{x + \cfrac{1}{x + \cfrac{1}{x + \cfrac{1}{x + \cfrac{1}{x}}}}}$$ You are given double x as input, compute the value of this continued fraction and store the result in a double variable named `cfrac`.		
		3.7	Given the diameter of the pizza in inches, the cost per square inch of pizza, the number of toppings and the cost of one topping and print the total cost of the pizza order.		
		3.8	calculates the shipping cost based on the weight of a package and the shipping rate per kilogram.		
		3.9	calculates the user's recommended daily calorie intake based on their age, gender, weight, height, and activity level. **For males:** $Calories = (88.362 + (13.397 \times weight\ in\ kg) + (4.799 \times height\ in\ cm) - (5.677 \times age\ in\ years)) \times activity\ factor$ **For females:** $Calories = (447.593 + (9.247 \times weight\ in\ kg) + (3.098 \times height\ in\ cm) - (4.330 \times age\ in\ years)) \times activity\ factor$		
		3.10	Calc EMI using the formula $$Monthly\ Payment = \frac{P * r(1+r)^n}{(1+r)^n - 1}$$ Where: P is the principal loan amount. R is the annual interest rate in percentage. $r = R/(12 * 100)$ n is the number of monthly payments.		
4	**02-09-24 & 09-09-24**	**Simple computational problems using the operator' precedence and associativity**			
		4.1	Evaluate the following expressions. a.A+B*C+(D*E) + F*G b. A/B*C-B+A*D/3 c.A+++B---A d. J= (i++) + (++i)		
		4.2	Find the maximum of three numbers using conditional operator		
		4.3	Take marks of 5 subjects in integers, and find the total, average in float		
		4.4	Find the grade of a student		
		4.5	Find the biggest of three numbers		
5		**Branching and logical expressions -----if-then-else structures.**			
		5.1	Write a C program to find the max and min of four numbers using if-else.		
		5.2	Write a C program to generate electricity bill.		

	14-09-24 & 16-09-24	**5.3**	takes the weight of the package (in kilograms) and the destination zone number as input and print the shipping cost amount. If input weight is less than 0 or zone number is out of given zones, then print `Invalid Input`. Calculate the shipping cost as follows: - For zone 1, the cost is Rs. 5 per kilogram. - For zone 2, the cost is Rs. 7 per kilogram. - For zone 3, the cost is Rs. 10 per kilogram. - For zone 4, the cost is Rs. 12 per kilogram. - For zone 5, the cost is Rs. 16 per kilogram. - For zone 6, the cost is Rs. 17 per kilogram. - For zone 7, the cost is Rs. 19 per kilogram.		
		5.4	Write a C program to simulate a calculator using switch case.		
		5.5	Write a C program to find the given year is a leap year or not.		
		5.6	Write a program that accept three positive integers as input and check if they form the sides of a Right triangle. Print YES if they form one, and NO if they do not.		
		5.7	Accept a point (p,q) in 2D space as input and find the region in space that this point belongs to. A point could belong to one of the four quadrants, or it could be on one of the two axes, or it could be the origin.		
		5.8	$$f(x) = \begin{cases} x+2 & 0 \leq x < 10 \\ x^2+2 & 10 \leq x \\ 0 & \text{otherwise} \end{cases}$$ Write a program that accept the float value of x as input and print the float value of $f(x)$ as output with two decimal places. Note that both the input and output are real		
		5.9	five employees of the company come together for a meeting and sit at a circular table: They will continue the meeting only if the following condition is satisfied. The sum of the employee-ids of every pair of adjacent employees at the table must be an even number. They are so lazy that they won't move around to satisfy the above condition. If the current seating plan doesn't satisfy the condition, the meeting will be canceled. Your task is to decide if the meeting happened or not. Employee ID's are given as input. Display YES or NO.		
		5.10	Take the total purchase amount as input and print the final amount to pay after discount given as follows: - If the purchase amount is less than 200, there is		

			no discount. - If the purchase amount is between 200 and 500 (both inclusive), apply a 10% discount. - If the purchase amount is greater than 500, apply a 20% discount.		
6	**21-09-24 & 23-09-24**	**Loops, while and for loops ---- Iterative problems**			
		6.1	Find the factorial of given number using any loop.		
		6.2	Find the given number is a prime or not		
		6.3	Compute sine and cos series		
		6.4	Checking a number palindrome		
		6.5	Construct a pyramid of numbers 1 * 2 2 * * 3 3 3 * * * 4 4 4 4 * * * * 5 5 5 5 5 * * * * *		
		6.6	Sum and average of n numbers		
		6.7	Maximum and minimum in a list		
		6.8	Linear search		
		6.9	Binary search		
		6.10	Bubble Sort		
		6.11	the prices of items as float one by one until they decide to stop. Use a loop to continuously prompt the user for item prices and calculate the total cost. Once the user decides to stop, print the total cost as float up to two decimal point.		
		6.12	Write a program that accept a positive integer n as input and print the sum of the first n terms of the series given below: $1 + (1 + 2) + (1 + 2 + 3) + (1 + 2 + 3 + 4) + \cdots$ Just to be clear, the first term in the series is 1, the second term is $(1 + 2)$ and so on.		
		6.13	program for a bank that calculates the compound interest earned on a savings account. formula for compound interest: $A = P * (1 + r/n)^{nt}$ Where: - A is the final amount (as a decimal). - P is the principal amount (as a decimal). - r is the annual interest rate in percent (as a decimal). - t is the number of years (as an integer). - n is the number of times interest is compounded per year (as an integer).		
		6.14	Find two numbers are co-primes or not. Two integers are co-prime if the only common divisor between the two integers is one.		
		6.15	Count No of Digits		
		6.16	Multiplication Table		
		6.17	Reverse the given no		

		6.18	Fibonacci series		
		6.19	Factors		
		6.20	Armstrong or not		
7	**28-09-24 & 07-10-24**	**1 D Arrays : 1D Array manipulation, linear search**			
		7.1	Find the min and max of a 1-D integer array		
		7.2	Perform linear search on1D array.		
		7.3	The reverse of a 1D integer array		
		7.4	Find 2's complement of the given binary number.		
		7.5	Eliminate duplicate elements in an array.		
		7.6	Find the frequency of given number		
		7.7	Take two non-empty integer arrays arr1 and arr2, and the size of these arrays size1 and size2 as parameters. The function returns the number of common elements in arr1 and arr2.		
		7.8	Sort array elements using bubble sort		
		7.9	Merge two sorted arrays		
		7.10	If elements of the array strictly increasing from index 0 to index p and then strictly decreasing from index p to index size-1 (where $0 < p < size-1$) then the function returns index p. Otherwise, return -1		
8	**14-10-24 & 19-10-24**	**2 D arrays :Matrix problems, sorting and Strings.**			
		8.1	Addition of two matrices		
		8.2	Multiplication two matrices		
		8.3	Find the transpose of a matrix		
		8.4	concatenate two strings without built-in functions		
		8.5	String palindrome		
		8.6	convert the given sentence into Title case		
		8.7	copy one string into another		
		8.8	prints the parts of the string that are split by the delimiter on separate lines.		
		8.9	check whether two strings are equal or not		
		8.10	convert the given string into upper and lower case		
9		**Pointers, structures and dynamic memory allocation**			
		9.1	Write a C program to find the sum of a 1D array using malloc()		
		9.2	Write a C program to find the total, average of n students using structures		
		9.3	Enter n students data using calloc() and display failed students list.		
		9.4	Read student name and marks from the command line and display the student details along with the total.		
		9.5	Write a C program to implement realloc()		
		9.6	Find the perimeter of the polygon. Given polygon points		

	21-10-24 & 26-10-24	**9.7**	**Calculate Course Score** Write a program to calculate the scores for different types of courses, each with its own grading criteria. The program reads the course information, including the type of course and grading details and computes the final score accordingly. Use the given structs, enums and unions, and complete the missing parts of the code using the hints. **Grading Formulas** The formulas for grading are as follows: • For THEORY: $\text{score} = (0.15 \times \text{quiz1}) + (0.15 \times \text{quiz2}) + (0.1 \times \text{assignments}) + (0.6 \times \text{final\_exam})$ • For PROGRAMMING: $\text{score} = (0.1 \times \text{quiz1}) + (0.3 \times \text{oppe1}) + (0.3 \times \text{oppe2}) + (0.1 \times \text{assignments}) + (0.2 \times \text{programming\_assignments})$ • For PROJECT: $\text{score} = (0.25 \times \text{viva1}) + (0.25 \times \text{viva2}) + (0.5 \times \text{final\_project})$ Round off the final score to the nearest integer before saving the score. **Sample Input:**		
		9.8	Calculate combined area of different shapes		
		9.9	Create a struct named Time with the members named days, hours, minutes, and seconds (all integer types).		
		9.10	Create a struct named Data with three members of integer type num1 and num2, and op . Write a function calculator that accepts a variable of struct Data type. The function performs the following arithmetic operations and displays the result based on value of op(1-Addition, 2-Subtraction, 3-Multiplication, and 4-Division). -If op = 1, print num1 + num2 as integer. -If op = 2, print num1 - num2 as integer. -If op = 3, print num1 * num2 as integer. -If op = 4, If num2 = 0, print Zero Division Error, otherwise print num1 / num2 as float up to two decimal points.		
10	**28-10-24 & 02-11-24**	**Bitfields, Self-Referential Structures, Linked lists**			
		10.1	Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields		
		10.2	Create and display a singly linked list using self-referential structure		
		10.3	Demonstrate the differences between structures and unions using a C program		
		10.4	Write a C program to shift/rotate using bit fields.		
		10.5	Write a C program to copy one structure variable to another structure of the same type.		
11	**04-11-24 & 11-11-24**	**Functions, call by value, scope and extent**			
		11.1	Write a C function to calculate NCR value.		
		11.2	Write a C function to find the length of a string.		
		11.3	Write a C function to transpose of a matrix.		
		11.4	Write a C function to demonstrate numerical integration of differential equations using Euler's method		

		11.5	write a function **prime_product** that accepts a positive integer m as input and returns 1 if m is a prime product and 0 otherwise.		
		11.6	write a function **nth_digit** that accepts two integers num and n and returns the nth digit of the number num (from right to left). If n is greater than the number of digits or less than or equal to 0, return -1.		
12	**16-11-24 & 18-11-24**	**Recursion, the structure of recursive calls**			
		12.1	Write a recursive function to generate Fibonacci series.		
		12.2	Write a recursive function to find the LCM of two numbers		
		12.3	Write a recursive function to find the factorial of a number.		
		12.4	Write a C Program to implement Ackermann function using recursion		
		12.5	Write a recursive function to find the sum of first n natural numbers.		
		12.6	Towers of Hanoi using recursion		
		12.7	Binary Search using recursion		
13	**23-11-24 & 25-11-24**	**Call by reference, dangling pointers**			
		13.1	Write a C program to swap two numbers using call by reference.		
		13.2	Demonstrate Dangling pointer problem using a C program		
		13.3	Write a C program to copy one string into another using pointer.		
		13.4	Write a C program to find no of lowercase, uppercase, digits and other characters using pointers		
14	**30-11-24 & 02-12-24**	**File handling**			
		14.1	Write a C program to write and read text into a file		
		14.2	Write a C program to write and read text into a binary file using fread() and fwrite()		
		14.3	Copy the contents of one file to another file		
		14.4	Write a C program to merge two files into the third file using command-line arguments.		
		14.5	Find no. of lines, words and characters in a file		
		14.6.	Write a C program to print last n characters of a given file		
		14.7	Create a program that reads text from a specified input file and toggles the case of all alphabetic characters (converts uppercase to lowercase and vice versa). The program then saves this modified text into a new output file.		
		14.8	Write a function **findToppers** that reads the student's score from the CSV(Comma-Separated Values) file score.csv where each line contains the student name (with a maximum length of 50) and marks separated by a comma. The function prints the		

			student names of those who have the highest marks. The function does not return anything.		
15	**07-12-24 & 09-12-24**	**Beyand Syllabus**			
		15.1	Write a C program that reads the coordinates of a point x and y as integers and determines in which quadrant the point lies. Assume that neither of the coordinates will be 0. If both x and y are positive, print Quadrant 1. If x is negative and y is positive, print Quadrant 2. If both x and y are negative, print Quadrant 3. If x is positive and y is negative, print Quadrant 4.		
		15.2	Write a function **print_pattern** that takes an integer n and prints the following type of pattern: 1 2 1 3 2 1 4 3 2 1 5 4 3 2 1 4 3 2 1 3 2 1 2 1 1		
		15.3	An **Armstrong number** is an n-digit number if the sum of its digits, each raised to the power of n, is equal to the original number itself. For example, let's consider a 3-digit number: In this case, 153 is an Armstrong number because the sum of the cubes of its digits equals the number itself (153). Write a function **countArmstrong** that takes three integer pointers a, b, and count as parameters. The function counts all Armstrong numbers in between the value at a and b(both inclusive) and stores the count at the pointer count.		
		15.4	**Leaders of Array** Write a function **findLeaders** that takes an integer array arr and the array length (integer) as parameters. The function prints all elements(called leader) that are larger than all elements to their right in the array. Each output element should appear in a new line. If no leader exists, then print None. **Note:-** Consider that all elements of the array are distinct and the size of the array is at least 2. Do not consider the last element of the array as a leader element.		
		15.5	Complete the function swap_name that that takes a pointer variable which contains a string representing a "first_name last_name". The function rearranges it to		

			become "last_name first_name" within the same pointer variable.		
		15.6	Complete the C program that verifies the validity of a username based on specific criteria. The validation rules are as follows: The username should consist of alphanumeric characters and underscores "_". The username must be at least 8 characters long and at most 20 characters long. The username should not begin with a number or an underscore "_". The username should not end with an underscore "_". Implement a function check_username that evaluates the given username and returns 0 if it is invalid according to the rules, and 1 if it is valid.		
		15.7	You are given the following structures: typedef struct { char name[20]; int height; } Student; typedef struct { Student* students[50]; int len; } Line; Complete the function insert_student that reads a list of student names and heights from the input and adds them to the line while maintaining the ascending order of the heights. The len variable should be updated accordingly. The updated line will be printed as the output. If multiple students have same height put the latest one in the lower index(in the left most place).		
		15.8	Your are provided with the name of the input and the output text files. Complete the function copy_odd_lines that reads the given input text file, extracts the odd-numbered lines, and writes them to output text file. The maximum size of each line in the input file is 200 characters.		

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

PART-C

EVALUATION PROCESS (R23 Regulations):

Evaluation Task	**Marks**
Day-to-day work	D1=10
Record	R1=05
Internal Test	IT1=15
Continuous Internal Evaluation(CIE)=D1+R1+IT1	**30**
Procedure/Algorithm	P1=20
Experimentation/Program execution	E1=10
Observations/Calculations/Validation	O1=10
Result/Inference	R1=10
Viva voce	V1=20
Semester End Examination (SEE)= P1+ E1+ O1+ V1	**70**
Total Marks = CIE+SEE	**100**

PART-D

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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO2	Design, Implement and evaluate a computer-based system to meet desired needs.
PSO3	Develop IT application services with the help of different current engineering tools.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs M. Hemalatha**	**Dr. K. Vijaya Bhaskara Reddy**	**Dr. K. Phaneendra**	**Dr. B. Srinivas Rao**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., IT-A
ACADEMIC YEAR	**:** 2024-25
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 4-1-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Dr. A. Rami Reddy
COURSE COORDINATOR	**:** Dr. A. Rami Reddy
PRE-REQUISITES	**:** Basics of Matrices**,** Differentiation, Integration

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

COURSE OUTCOMES (COs)

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

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

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

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

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

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED REFERENCE BOOKS:

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

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

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

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

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	29-07-2024 TO 03-08-2024	29-07-2024 TO 03-08-2024	TLM1			
2.	Orientation Programme	1	06-08-2024					
3.	Introduction to the course	1	07-08-2024		TLM1			
4.	Course Outcomes, Program Outcomes	1	07-08-2024		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
5.	Introduction to Unit I, Matrices	1	09-08-2024		TLM1	CO1	T1,T2	
6.	Rank of a matrix	1	13-08-2024		TLM1	CO1	T1,T2	
7.	Echelon form	1	14-08-2024		TLM1	CO1	T1,T2	
8.	Normal form	1	14-08-2024		TLM1	CO1	T1,T2	
9.	Cauchy-Binet formulae	1	16-08-2024		TLM1	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	17-08-2024		TLM1	CO1	T1,T2	
11.	Inverse by Gauss-Jordan method	1	20-08-2024		TLM1	CO1	T1,T2	
12.	System of Linear Equations	1	21-08-2024		TLM1	CO1	T1,T2	
13.	**TUTORIAL I**	1	21-08-2024		TLM3	CO1	T1,T2	
14.	Homogeneous System of Equations	1	23-08-2024		TLM1	CO1	T1,T2	
15.	Homogeneous System of Equations	1	24-08-2024		TLM1	CO1	T1,T2	
16.	Non-Homogeneous System of Equations	1	27-08-2024		TLM1	CO1	T1,T2	
17.	**TUTORIAL II**	1	28-08-2024		TLM3	CO1	T1,T2	
18.	Gauss Elimination Method	1	28-08-2024		TLM1	CO1	T1,T2	
19.	Jacobi Iteration Method	1	30-08-2024		TLM1	CO1	T1,T2	
20.	Jacobi Iteration Method	1	31-08-2024		TLM1	CO1	T1,T2	
21.	Gauss-Seidel Method	1	03-09-2024		TLM1	CO1	T1,T2	
22.	**TUTORIAL III**	1	04-09-2024		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
23.	Introduction to Unit II	1	04-09-2024		TLM1	CO2	T1,T2	

24.	Eigen values, Eigen vectors	1	06-09-2024		TLM1	CO2	T1,T2	
25.	Eigen values, Eigen vectors	1	10-09-2024		TLM1	CO2	T1,T2	
26.	**TUTORIAL IV**	1	11-09-2024		TLM3	CO1	T1,T2	
27.	Properties	1	11-09-2024		TLM1	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	13-09-2024		TLM1	CO2	T1,T2	
29.	Cayley-Hamilton Theorem	1	17-09-2024		TLM1	CO2	T1,T2	
30.	Finding Inverse and Powers of matrix	1	18-09-2024		TLM1	CO2	T1,T2	
31.	**TUTORIAL V**	1	18-09-2024		TLM3	CO1	T1,T2	
32.	Diagonalization of a matrix	1	20-09-2024		TLM1	CO2	T1,T2	
33.	Quadratic Forms	1	21-09-2024		TLM1	CO2	T1,T2	
34.	Nature of Quadratic Forms	1	24-09-2024		TLM1	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	25-09-2024		TLM1	CO2	T1,T2	
36.	Orthogonal Transformation	1	25-09-2024		TLM1	CO2	T1,T2	
37.	Revision	1	27-09-2024		TLM3	CO4	T1,T2	
38.	Revision	1	28-09-2024		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-II		16			No. of classes taken:			

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

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
39.	Introduction to Unit III	1	08-10-2024		TLM1	CO3	T1,T2	
40.	Mean Value theorem	1	09-10-2024		TLM1	CO3	T1,T2	
41.	Rolle's theorem	1	09-10-2024		TLM1	CO3	T1,T2	
42.	Lagrange's mean value theorem	1	15-10-2024		TLM1	CO3	T1,T2	
43.	Lagrange's mean value theorem	1	16-10-2024		TLM1	CO3	T1,T2	
44.	Cauchy's mean value theorem	1	16-10-2024		TLM1	CO3	T1,T2	
45.	**TUTORIAL VI**	1	18-10-2024		TLM3	CO3	T1,T2	
46.	Cauchy's mean value theorem	1	19-10-2024		TLM1	CO3	T1,T2	
47.	Taylor's theorem	1	22-10-2024		TLM1	CO3	T1,T2	
48.	Taylor's theorem	1	23-10-2024		TLM1	CO3	T1,T2	
49.	Maclaurin's theorem	1	23-10-2024		TLM1	CO3	T1,T2	
50.	Problems and applications	1	25-10-2024		TLM1	CO3	T1,T2	
51.	**TUTORIAL VII**	1	26-10-2024		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

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

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

52.	Introduction to Unit IV	1	29-10-2024		TLM1	CO4	T1,T2	
53.	Functions of several variables.	1	30-10-2024		TLM1	CO4	T1,T2	
54.	Continuity and Differentiability	1	30-11-2024		TLM3	CO4	T1,T2	
55.	Partial Derivatives	1	01-11-2024		TLM1	CO4	T1,T2	
56.	Total derivatives, Chain rule, Directional Derivative	1	02-11-2024		TLM1	CO4	T1,T2	
57.	Taylor's Series expansion	1	05-11-2024		TLM1	CO4	T1,T2	
58.	**TUTORIAL VIII**	1	06-11-2024		TLM3	CO4	T1,T2	
59.	Taylor's Series expansion	1	06-11-2024		TLM1	CO4	T1,T2	
60.	Maclaurin's series expansion	1	08-11-2024		TLM1	CO4	T1,T2	
61.	Jacobian	1	12-11-2024		TLM1	CO4	T1,T2	
62.	Jacobian	1	13-11-2024		TLM1	CO4	T1,T2	
63.	**TUTORIAL IX**	1	13-11-2024		TLM3	CO4	T1,T2	
64.	Functional Dependence	1	15-11-2024		TLM1	CO4	T1,T2	
65.	Maxima and Minima	1	16-11-2024		TLM1	CO4	T1,T2	
66.	Maxima and Minima	1	19-11-2024		TLM1	CO4	T1,T2	
67.	Lagrange Multiplier Method	1	20-11-2024		TLM1	CO4	T1,T2	
68.	**TUTORIAL X**	1	20-11-2024		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		17			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
69.	Introduction to Unit-V	1	22-11-2024		TLM1	CO5	T1,T2	
70.	Double Integrals - Cartesian coordinates	1	23-11-2024		TLM1	CO5	T1,T2	
71.	Double Integrals- Polar co ordinates	1	26-11-2024		TLM1	CO5	T1,T2	
72.	Triple Integrals - Cartesian coordinates	1	27-11-2024		TLM1	CO5	T1,T2	
73.	**TUTORIAL XI**	1	27-11-2024		TLM3	CO5	T1,T2	
74.	Triple Integrals - Cartesian coordinates	1	29-11-2024		TLM1	CO5	T1,T2	
75.	Triple Integrals - Spherical coordinates	1	30-11-2024		TLM1	CO5	T1,T2	
76.	Change of order of Integration	1	03-12-2024		TLM1	CO5	T1,T2	
77.	Change of order of Integration	1	04-12-2024		TLM1	CO5	T1,T2	
78.	**TUTORIAL XII**	1	04-12-2024		TLM3	CO5	T1,T2	
79.	Change of variables	1	06-12-2024		TLM1	CO5	T1,T2	

80.	Finding area by double Integral	1	07-12-2024		TLM1	CO5	T1,T2	
81.	Finding area by double Integral	1	10-12-2024		TLM1	CO5	T1,T2	
82.	Finding Volume by double and triple Integral	1	11-12-2024		TLM1	CO5	T1,T2	
83.	Revision	1	11-12-2024		TLM3	CO4	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
84.	Other applications of double integral	1	13-12-2024		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (16-12-2024 TO 21-12-2024)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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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.
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PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
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Dr. A. RAMI REDDY	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Lakshmi V R Babu Syamala & Mrs. 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/IT-A **A.Y. :** 2024-25

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): IT-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	08-08-2024		TLM1	CO1	
2	Explanation of chemicals and glassware	3	22-08-2024		TLM4	CO1	
3.	Preparation of a Bakelite	3	29-08-2024		TLM4	CO1	
4.	Determination of amount of HCl using standard Na_2CO_3 solution	3	05-09-2024		TLM4	CO1	
5.	Determination of Strength of an acid in Pb-Acid battery	3	12-09-2024		TLM4	CO3	
6.	Estimation of Ferrous Iron by Dichrometry	3	19-09-2024		TLM4	CO1	
7.	Estimation of Ferrous Iron by permanganometry	3	26-09-2024		TLM4	CO1	
8.	Estimation of total hardeness of given water sample	3	10-10-2024		TLM4	CO1	
9.	Alkalinity of water sample	3	17-10-2024		TLM4	CO1	
10.	Conductometric titration of strong acid vs. strong base	3	24-10-2024		TLM4	CO3	
11.	Conductometric titration of weak acid vs. strong base	3	07-11-2024		TLM4	CO3	
12.	Measuring of pH of water sample	3	14-11-2024		TLM4	CO1	
13.	Additional experiment/repeat	3	21-11-2024		TLM4	CO1	
14.	Additional experiment/repeat	3	28-11-2024		TLM4	CO	
15.	Internal Exam	3	05-12-2024 & 12-12-2024		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. Lakshmi V R Babu Syamala**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. A.Rami Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Lakshmi V R BabuSyamala
Course Name & Code **:** Chemistry&23FE02
L-T-P Structure **:** 3-0-0 **Credits:** 03
Program/Sem/Sec : I B.Tech./I Sem/IT-A **A.Y. :** 2024-25

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): IT-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 & Fundamentals of Quantum Mechanics	2	05-08-2024 & 05-08-2024		TLM1	
2.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	08-08-2024		TLM1	
3.	Particle in one dimensional box	1	09-08-2024		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	12-08-2024 & 12-08-2024		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	2	16-08-2024 & 19-08-2024		TLM1	
6.	Energy level diagrams-Summary	1	19-08-2024		TLM1	
7.	π-molecular orbitals of butadiene	1	22-08-2024		TLM1	
8.	π-molecular orbitals ofbenzene	1	23-08-2024		TLM1	
9.	Calculation of Bond order	1	29-08-2024		TLM1	
10.	Revision and assignment	2	30-08-2024 & 02-09-2024		TLM1	

No. of classes required to complete UNIT-I: 14	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	02-09-2024		TLM1	
2.	Semiconductors - Basic concept & applications	1	05-09-2024		TLM1	
3.	Super conductors - Introduction	1	06-09-2024		TLM1	
4.	Super conductors - Basic concept & applications	1	09-09-2024		TLM1	
5.	Super capacitors - Introduction, Basic concept	1	09-09-2024		TLM1	
6.	Super capacitors - classification & applications	2	12-09-2024 & 13-09-2024		TLM1	
7.	Nano materials - Introduction	1	19-09-2024		TLM2	
8.	Nano materials - classification	1	20-09-2024		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	23-09-2024		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	1	23-09-2024		TLM2	
11.	Revision and assignment	2	26-09-2024 & 27-09-2024		TLM1	
No. of classes required to complete UNIT-II: 12				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	07-10-2024		TLM1	
2.	Cell potential calculations and numerical problems	2	07-10-2024 & 10-10-2024		TLM1	
3.	Potentiometry-potentiometric titrations (redox titrations)	1	14-10-2024		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	14-10-2024		TLM1	

5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	17-10-2024		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	18-10-2024 & 21-10-2024		TLM1	
7.	Fuel cells, hydrogen-oxygenfuel cell– working of the cells	1	21-10-2024		TLM1	
8.	PolymerElectrolyte Membrane Fuel cells (PEMFC)	1	24-10-2024		TLM1	
9.	Revision and assignment	2	25-10-2024 & 28-10-2024		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	28-10-2024		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	01-11-2024		TLM1	
3.	Mechanisms of polymer formation	1	04-11-2024		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	04-11-2024		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	07-11-2024 & 08-11-2024		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	11-11-2024		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	11-11-2024		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	14-11-2024		TLM1	

9.	Revision and assignment	2	15-11-2024 & 18-11-2024		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	18-11-2024		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	21-11-2024		TLM1	
3.	UV-Visible Spectroscopy	1	22-11-2024		TLM1	
4.	Electronic transition, Instrumentation	2	25-11-2024 & 25-11-2024		TLM1	
5.	IR spectroscopy, fundamental modes	2	28-11-2024 & 29-11-2024		TLM1	
6.	selection rules, Instrumentation	2	02-12-2024 & 02-12-2024		TLM1	
7.	Chromatography-Basic Principle	1	05-12-2024		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	06-12-2024		TLM1	
9.	Revision and assignment	2	09-12-2024 & 09-12-2024		TLM1	
No. of classes required to complete UNIT-V: 14				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	12-12, & 13-12-2024		TLM1	

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

TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (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. A.Rami Reddy
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr R. Padma Venkat
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **2-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem – IT- A
A.Y. : 2024-25

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	3 Weeks	19-07-2024 TO 03-08-2024		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	08/8/2024& 10/8/2024		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	01	17/8/2024		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	01	19/8/2024		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	01	22/8/2024		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	24/8/2024		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	01	29/8/2024		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 07						**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
7.	**Nature: The Brook by Alfred Tennyson**	02	31/8/2024& 05/9/2024		TLM1 TLM 6	CO22	T1,T2	
8.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	01	12/9/2024		TLM2 TLM5	CO2	T1,T2	
9.	**Structure of Paragraph – Paragraph Writing**	01	14/9/2024		TLM1 TLM6 TLM5	CO2	T1,T2	
10.	**Cohesive Devices-linkers, Homophones, Homographs, Homonyms**	01	19/9/2024		TLM2 TLM6	CO2	T1,T2	
11.	**Use of Articles and zero article, Prepositions**	01	21/9/2024		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 06						**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
12.	**Biography: Elon Musk**	02	26/09/202 &28/09/20 24		TLM1 TLM 6	CO3	T1,T2	
13.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	01	10/10/2024		TLM2 TLM5	CO3	T1,T2	
14.	**Summarizing, Note-making, Paraphrasing**	01	12/10/2024		TLM1 TLM6 TLM5	CO3	T1,T2	
15.	**Verbs- Tenses, Subject-verb agreement**	02	17/10/2024 & 19/10/2024		TLM2 TLM6	CO3	T1,T2	
16.	**Compound words, Collocations**	01	24/10/2024		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 07						**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
17.	**Inspiration: The Toys of Peace- by Saki**	02	26/10/2024 & 02/11/2024		TLM1 TLM 6	CO4	T1,T2	
18.	**Study of graphic elements in text to display complicated data**	01	07/11/2024		TLM2 TLM5	CO4	T1,T2	
19.	**Letter Writing : Official Letters, Resumes**	02	09/11/2024& 14/11/2024		TLM1 TLM6 TLM5	CO4	T1,T2	
20.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	16/11/2024 & 21/11/2024		TLM2 TLM6	CO4	T1,T2	
21.	**Words often confused, Jargons**	01	23/11/2024		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
22.	**Motivation: The Power of Interpersonal Communication**	02	28/11/2024 & 30/11/2024		TLM1 TLM 6	CO5	T1,T2	
23.	**Reading Comprehension**	01	05/12/2024		TLM2 TLM5	CO5	T1,T2	
24.	**Structured Essays on specific topics**	01	07/12/2024		TLM1 TLM6	CO5	T1,T2	

					TLM5			
25.	**Editing Texts – Correcting Common errors Technical Jargon,**	02	12/12/2024 & 14/12/2024		TLM2 TLM6	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	19/12/2024		TLM2 &5	
2.	JARGON	01	21/12/2024		TLM2 &5	
3.	TECHNICAL VOCABULARY	01	21/12/2024		TLM2 &5	
No. of classes required to complete UNIT-V: 03						

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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr. R. Padma**	**Dr. R. Padma**	**Dr. R. Padma**	**Dr. A. Rami Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms.D.Sri Lakshmi Manasa
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **2-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem – IT- B
A.Y. : 2024-25

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	3 Weeks	19-07-2024 TO 03-08-2024		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	05/8/2024& 09/8/2024		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	01	12/8/2024		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	01	16/8/2024		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	01	19/8/2024		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	23/8/2024		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	01	30/8/2024		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 07						**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
7.	**Nature: The Brook by Alfred Tennyson**	02	02/9/2024 & 06/9/2024		TLM1 TLM 6	CO22	T1,T2	
8.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	01	09/9/2024		TLM2 TLM5	CO2	T1,T2	
9.	**Structure of Paragraph – Paragraph Writing**	01	13/9/2024		TLM1 TLM6 TLM5	CO2	T1,T2	
10.	**Cohesive Devices- linkers, Homophones, Homographs, Homonyms**	01	20/09/2024		TLM2 TLM6	CO2	T1,T2	
11.	**Use of Articles and zero article, Prepositions**	01	23/09/2024		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 06						**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
12.	**Biography: Elon Musk**	02	27/09/2024 & 30/09/2024		TLM1 TLM 6	CO3	T1,T2	
13.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	01	04/10/2024		TLM2 TLM5	CO3	T1,T2	
14.	**Summarizing, Note-making, Paraphrasing**	01	07/10/2024		TLM1 TLM6 TLM5	CO3	T1,T2	
15.	**Verbs- Tenses, Subject-verb agreement**	02	11/10/2024 & 14/10/2024		TLM2 TLM6	CO3	T1,T2	
16.	**Compound words, Collocations**	01	18/10/2024		TLM2 TLM5	CO3	T1,T2	
No. of classes required to complete UNIT-III: 07						**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
17.	**Inspiration: The Toys of Peace- by Saki**	02	21/10/2024 & 25/10/2024		TLM1 TLM 6	CO4	T1,T2	
18.	**Study of graphic elements in text to display complicated data**	01	28/10/2024		TLM2 TLM5	CO4	T1,T2	
19.	**Letter Writing : Official Letters, Resumes**	02	01/11/2024 & 04/11/2024		TLM1 TLM6 TLM5	CO4	T1,T2	
20.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	08/11/2024 & 11/11/2024		TLM2 TLM6	CO4	T1,T2	
21.	**Words often confused, Jargons**	01	15/11/2024		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
22.	**Motivation: The Power of Interpersonal Communication**	02	18/11/2024 & 22/11/2024		TLM1 TLM 6	CO5	T1,T2	
23.	**Reading Comprehension**	01	25/11/2024		TLM2 TLM5	CO5	T1,T2	

24.	**Structured Essays on specific topics**	01	29/11/2024		TLM1 TLM6 TLM5	CO5	T1,T2	
25.	**Editing Texts – Correcting Common errors Technical Jargon,**	02	02/12/2024 & 06/12/2024		TLM2 TLM6	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	09/12/2024		TLM2 &5	
2.	JARGON	01	13/12/2024		TLM2 &5	
3.	TECHNICAL VOCABULARY	01	13/12/2024		TLM2 &5	
No. of classes required to complete UNIT-V: 03						

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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**D.Sri Lakshmi Manasa**	**Dr. R. Padma**	**Dr. R. Padma**	**Dr. A. Rami Reddy**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

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/Isem/ ITB **A.Y. :**2024-25

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	05 -08-2024		TLM1	
2.		1	07-08-2024		TLM1	
3.		1	08-08-2024		TLM1	
4.		1	12-08-2024		TLM1	
5.	Fundamentals Of Quantum Mechanics	1	14-08-2024		TLM1	
6.	Fundamentals Of Quantum Mechanics	1	17-08-2024		TLM1	
7.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules	1	19-08-2024		TLM1	
8.	Practice of examples	1	21-08-2024		TLM1	
9.	Practice of examples	1	22-08-2024		TLM1	
10.	Energy level diagrams of O_2 and CO	1	24-08-2024		TLM1	
11	Practice of examples	1	28-08-2024		TLM1	
12	π-molecular orbitals of butadiene	1	29-08-2024		TLM1	
13	π-molecular orbitals of benzene	1	31-08-2024		TLM1	
14	Schrodinger Wave Equation & Significance of Ψ and Ψ^2	1	02-09-2024		TLM1	
15	Particle In one dimensional box	1	04-09-2024		TLM1	
16	Practice of above derivations	1	05-09-2024		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	09-09-2024		TLM1	
2.	Semiconductors - Basic concept&applications	1	11-09-2024		TLM1	
3.	Super conductors - Introduction	1	12-09-2024		TLM1	
4.	Super conductors - Basic concept&applications	1	18-09-2024		TLM1	
5.	Supercapacitors - Introduction	1	19-09-2024		TLM1	
6.	Supercapacitors - Basic concept-classification&applications	1	21-09-2024		TLM2	
7.	Nano materials - Introduction	1	23-09-2024		TLM2	
8.	Nano materials - classification	1	25-09-2024		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	26-09-2024		TLM2	
10	Nano materials - carbon nano tubes and graphene nanoparticles	1	28-09-2024		TLM2	
No. of classes required to complete UNIT-II: 10				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	07-10-2024		TLM2	
2.	Electrochemical cell and basic concepts of electrochemistry.	1	09-10-2024		TLM1	
3.	Cell potential calculations and numerical problems	1	14-10-2024		TLM1	
4.	Continue...numerical problems.	1	16-10-2024		TLM1	
5.	Continue...numerical problems	1	17-10-2024		TLM1	
6.	Potentiometry-potentiometric titrations (redox titrations)	1	19-10-2024		TLM1	
7.	Concept of conductivity, conductivitycell,conductometric titrations (acid-base titrations)	1	21-10-2024		TLM1	

8.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	23-10-2024		TLM1	
9	Primary cells – Zinc-air battery, Secondary cells – - working of the batteries including cell reactions	1	24-10-2024		TLM1	
10	lithium-ion batteries working of the batteries including cell reactions	1	26-10-2024		TLM1	
11	Fuel cells, hydrogen-oxygen fuel cell– working of the cells, Polymer electrolyte membrane fuel cells (PEMFC)	1	28-10-2024		TLM1	
12	Practise of making and cell reactions of above batteries.	1	30-10-2024		TLM1	
13	Nernst equation and problems	1	02-11-2024		TLM1	
14	Contd…. problems on Nernst equation.	1	04-11-2024		TLM1	
No. of classes required to complete UNIT-III: 14				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	06-11-2024		TLM1	
2.	Thermo and Thermosetting plastics, types of polymerisation with examples.	1	07-11-2024		TLM1	
3.	Mechanisms of addition polymerisation	1	11-11-2024		TLM1	
4.	Mechanism of step growth polymerization.	1	13-11-2024		TLM1	
5.	Mechanism coordination polymerization, with specific example.	1	14-11-2024		TLM1	
6.	Preparation, properties and applications of – PVC, Teflon.	1	16-11-2024		TLM1	
7.	Preparation, properties and applications of Nylon-6,6, carbon fibres	1	18-11-2024		TLM1	

8.	Preparation, properties and applications of Bakelite,	1	20-11-2024		TLM1	
9	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	21-11-2024		TLM1	
10	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	23-11-2024		TLM1	
11	Contd conducting polymers.	1	25-11-2024		TLM1	
12	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	27-11-2024		TLM1	
No. of classes required to complete UNIT-IV: 12				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	28-11-2024		TLM2	
2.	Absorption of radiation: Beer-Lambert's law	1	30-11-2024		TLM2	
3.	UV-Visible Spectroscopy	1	02-12-2024		TLM2	
4.	electronic transition, Instrumentation	1	04-012-2024		TLM2	
5.	IR spectroscopies, fundamental modes	1	05-12-2024		TLM2	
6.	selection rules, Instrumentation of IR spectroscopy	1	07-12-2024		TLM2	
7.	Applications of IR spectroscopy	1	07-12-2024		TLM2	
8.	Chromatography-Basic Principle, Classification-	1	09-12-2024		TLM2	
9	HPLC: Principle, Instrumentation and Applications	1	09-12-2024		TLM1	
10	Instruction for SEE	1	11-12-2024		TLM1	
No. of classes required to complete UNIT-V: 10				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	12-12-2024		TLM2	
2	Applications of polymers in advanced technologies .	1	12-12-2024		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.A.Rami 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, 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., IT-B
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mrs.CH.Padma
COURSE COORDINATOR : Dr. A. Rami Reddy
PRE-REQUISITES : Basics of Matrices**,** Differentiation, Integration

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

COURSE OUTCOMES (COs)

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

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

BOS APPROVED REFERENCE BOOKS:

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	29-07-2024 To 03-08-2024	29-07-2024 To 03-08-2024	TLM1			
2.	Introduction to the course	1	06-08-2024		TLM1			
3.	Course Outcomes, Program Outcomes	1	06-08-2024		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	07-08-2024		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	08-08-2024		TLM1	CO1	T1,T2	
6.	Echelon form	1	09-08-2024		TLM1	CO1	T1,T2	
7.	Normal form	1	13-08-2024		TLM1	CO1	T1,T2	
8.	**TUTORIAL I**	1	13-08-2024		TLM3	CO1	T1,T2	
9.	Cauchy-Binet formulae	1	14-08-2024		TLM1	CO1	T1,T2	
10.	Inverse by Gauss-Jordan method	1	16-08-2024		TLM1	CO1	T1,T2	
11.	System of Linear Equations	1	20-08-2024		TLM1	CO1	T1,T2	
12.	**TUTORIAL II**	1	20-08-2024		TLM3	CO1	T1,T2	
13.	Homogeneous System of Equations	1	21-08-2024		TLM1	CO1	T1,T2	
14.	Homogeneous System of Equations	1	22-08-2024		TLM1	CO1	T1,T2	
15.	Non-Homogeneous System of Equations	1	23-08-2024		TLM1	CO1	T1,T2	
16.	Gauss Elimination Method	1	27-08-2024		TLM1	CO1	T1,T2	
17.	**TUTORIAL III**	1	27-08-2024		TLM3	CO1	T1,T2	
18.	Jacobi Iteration Method	1	28-08-2024		TLM1	CO1	T1,T2	
19.	Jacobi Iteration Method	1	29-08-2024		TLM1	CO1	T1,T2	
20.	Gauss-Seidel Method	1	30-08-2024		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	03-09-2024		TLM1	CO2	T1,T2	
22.	**TUTORIAL IV**	1	03-09-2024		TLM3	CO2	T1,T2	
23.	Eigen values, Eigen vectors	1	04-09-2024		TLM1	CO2	T1,T2	
24.	Properties	1	05-09-2024		TLM1	CO2	T1,T2	
25.	Properties	1	06-09-2024		TLM1	CO2	T1,T2	
26.	Cayley-Hamilton Theorem	1	10-09-2024		TLM1	CO2	T1,T2	

27.	**TUTORIAL V**	1	10-09-2024		TLM3	CO2	T1,T2	
28.	Cayley-Hamilton Theorem	1	11-09-2024		TLM1	CO2	T1,T2	
29.	Finding Inverse and Powers of matrix	1	12-09-2024		TLM1	CO2	T1,T2	
30.	Diagonalization of a matrix	1	13-09-2024		TLM1	CO2	T1,T2	
31.	Diagonalization of a matrix	1	17-09-2024		TLM1	CO2	T1,T2	
32.	**TUTORIAL VI**	1	17-09-2024		TLM3	CO2	T1,T2	
33.	Quadratic Forms	1	18-09-2024		TLM1	CO2	T1,T2	
34.	Nature of Quadratic Forms	1	19-09-2024		TLM1	CO2	T1,T2	
35.	Reduction of Quadratic form to Canonical form	1	20-09-2024		TLM1	CO2	T1,T2	
36.	Reduction of Quadratic form to Canonical form	1	24-09-2024		TLM1	CO2	T1,T2	
37.	**TUTORIAL VII**	1	24-09-2024		TLM3	CO2	T1,T2	
38.	Orthogonal Transformation	1	25-09-2024		TLM1	CO2	T1,T2	
39.	Orthogonal Transformation	1	26-09-2024		TLM1	CO2	T1,T2	
40.	Problems and applications	1	27-09-2024		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		20			No. of classes taken:			

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

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
41.	Introduction to Unit III	1	08-10-2024		TLM1	CO3	T1,T2	
42.	Mean Value theorem	1	08-10-2024		TLM1	CO3	T1,T2	
43.	Rolle's theorem	1	09-10-2024		TLM1	CO3	T1,T2	
44.	Rolle's theorem	1	15-10-2024		TLM1	CO3	T1,T2	
45.	**TUTORIAL VIII**	1	15-10-2024		TLM3	CO3	T1,T2	
46.	Lagrange's mean value theorem	1	16-10-2024		TLM1	CO3	T1,T2	
47.	Lagrange's mean value theorem	1	17-10-2024		TLM1	CO3	T1,T2	
48.	Cauchy's mean value theorem	1	18-10-2024		TLM1	CO3	T1,T2	
49.	Cauchy's mean value theorem	1	22-10-2024		TLM1	CO3	T1,T2	
50.	**TUTORIAL IX**	1	22-10-2024		TLM3	CO3	T1,T2	
51.	Taylor's theorem	1	23-10-2024		TLM1	CO3	T1,T2	
52.	Taylor's theorem	1	24-10-2024		TLM1	CO3	T1,T2	
53.	Maclaurin's theorem	1	25-10-2024		TLM1	CO3	T1,T2	
54.	Maclaurin's theorem	1	29-10-2024		TLM1	CO3	T1,T2	
55.	**TUTORIAL X**	1	29-10-2024		TLM3	CO3	T1,T2	
56.	Problems and applications	1	30-10-2024		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	01-11-2024		TLM1	CO4	T1,T2	
58.	Functions of several variables, Continuity and Differentiability	1	05-11-2024		TLM1	CO4	T1,T2	
59.	**TUTORIAL XI**	1	05-11-2024		TLM3	CO4	T1,T2	
60.	Partial Derivatives	1	06-11-2024		TLM1	CO4	T1,T2	
61.	Total derivatives, Chain rule, Directional Derivative	1	07-11-2024		TLM1	CO4	T1,T2	
62.	Taylor's Series expansion	1	08-11-2024		TLM1	CO4	T1,T2	
63.	Maclaurin's series expansion	1	12-11-2024		TLM1	CO4	T1,T2	
64.	**TUTORIAL XII**	1	12-11-2024		TLM3	CO4	T1,T2	
65.	Jacobian	1	13-11-2024		TLM1	CO4	T1,T2	
66.	Jacobian	1	14-11-2024		TLM1	CO4	T1,T2	
67.	Functional Dependence	1	15-11-2024		TLM1	CO4	T1,T2	
68.	Maxima and Minima	1	19-11-2024		TLM1	CO4	T1,T2	
69.	**TUTORIAL XIII**	1	19-11-2024		TLM3	CO4	T1,T2	
70.	Maxima and Minima	1	20-11-2024		TLM1	CO4	T1,T2	
71.	Lagrange Multiplier Method	1	21-11-2024		TLM1	CO4	T1,T2	
72.	Lagrange Multiplier Method	1	22-11-2024		TLM1	CO4	T1,T2	
No. of classes required to complete UNIT-IV		16			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
73.	Introduction to Unit-V	1	26-11-2024		TLM1	CO5	T1,T2	
74.	**TUTORIAL XIV**	1	26-11-2024		TLM3	CO5	T1,T2	
75.	Double Integrals - Cartesian coordinates	1	27-11-2024		TLM1	CO5	T1,T2	
76.	Double Integrals- Polar co ordinates	1	28-11-2024		TLM1	CO5	T1,T2	
77.	Triple Integrals - Cartesian coordinates	1	29-11-2024		TLM3	CO5	T1,T2	
78.	Triple Integrals - Cartesian coordinates	1	03-12-2024		TLM1	CO5	T1,T2	
79.	**TUTORIAL XV**	1	03-12-2024		TLM3	CO5	T1,T2	
80.	Triple Integrals - Spherical coordinates	1	04-12-2024		TLM1	CO5	T1,T2	
81.	Change of order of Integration	1	05-12-2024		TLM1	CO5	T1,T2	
82.	Change of order of Integration	1	06-12-2024		TLM1	CO5	T1,T2	

83.	Change of variables	1	10-12-2024		TLM1	CO5	T1,T2	
84.	**TUTORIAL XVI**	1	10-12-2024		TLM3	CO5	T1,T2	
85.	Finding area by double Integral	1	11-12-2024		TLM1	CO5	T1,T2	
86.	Finding Volume by double and triple Integral	1	12-12-2024		TLM1	CO5	T1,T2	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
87.	Other applications of double integral	1	13-12-2024		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (16-12-2024 TO 21-12-2024)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

Mrs. CH.PADMA	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: P. Mohanaganga Raju
Course Name & Code : Basic Civil and Mechanical Engineering & 23CM01
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech., I-Sem., IT-B **A.Y.:** 2024-25

PREREQUISITE: Building Materials

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

Textbooks:

1. Basic Civil Engineering, M.S.Palanisamy, , Tata Mcgraw Hill publications (India) Pvt. Ltd. Fourth Edition.

2. Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers. 2022. First Edition.
3. Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

Reference Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction CO's & PO's, Subject	1	06-08-2024		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	07-08-2024		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	09-08-2024		**TLM2**	
4.	Geo-technical Engineering-Transportation Engineering	1	13-08-2024		**TLM2**	
5.	Hydraulics and Water Resources Engineering	1	14-08-2024		**TLM2**	
6.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	16-08-2024		**TLM1**	
7.	Construction Materials-Cement -types	1	17-08-2024		**TLM4**	
8.	Aggregate types- Bricks-classifications- Steel-properties - types Cement concrete- Applications	1	20-08-2024		**TLM4**	
9.	Introduction to Prefabricated construction Techniques, Over view-Prefabricated construction	1	21-08-2024		**TLM4**	
No. of classes required to complete UNIT-I: 09				**No. of classes taken:**		

UNIT-II: Surveying

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Objectives of Surveying, Horizontal Measurements	1	23-08-2024		**TLM2**	
2.	Angular Measurements	1	24-08-2024		**TLM2**	
3.	Compass Surveying overview-	1	27-08-2024		**TLM2**	
4.	Introduction to Bearings	1	28-08-2024		**TLM2**	
5.	Levelling introduction-	1	30-08-2024		**TLM2**	

6.	Levelling instruments used for levelling	1	31-08-2024		**TLM2**	
7.	Simple problems on levelling and bearings- problems on levelling	1	03-09-2024		**TLM3**	
8.	Simple problems on and bearings	1	04-09-2024		**TLM2**	
9.	Rise and fall/ HI method	1	06-09-2024		**TLM3**	
10.	Contour mapping	1	10-09-2024		**TLM3**	
No. of classes required to complete UNIT-II:10				**No. of classes taken:**		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Transportation Engineering** Importance of Transportation in Nation's economic development	1	11-09-2024		**TLM2**	
2.	Types of Highway Pavements	1	13-09-2024		**TLM2**	
3.	Flexible Pavements - Basics of Harbour, Tunnel,- Rigid Pavements Simple Differences	1	17-09-2024		**TLM2**	
4.	Basics of Airport, and Railway Engineering	1	18-09-2024		**TLM2**	
5.	**Water Resources and Environmental Engineering** Introduction, Sources of water-	1	20-09-2024		**TLM2**	
6.	Quality of water- Specifications	1	21-09-2024		**TLM2**	
7.	Introduction to Hydrology	1	24-09-2024		**TLM2**	
8.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	25-09-2024		**TLM2**	
9.	(Simple introduction to Dams and Reservoirs).	1	27-09-2024		**TLM2**	
10.	Revision	1	28-09-2024		**TLM2**	
No. of classes required to complete UNIT-III:09				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (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: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Head of the Department**
Name of the Faculty	**P Mohanaganga Raju**	**B. Ramakrishna**	**Dr. J. Venkateswara Rao**
Signature			

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor	: **Mrs M.HEMALATHA**	
Course Name & Code	**: Introduction to Programming (23CS01)**	
L-T-P Structure	: **3-0-0**	**Credits: 3**
Program/Sem/Sec	: **B.Tech.–IT /I Sem-**B	**A.Y.: 2024-25**

PRE-REQUISITE: Fundamentals of 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 algorithm and algorithmic thinking.	Understand – Level 2
CO2:	Analyze a problem and develop an algorithm to solve it.	Analyze – Level 4
CO3:	Implement various algorithms using the C programming language.	Apply – Level 3
CO4:	Understand more advanced features of C language.	Understand – Level 2
CO5:	Develop problem-solving skills and the ability to debug 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	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO5	3	-	-	-	-	-	-	-	-	-	-	-	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	05-08-24		**TLM1**	
2.	History of Computers	1	07-08-24		**TLM1**	
3.	Basic organization of a computer: ALU, input-output units.	1	07-08-24		**TLM1**	
4.	Memory, program counter	1	08-08-24		**TLM1**	
5.	Introduction to Programming Languages,	1	12-08-24		**TLM1**	
6.	Basics of a Computer Program-Algorithms	1	14-08-24		**TLM1**	
7.	Flowcharts (Using Dia Tool)	1	14-08-24		**TLM1**	
8	pseudo code	1	19-08-24		**TLM1**	
9.	Introduction to Compilation and Execution	1	21-08-24		**TLM1**	
10.	Primitive Data Types	1	21-08-24		**TLM1**	
11.	Variables, and Constants, Basic Input and Output operations	1	22-08-24		**TLM4**	
12	Operators	1	28-08-24		**TLM 4**	
13.	Type Conversion, and Casting	1	28-08-24		**TLM1**	
14.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm.	1	29-08-24		**TLM2**	
15.	Problem solving strategies: Top-down approach, Bottom-up approach	1	02-09-24		**TLM1**	
16	Time and space complexities of algorithms.	1	04-09-24		**TLM2**	
17	Tutorial - I	1	04-09-24		**TLM 3 & 5**	
No. of classes required to complete UNIT – I: 17				**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.	Conditional Statements	1	05-09-24		**TLM1**	
19	if, if-else, nested if-else , else-if ladder	1	09-09-24		**TLM1**	
20.	switch	1	11-09-24		**TLM1**	
21.	Example programs on Decision Making and Branching	2	11-09-24 12-09-24		**TLM4**	
22.	Loops: while , Example programs	2	18-09-24 18-09-24		**TLM4**	
23.	do-while, for	1	19-09-24		**TLM1**	
24.	Example programs on Loops	2	23-09-24		**TLM4**	
25.	Break and Continue	1	25-09-24		**TLM1**	
26.	Example programs on Patterns	2	25-09-24 26-09-24		**TLM4**	
27.	Tutorial - II	1	27-09-24		**TLM 3 & 5**	
No. of classes required to complete UNIT – II: 14				**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	7-10-24		TLM1	
26.	Array indexing, Accessing elements, memory model	1	9-10-24		TLM1	
27.	programs with array of integers	1	9-10-24		TLM4	
28.	Introduction to two dimensional arrays	1	10-10-24		TLM1	
29.	2D Array indexing, Accessing elements	1	14-10-24		TLM2	
30.	programs with 2D arrays	1	16-10-24		TLM4	
31.	Introduction to Strings	1	16-10-24		TLM1	
32.	Reading and Writing Operations on Strings	1	17-10-24		TLM1	
33.	String Handling Functions	1	21-10-24		TLM2	
34.	String Handling Functions Example Programs using Strings	1	23-10-24		TLM4	
	Tutorial-III	1	23-10-24		TLM3 & 5	
No. of classes required to complete UNIT – III: 10				**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	24-10-24		TLM1	
37.	dereferencing and address operators	1	28-10-24		TLM1	
38.	pointer and address arithmetic	1	30-10-24		TLM1	
39.	array manipulation using pointers	1	30-10-24		TLM1	
40.	User-defined data types	1	31-10-24		TLM1	
41.	Structures , Definition and Initialization	2	04-11-24 06-11-24		TLM1	
42.	Example programs	1	07-11-24		TLM4	
43.	Unions	1	11-11-24		TLM1	
44.	Example programs	1	13-11-24		TLM4	
45.	Tutorial -IV	1	14-11-24		TLM3 & 5	
No. of classes required to complete UNIT – IV: 11				**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	1	18-11-24		TLM1	
47.	Function Declaration and Definition	1	20-11-24		TLM1	
48.	Function call Return Types	1	21-11-24		TLM1	
49.	Arguments	1	25-11-24		TLM1	
50.	modifying parameters inside functions using pointers	1	27-11-24		TLM1	
51.	arrays as parameters	1	28-11-24		TLM1	
52.	Scope and Lifetime of Variables	1	02-12-24		TLM1	
53.	Introduction to Files	1	04-12-24		TLM1	
54.	Basics of File Handling	1	04-12-24		TLM2	

55.	Operations on Files	1	05-12-24		**TLM4**	
56	Tutorial - V	1	09-12-24		**TLM3 & 5**	
No. of classes required to complete UNIT – V: 10				**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
57.	Application Development using C	1	11-12-24		**TLM2**	
58.	Introduction to Data Structures	1	12-12-24		**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):

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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO2	Design, Implement and evaluate a computer-based system to meet desired needs.
PSO3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	**Mrs M. Hema Latha**	**Dr Y.Viajaya Bhaskar Reddy**	**Dr. K. Phaneendra**	**Dr. B. Srinivas Rao**

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor	: Mrs. S.Jyothi, Mr.G.Rajendra, Mr.B.Ravindra Chanti Babu		
Course Name & Code	: IT WORKSHOP (23IT51)		
L-T-P Structure	: - - 2	**Credit**	:01
Program/Sem/Sec	: B.Tech / IT –I / B	**A.Y**	: 2024-25

PRE-REQUISITE : NIL

Course Educational Objectives: In this course, the students will learn

➢ 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 introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools.
➢ To teach the usage of Internet for productivity and self-paced life-long learning.

COURSE OUTCOMES:

At the end of the course

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

COURSE ARTICULATION MATRIX (Correlation between COs&POs):

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

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 Informatiion Technology course tool kit, Vikas Gupta,Wiley Dream Tech ,2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dreamtech,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 Kouame. –CIS 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

PART-C

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 of Computer	3	10/8/2024		**TLM5/TLM6**	
2.	Identify the peripherals of a computer, components in a CPUand its functions	6	17/8/2024 &24/8/2024		**TLM5/TLM6**	
3.	Disassemble and Assemble the PC back to working condition	6	31/8/2024 &14/9/2024		**TLM5/TLM6**	
4.	Installation of MS windows on the personal computer	3	21/9/2024		**TLM5/TLM6**	
5.	Installation of Linux and windows on the computer usingVMware	6	28/9/2024 &5/10/2024		**TLM5/TLM6**	
6.	Installation of BOSS configuredas dual boot (VMWare) with both Windows and BOSS	3	12/10/2024 &19/10/2024		**TLM5/TLM6**	
7.	Working on Internet & World Wide Web	6	26/10/2024 &2/11/2024		**TLM5/TLM6**	
8.	Demonstration and Practice of LaTeX and WORD	3	9/11/2024		**TLM5/TLM6**	
9.	Demonstration and Practice of Power, Microsoft Excel	6	16/11/2024 &23/11/2024		**TLM5/TLM6**	
10.	Demonstration And Practice AITOOLS – ChatGPT	3	30/11/2024		**TLM5/TLM6**	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS) -16
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PROGRAMME OUTCOMES (POs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	(Mrs .S.Jyothi)	Mr.P Veera swamy	Mr.G.Rajendra	Mr. Dr. B.Srinivasa Rao
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms.D.Sri Lakshmi Manasa
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : B. Tech IT-- I SEM
A.Y. : 2024-25

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

List of Activities:

1. 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	05/8/2024		TLM4	
2.	Vowels & Consonants	06	12/8/2024& 19/8/2024		TLM1 TLM5	
3.	Neutralization	03	296/8/2024		TLM1, TLM5	
4.	Accent rules	03	02/9/2024		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	09/9/2024& 23/9/2024		TLM4	

6.	Role Play-I (Formal and Informal)	06	07/10/2024& 14/10/2024		TLM4	
7.	e-mail Writing,	03	21/10/2024		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	28/10/2024		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	04/11/2024		TLM4, TLM6	
10.	Debate: methods & Practice	03	11/11/2024		TLM4, TLM6	
11.	PPT Presentation	06	18/11/2024 & 25/11/2024		TLM2, TLM4	
12.	Poster Presentation	03	02/12/2024		TLM2, TLM4	
13.	Mock Interviews	03	09/12/2024		TLM1, TLM6	
14.	Lab Internal Exam	03	16/12/2024			
No. of classes required to complete Syllabus: 54				**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	**D. Sri Lakshmi Manasa**	**Dr. R. Padma**	**Dr. R. Padma**	**Dr. A. Rami Reddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. V.Parvathi
Course Name & Code **:** Chemistry Lab&23FE52
L-T-P Structure **:0-0-3** **Credits:1.5**
Program/Sem/Sec : B.Tech/ I sem/ IT B **A.Y. :**2024-25

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	08-08-2024		TLM1		
2.	Introduction to chemistry lab	**3**	22-08-2024		TLM4		
3.	Demonstration of volumetric analysis	3	29-08-2024		TLM4	CO1	
4.	Preparation of a Bakelite	3	05-09-2024		TLM4	CO2	
5.	Determination of amount of HCl using standard Na2CO3 solution	3	12-09-2024		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	19-09-2024		TLM4	CO3	
7.	Estimation of Ferrous Iron by Dichrometry	3	26-09-2024		TLM4	CO1	
8.	Estimation of Ferrous Iron by permanganometry	3	17-10-2024		TLM4	CO1	
9	Estimation of total hardness of water by EDTA method	3	24-10-2024		TLM4	CO4	
10.	Determination of alkalinity And concentration of individual ions	3	07-11-2024		TLM4	CO4	
11.	Conductometric titration of strong acid vs. strong base	3	14-11-2024		TLM4	CO1	
12.	Conductometric titration of weak acid vs. strong base	3	21-11-2024		TLM4	CO1	
13	Measurement of pH//Revision/ Experiment for absentees for regular lab.	3	28-11-2024		TLM4	CO4	
14	Revision / experiments for absentees for regular lab	3	05-12-2024		TLM4		
15	Internal Exam	3	12-12--2024				

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.A.Rami Reddy**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : **Mrs M.HEMALATA**

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

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

Program/Sem/Sec : **B.Tech.–IT /I Sem-B** **A.Y. : 2024-25**

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.	

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 (LESSON PLAN):

INDEX					
Week	Expected Date of execution	IDX	PROGRAM	Completion date	Sign
1	**06-08-24 & 09-08-24**	**Familiarization with programming environment**			
		0	Codeblocks Introduction , Working with online Ediotrs		
		1.1	Area and perimeter of Rectangle		
		1.2	Area and perimeter of Circle		
		1.3	Display Decimal No in Different Forms		
		1.4	Express the expenses in percentages		
		1.5	Arithmetic operations		
		1.6	Area of a triangle		
		1.7	Find size of char, int, float , double		
		1.8	calculate the sum of the first n natural numbers, odd numbers, even numbers		
		1.9	Find the volume of a sphere $volume = \frac{4}{3} * \pi * radious^3$		
		1.10	Find the nth term of Arithmetic series		
2	**13-08-24 & 16-08-24**	**Converting Algorithms/flow charts into C source code**			
		2.1	Sum and Average of 3 numbers		
		2.2	Conversion of Fahrenheit to Celsius and vice versa		
		2.3	Simple interest calculation		
		2.4	Find different category of tickets sold		
		2.5	Find average show rating		
		2.6	Find the total people attended the show		
		2.7	Swap two numbers without temporary variable.		
		2.8	Find the volume of a cylinder $Volume = \pi * Radious^2 * Height$		
		2.9	Find roots of quadratic equation		
		2.10	convert a given time in Seconds into hours, minutes, and seconds.		
3		**Simple computational problems using arithmetic expressions.**			
		3.1	Finding the square root of a given number		
		3.2	Finding compound interest		
		3.3	Area of a triangle using heron's formulae		
		3.4	Distance travelled by an object		
		3.5	calculate the sum of digits of a four digits positive integer num		

	20-08-24 & 23-08-24	**3.6**	$$cfrac = x + \cfrac{1}{x + \cfrac{1}{x + \cfrac{1}{x + \cfrac{1}{x + \cfrac{1}{x}}}}}$$ You are given double x as input, compute the value of this continued fraction and store the result in a double variable named `cfrac`.		
		3.7	Given the diameter of the pizza in inches, the cost per square inch of pizza, the number of toppings and the cost of one topping and print the total cost of the pizza order.		
		3.8	calculates the shipping cost based on the weight of a package and the shipping rate per kilogram.		
		3.9	calculates the user's recommended daily calorie intake based on their age, gender, weight, height, and activity level. **For males:** $Calories = (88.362 + (13.397 \times weight\ in\ kg) + (4.799 \times height\ in\ cm) - (5.677 \times age\ in\ years)) \times activity\ factor$ **For females:** $Calories = (447.593 + (9.247 \times weight\ in\ kg) + (3.098 \times height\ in\ cm) - (4.330 \times age\ in\ years)) \times activity\ factor$		
		3.10	Calc EMI using the formula $Monthly\ Payment = \frac{P * r(1+r)^n}{(1+r)^n - 1}$ Where: P is the principal loan amount. R is the annual interest rate in percentage. $r = R/(12 * 100)$ n is the number of monthly payments.		
4	**27-08-24 & 30-08-24**	**Simple computational problems using the operator' precedence and associativity**			
		4.1	Evaluate the following expressions. a.A+B*C+(D*E) + F*G b. A/B*C-B+A*D/3 c.A+++B---A d. J= (i++) + (++i)		
		4.2	Find the maximum of three numbers using conditional operator		
		4.3	Take marks of 5 subjects in integers, and find the total, average in float		
		4.4	Find the grade of a student		
		4.5	Find the biggest of three numbers		
5		**Branching and logical expressions -----if-then-else structures.**			
		5.1	Write a C program to find the max and min of four numbers using if-else.		

	03-09-24 & 06-09-24	**5.2**	Write a C program to generate electricity bill.		
		5.3	takes the weight of the package (in kilograms) and the destination zone number as input and print the shipping cost amount. If input weight is less than 0 or zone number is out of given zones, then print `Invalid Input`. Calculate the shipping cost as follows: - For zone 1, the cost is Rs. 5 per kilogram. - For zone 2, the cost is Rs. 7 per kilogram. - For zone 3, the cost is Rs. 10 per kilogram. - For zone 4, the cost is Rs. 12 per kilogram. - For zone 5, the cost is Rs. 16 per kilogram. - For zone 6, the cost is Rs. 17 per kilogram. - For zone 7, the cost is Rs. 19 per kilogram.		
		5.4	Write a C program to simulate a calculator using switch case.		
		5.5	Write a C program to find the given year is a leap year or not.		
		5.6	Write a program that accept three positive integers as input and check if they form the sides of a Right triangle. Print YES if they form one, and NO if they do not.		
		5.7	Accept a point (p,q) in 2D space as input and find the region in space that this point belongs to. A point could belong to one of the four quadrants, or it could be on one of the two axes, or it could be the origin.		
		5.8	$$f(x) = \begin{cases} x+2 & 0 \leq x < 10 \\ x^2+2 & 10 \leq x \\ 0 & \text{otherwise} \end{cases}$$ Write a program that accept the float value of x as input and print the float value of $f(x)$ as output with two decimal places. Note that both the input and output are real		
		5.9	five employees of the company come together for a meeting and sit at a circular table: They will continue the meeting only if the following condition is satisfied. The sum of the employee-ids of every pair of adjacent employees at the table must be an even number. They are so lazy that they won't move around to satisfy the above condition. If the current seating plan doesn't satisfy the condition, the meeting will be canceled. Your task is to decide if the meeting happened or not. Employee ID's are given as input. Display YES or NO.		
		5.10	Take the total purchase amount as input and print the final amount to pay after discount given as follows:		

			- If the purchase amount is less than 200, there is no discount. - If the purchase amount is between 200 and 500 (both inclusive), apply a 10% discount. - If the purchase amount is greater than 500, apply a 20% discount.		
6	**10-09-24 & 13-09-24**	**Loops, while and for loops ---- Iterative problems**			
		6.1	Find the factorial of given number using any loop.		
		6.2	Find the given number is a prime or not		
		6.3	Compute sine and cos series		
		6.4	Checking a number palindrome		
		6.5	Construct a pyramid of numbers 1 * 2 2 * * 3 3 3 * * * 4 4 4 4 * * * * 5 5 5 5 5 * * * * * *		
		6.6	Sum and average of n numbers		
		6.7	Maximum and minimum in a list		
		6.8	Linear search		
		6.9	Binary search		
		6.10	Bubble Sort		
		6.11	the prices of items as float one by one until they decide to stop. Use a loop to continuously prompt the user for item prices and calculate the total cost. Once the user decides to stop, print the total cost as float up to two decimal point.		
		6.12	Write a program that accept a positive integer n as input and print the sum of the first n terms of the series given below: $1 + (1 + 2) + (1 + 2 + 3) + (1 + 2 + 3 + 4) + \cdots$ Just to be clear, the first term in the series is 1, the second term is $(1 + 2)$ and so on.		
		6.13	program for a bank that calculates the compound interest earned on a savings account. formula for compound interest: $A = P * (1 + r/n)^{nt}$ Where: - A is the final amount (as a decimal). - P is the principal amount (as a decimal). - r is the annual interest rate in percent (as a decimal). - t is the number of years (as an integer). - n is the number of times interest is compounded per year (as an integer).		
		6.14	Find two numbers are co-primes or not. Two integers are co-prime if the only common divisor between the two integers is one.		
		6.15	Count No of Digits		
		6.16	Multiplication Table		

		6.17	Reverse the given no		
		6.18	Fibonacci series		
		6.19	Factors		
		6.20	Armstrong or not		
7	**17-09-24 & 20-09-24**	**1 D Arrays : 1D Array manipulation, linear search**			
		7.1	Find the min and max of a 1-D integer array		
		7.2	Perform linear search on1D array.		
		7.3	The reverse of a 1D integer array		
		7.4	Find 2's complement of the given binary number.		
		7.5	Eliminate duplicate elements in an array.		
		7.6	Find the frequency of given number		
		7.7	Take two non-empty integer arrays arr1 and arr2, and the size of these arrays size1 and size2 as parameters. The function returns the number of common elements in arr1 and arr2.		
		7.8	Sort array elements using bubble sort		
		7.9	Merge two sorted arrays		
		7.10	If elements of the array strictly increasing from index 0 to index p and then strictly decreasing from index p to index size-1 (where $0 < p < size-1$) then the function returns index p. Otherwise, return -1		
8	**24-09-24 & 27-09-24**	**2 D arrays :Matrix problems, sorting and Strings.**			
		8.1	Addition of two matrices		
		8.2	Multiplication two matrices		
		8.3	Find the transpose of a matrix		
		8.4	concatenate two strings without built-in functions		
		8.5	String palindrome		
		8.6	convert the given sentence into Title case		
		8.7	copy one string into another		
		8.8	prints the parts of the string that are split by the delimiter on separate lines.		
		8.9	check whether two strings are equal or not		
		8.10	convert the given string into upper and lower case		
9		**Pointers, structures and dynamic memory allocation**			
		9.1	Write a C program to find the sum of a 1D array using malloc()		
		9.2	Write a C program to find the total, average of n students using structures		
		9.3	Enter n students data using calloc() and display failed students list.		
		9.4	Read student name and marks from the command line and display the student details along with the total.		
		9.5	Write a C program to implement realloc()		
		9.6	Find the perimeter of the polygon. Given polygon points		

	08-10-24 & 15-10-24	**9.7**	**Calculate Course Score** Write a program to calculate the scores for different types of courses, each with its own grading criteria. The program reads the course information, including the type of course and grading details and computes the final score accordingly. Use the given structs, enums and unions, and complete the missing parts of the code using the hints. **Grading Formulas** The formulas for grading are as follows: • For THEORY: $\text{score} = (0.15 \times \text{quiz1}) + (0.15 \times \text{quiz2}) + (0.1 \times \text{assignments}) + (0.6 \times \text{final\_exam})$ • For PROGRAMMING: $\text{score} = (0.1 \times \text{quiz1}) + (0.3 \times \text{oppe1}) + (0.3 \times \text{oppe2}) + (0.1 \times \text{assignments}) + (0.2 \times \text{programming\_assignments})$ • For PROJECT: $\text{score} = (0.25 \times \text{viva1}) + (0.25 \times \text{viva2}) + (0.5 \times \text{final\_project})$ Round off the final score to the nearest integer before saving the score. **Sample Input:**		
		9.8	Calculate combined area of different shapes		
		9.9	Create a struct named Time with the members named days, hours, minutes, and seconds (all integer types).		
		9.10	Create a struct named Data with three members of integer type num1 and num2, and op . Write a function calculator that accepts a variable of struct Data type. The function performs the following arithmetic operations and displays the result based on value of op(1-Addition, 2-Subtraction, 3-Multiplication, and 4-Division). -If op = 1, print num1 + num2 as integer. -If op = 2, print num1 - num2 as integer. -If op = 3, print num1 * num2 as integer. -If op = 4, If num2 = 0, print Zero Division Error, otherwise print num1 / num2 as float up to two decimal points.		
10	**18-10-24 & 22-10-24**	**Bitfields, Self-Referential Structures, Linked lists**			
		10.1	Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields		
		10.2	Create and display a singly linked list using self-referential structure		
		10.3	Demonstrate the differences between structures and unions using a C program		
		10.4	Write a C program to shift/rotate using bit fields.		
		10.5	Write a C program to copy one structure variable to another structure of the same type.		
11	**05-11-24 & 08-11-24**	**Functions, call by value, scope and extent**			
		11.1	Write a C function to calculate NCR value.		
		11.2	Write a C function to find the length of a string.		
		11.3	Write a C function to transpose of a matrix.		
		11.4	Write a C function to demonstrate numerical integration of differential equations using Euler's method		

		11.5	write a function **prime_product** that accepts a positive integer m as input and returns 1 if m is a prime product and 0 otherwise.		
		11.6	write a function **nth_digit** that accepts two integers num and n and returns the nth digit of the number num (from right to left). If n is greater than the number of digits or less than or equal to 0, return -1.		
12	**12-11-24 & 15-11-24**	**Recursion, the structure of recursive calls**			
		12.1	Write a recursive function to generate Fibonacci series.		
		12.2	Write a recursive function to find the LCM of two numbers		
		12.3	Write a recursive function to find the factorial of a number.		
		12.4	Write a C Program to implement Ackermann function using recursion		
		12.5	Write a recursive function to find the sum of first n natural numbers.		
		12.6	Towers of Hanoi using recursion		
		12.7	Binary Search using recursion		
13	**19-11-24 & 22-11-24**	**Call by reference, dangling pointers**			
		13.1	Write a C program to swap two numbers using call by reference.		
		13.2	Demonstrate Dangling pointer problem using a C program		
		13.3	Write a C program to copy one string into another using pointer.		
		13.4	Write a C program to find no of lowercase, uppercase, digits and other characters using pointers		
14	**26-11-24 & 29-11-24**	**File handling**			
		14.1	Write a C program to write and read text into a file		
		14.2	Write a C program to write and read text into a binary file using fread() and fwrite()		
		14.3	Copy the contents of one file to another file		
		14.4	Write a C program to merge two files into the third file using command-line arguments.		
		14.5	Find no. of lines, words and characters in a file		
		14.6.	Write a C program to print last n characters of a given file		
		14.7	Create a program that reads text from a specified input file and toggles the case of all alphabetic characters (converts uppercase to lowercase and vice versa). The program then saves this modified text into a new output file.		
		14.8	Write a function **findToppers** that reads the student's score from the CSV(Comma-Separated Values) file score.csv where each line contains the student name (with a maximum length of 50) and marks separated by a comma. The function prints the		

			student names of those who have the highest marks. The function does not return anything.		
15	**03-12-24 & 06-12-24**	**Beyand Syllabus**			
		15.1	Write a C program that reads the coordinates of a point x and y as integers and determines in which quadrant the point lies. Assume that neither of the coordinates will be 0. If both x and y are positive, print Quadrant 1. If x is negative and y is positive, print Quadrant 2. If both x and y are negative, print Quadrant 3. If x is positive and y is negative, print Quadrant 4.		
		15.2	Write a function **print_pattern** that takes an integer n and prints the following type of pattern: 1 2 1 3 2 1 4 3 2 1 5 4 3 2 1 4 3 2 1 3 2 1 2 1 1		
		15.3	An **Armstrong number** is an n-digit number if the sum of its digits, each raised to the power of n, is equal to the original number itself. For example, let's consider a 3-digit number: In this case, 153 is an Armstrong number because the sum of the cubes of its digits equals the number itself (153). Write a function **countArmstrong** that takes three integer pointers a, b, and count as parameters. The function counts all Armstrong numbers in between the value at a and b(both inclusive) and stores the count at the pointer count.		
		15.4	**Leaders of Array** Write a function **findLeaders** that takes an integer array arr and the array length (integer) as parameters. The function prints all elements(called leader) that are larger than all elements to their right in the array. Each output element should appear in a new line. If no leader exists, then print None. **Note:-** Consider that all elements of the array are distinct and the size of the array is at least 2. Do not consider the last element of the array as a leader element.		
		15.5	Complete the function swap_name that that takes a pointer variable which contains a string representing a		

			"first_name last_name". The function rearranges it to become "last_name first_name" within the same pointer variable.		
		15.6	Complete the C program that verifies the validity of a username based on specific criteria. The validation rules are as follows: The username should consist of alphanumeric characters and underscores "_". The username must be at least 8 characters long and at most 20 characters long. The username should not begin with a number or an underscore "_". The username should not end with an underscore "_". Implement a function check_username that evaluates the given username and returns 0 if it is invalid according to the rules, and 1 if it is valid.		
		15.7	You are given the following structures: typedef struct { char name[20]; int height; } Student; typedef struct { Student* students[50]; int len; } Line; Complete the function insert_student that reads a list of student names and heights from the input and adds them to the line while maintaining the ascending order of the heights. The len variable should be updated accordingly. The updated line will be printed as the output. If multiple students have same height put the latest one in the lower index(in the left most place).		
		15.8	Your are provided with the name of the input and the output text files. Complete the function copy_odd_lines that reads the given input text file, extracts the odd-numbered lines, and writes them to output text file. The maximum size of each line in the input file is 200 characters.		

Delivery Methods			
DM1	Chalk and Talk	**DM4**	Assignment/Test/Quiz
DM2	ICTTools	**DM5**	Laboratory/Field Visit

DM3	Tutorial	**DM6**	Web-based Learning

PART-C

EVALUATION PROCESS (R23 Regulations):

Evaluation Task	**Marks**
Day-to-day work	D1=10
Record	R1=05
Internal Test	IT1=15
Continuous Internal Evaluation(CIE)=D1+R1+IT1	**30**
Procedure/Algorithm	P1=20
Experimentation/Program execution	E1=10
Observations/Calculations/Validation	O1=10
Result/Inference	R1=10
Viva voce	V1=20
Semester End Examination (SEE)= P1+ E1+ O1+ V1	**70**
Total Marks = CIE+SEE	**100**

PART-D

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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO2	Design, Implement and evaluate a computer-based system to meet desired needs.
PSO3	Develop IT application services with the help of different current engineering tools.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs M. Hemalatha**	**Dr. K. Vijaya Bhaskara Reddy**	**Dr. K. Phaneendra**	**Dr. B. Srinivas Rao**
Signature				