



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),

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

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

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

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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### COURSE HANDOUT

#### PART-A

Name of Course Instructor	: Mr. A. S. R. C. Murthy	
Course Name & Code	: Introduction to Programming (23CS01)	
L-T-P Structure	: 3-0-0	Credits: 3
Program/Sem/Sec	: B.Tech./I/A-Sec.	A.Y.: 2023-24

#### PRE-REQUISITE: NIL

#### COURSE EDUCATIONAL OBJECTIVE (CEO):

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

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

<b>CO1:</b>	Understand basics of computers, the concept of algorithm and algorithmic thinking.	Understand –Level 2
<b>CO2:</b>	Analyze a problem and develop an algorithm to solve it.	Analyze – Level 4
<b>CO3:</b>	Implement various algorithms using the C programming language.	Apply – Level 3
<b>CO4:</b>	Understand more advanced features of C language.	Understand – Level 2
<b>CO5:</b>	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	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
CO5	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
	1 – Low			2 – Medium						3 – High					

#### TEXTBOOKS:

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

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

#### REFERENCE BOOKS:

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

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

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

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

#### UNIT – I: Introduction to Programming and Problem Solving

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Discussion of CEO's and CO's	1	20-09-2023			
2.	History of Computers	1	21-09-2023			
3.	Basic organization of a computer: ALU, input-output units.	2	22-09-2023 23-09-2023			
4.	Memory, program counter	1	25-09-2023			
5.	Introduction to Programming Languages,	1	27-09-2023			
6.	Basics of a Computer Program- Algorithms	1	29-09-2023			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	30-09-2023			
8.	Introduction to Compilation and Execution	1	04-10-2023			
9.	Primitive Data Types	2	05-10-2023 06-10-2023			
10.	Variables, and Constants, Basic Input and Output operations	1	07-10-2023			
11.	Type Conversion, and Casting	1	09-10-2023			
12.	<b>Problem solving techniques:</b> Algorithmic approach, characteristics of algorithm	1	11-10-2023			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	12-10-2023			
14.	Time and space complexities of algorithms.	1	13-10-2023			
<b>No. of classes required to complete UNIT – I: 15</b>				<b>No. of classes taken:</b>		

#### UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs Conditional Statements	1	14-10-2023			
16.	if, if-else	1	16-10-2023			
17.	switch.	1	18-10-2023			
18.	Example programs on Decision Making and Branching	1	25-10-2023			
19.	Loops: while , Example programs	2	26-10-2023 27-10-2023			
20.	do-while, for, Example programs	2	28-10-2023 30-10-2023			
21.	on Loops	1	01-11-2023			
22.	Break and Continue	1	02-11-2023			
23.	Example programs on Loops	1	03-11-2023			
24.	Revision	1	04-11-2023			
<b>No. of classes required to complete UNIT – II: 12</b>				<b>No. of classes taken:</b>		

**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	06-11-2023			
26.	Array indexing, Accessing elements	1	13-11-2023			
27.	memory model	1	15-11-2023			
28.	programs with array of integers	1	16-11-2023			
29.	Introduction to two dimensional arrays	1	17-11-2023			
30.	2D Array indexing, Accessing elements	1	18-11-2023			
31.	programs with 2D arrays	1	20-11-2023			
32.	Introduction to Strings	1	22-11-2023			
33.	Reading and Writing Operations on Strings	1	23-11-2023			
34.	String Handling Functions	1	24-11-2023			
35.	Example Programs using Strings	1	25-11-2023			
<b>No. of classes required to complete UNIT – III: 11</b>				<b>No. of classes taken:</b>		

**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	27-11-2023			
37.	dereferencing and address operators	1	29-11-2023			
38.	pointer and address arithmetic	1	30-11-2023			
39.	array manipulation using pointers	2	01-12-2023			
			02-12-2023			
40.	User-defined data types	1	04-12-2023			
41.	Structures , Definition and Initialization	2	06-12-2023			
			07-12-2023			
42.	Example programs	1	08-12-2023			
43.	Unions	2	09-12-2023			
			11-12-2023			
44.	Example programs	1	13-12-2023			
45.	Revision	1	14-12-2023			
<b>No. of classes required to complete UNIT – IV: 13</b>				<b>No. of classes taken:</b>		

**UNIT – V:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Functions	1	15-12-2023			
47.	Function Declaration and Definition	1	16-12-2023			
48.	Function call Return Types	1	18-12-2023			
49.	Arguments	1	20-12-2023			
50.	modifying parameters inside functions using pointers	2	21-12-2023			
			22-12-2023			
51.	arrays as parameters	1	23-12-2023			
52.	Scope and Lifetime of Variables	1	27-12-2023			
53.	Introduction to Files	1	28-12-2023			
54.	Basics of File Handling	1	29-12-2023			

55.	Operations on Files	1	30-12-2023			
<b>No. of classes required to complete UNIT – V: 11</b>				<b>No. of classes taken:</b>		

### Content Beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Application Development using C	1	29-12-2023			
57.	Introduction to Data Structures	1	30-12-2023			

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

### PART-C

#### EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment – I (Units-I, II )	A1 = 5
I – Descriptive Examination (Units-I, II)	M1 = 15
I – Quiz Examination (Units-I, II)	Q1 = 10
Assignment – II (Unit-III, IV & V)	A2 = 5
II – Descriptive Examination (UNIT-III, IV & V)	M2 = 15
II – Quiz Examination (UNIT-III, IV & V)	Q2 = 10
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):

<b>PO1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>PO4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
<b>PO5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
<b>PO6</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
<b>PO7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>PO8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO9</b>	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
<b>PO11</b>	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
<b>PO12</b>	<b>Life-long learning:</b> 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):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	A S R C MURTHY	Dr. B. Srinivasa Rao	Dr. K.N. Prashanthi	Dr. D. Veeraiah
Signature				



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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

## COURSE HANDOUT

### PART-A

Name of Course Instructor	: A. S. R. C. Murthy	
Course Name & Code	: Computer Programming Lab (20CS51)	
L-T-P Structure	: 0-0-3	Credits: 1.5
Program/Sem/Sec	: B.Tech. - CSE/ISem-A	A.Y. : 2023-24

**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:

<b>CO1</b> :	Read, understand, and trace the execution of programs written in C language. (Understand)	Apply – Level 2
<b>CO2</b> :	Select the right control structure for solving the problem. (Apply)	Apply – Level 3
<b>CO3</b> :	Develop C programs which utilize memory efficiently using programming constructs like pointers. (Apply)	Apply – Level 3
<b>CO4</b> :	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (Apply).	Apply – Level 3
<b>CO5</b> :	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
<b>CO1</b>	3	2	-	-	3	-	-	-	-	-	-	-	2	-	-
<b>CO2</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>CO3</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>CO4</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>CO5</b>	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-
	1 – Low				2 – Medium				3 – High						

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		22-09-2023	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		29-09-2023	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		06-10-2023	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		13-10-2023	DM5
5.	Week5: Exercise Programs on Branching and logical expressions	03		27-10-2023	DM5
6.	Week6: Exercise Programs on Loops, while and for loops	03		03-11-2023	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		17-11-2023	DM5
8.	Week8: Exercise Program on 2 D arrays, sorting and Strings.	03		24-11-2023	DM5
9.	Week9: Exercise Program on Pointers, structures and dynamic memory allocation	03		01-12-2023	DM5
10.	Week10: Exercise Program on Bit fields, Self-Referential Structures, Linked lists	03		08-12-2023	DM5
11.	Week 11: Exercise Program on Functions, call by value, scope and extent.	03		15-12-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		22-12-2023	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		29-12-2023	DM5
14.	Week 14: Exercise Programs on File handling.	03		29-12-2023	DM5
15.	Lab Internal	03		03-01-2023	DM5

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

### **PART-C**

<b>PO1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>PO4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
<b>PO5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
<b>PO6</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
<b>PO7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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<b>PO9</b>	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
<b>PO11</b>	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
<b>PO12</b>	<b>Life-long learning:</b> Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

**PROGRAMMESPECIFICOUTCOMES(PSOs):**

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	A S R C Murthy	Dr. B. Srinivas Rao	Dr.K. Naga Prasanthi	Dr. D. Veeraiah
<b>Signature</b>				



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 Phone: 08659-222933, Fax: 08659-222931

## **FRESHMAN ENGINEERING DEPARTMENT**

### **COURSE HANDOUT**

#### **PART-A**

**Name of Course Instructor:** ANURADHA MATTA  
**Course Name & Code** : Communicative English & 23FE50  
**L-T-P Structure** : **2-0-0** **Credits:** 02  
**Program/Sem/Sec** : B. Tech, I Sem – CSE - A  
**A.Y.** : 2023-24

**PREREQUISITE:** NIL

**COURSE EDUCATIONAL OBJECTIVES (CEOs):**

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

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

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

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

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

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

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

### UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	19-09-2023& 22-09-2023		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	23-09-2023		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	26-09-2023		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	02	29-09-2023 &30-09-2023		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	03-10-2023		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms	01	06-10-2023		TLM2 TLM5	CO1	T1,T2	
7.	Affixes, Root Words	01	07-10-2023		TLM2 TLM5	CO1	T1,T2	
<b>No. of classes required to complete UNIT-I: 09</b>						<b>No. of classes taken:</b>		

### UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Nature: The Brook by Alfred Tennyson	02	16-10-2023 &18-10-2023		TLM1 TLM 6	CO2	T1,T2	
2.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	25-10-2023		TLM2 TLM5	CO2	T1,T2	
3.	Structure of Paragraph – Paragraph Writing	01	28-10-2023		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	Cohesive Devices- linkers	01	30-10-2023		TLM2 TLM6	CO2	T1,T2	
5.	Use of Articles and zero article, Prepositions	02	01-11-2023& 03-11-2023		TLM2 TLM6	CO2	T1,T2	
6.	Homophones, Homographs, Homonyms	01	04-11-2023		TLM2 TLM5	CO2	T1,T2	
<b>No. of classes required to complete UNIT-II: 08</b>					<b>No. of classes taken:</b>			

### UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Biography: Elon Musk	02	14-11-2023& 17-11-2023		TLM1 TLM 6	CO3	T1,T2	
2.	Reading and making basic inferences – recognizing	01	18-11-2023		TLM2 TLM5	CO3	T1,T2	

	and interpreting the text clues for comprehension							
3.	Summarizing, Note-making, Paraphrasing	01	21-11-2023 & 24-11-2023		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	Verbs- Tenses, Subject-verb agreement	02	25&28-11-2023 & 01-12-2023		TLM2 TLM6	CO3	T1,T2	
5.	Compound words, Collocations	01	02-12-2023		TLM2 TLM5	CO3	T1,T2	
<b>No. of classes required to complete UNIT-III: 07</b>							<b>No. of classes taken:</b>	

#### UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Inspiration: The Toys of Peace- by Saki	02	05-12-2023& 08-12-2023		TLM1 TLM 6	CO4	T1,T2	
2.	Study of graphic elements in text to display complicated data	01	12-12-2023		TLM2 TLM5	CO4	T1,T2	
3.	Letter Writing : Official Letters, Resumes	01	15-12-2023		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	16-12-2023& 19-12-2023		TLM2 TLM6	CO4	T1,T2	
5.	Words often confused, Jargons	01	22-12-2023		TLM2 TLM5	CO4	T1,T2	
<b>No. of classes required to complete UNIT-IV: 07</b>							<b>No. of classes taken:</b>	

#### UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Motivation: The Power of Interpersonal Communication	02	23&26-12-2023		TLM1 TLM 6	CO5	T1,T2	
2.	Reading Comprehension	01	29-12-2023		TLM2 TLM5	CO5	T1,T2	
3.	Structured Essays on specific topics	01	30-12-2023		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	Editing Texts – Correcting Common errors	01	30-12-2023		TLM2 TLM6	CO5	T1,T2	
5.	Technical Jargon	01	30-12-2023		TLM2 TLM5	CO5	T1,T2	
<b>No. of classes required to complete UNIT-V: 05</b>							<b>No. of classes taken:</b>	

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	WORD ANALOGY	1	30-12-2023		TLM2 & 5	
<b>No. of classes required to complete UNIT-V: 07</b>					<b>No. of classes taken:</b>	

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



TLM3	Tutorial	TLM6	Group Discussion/Project
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### PART-C

#### EVALUATION PROCESS (R23 Regulation):

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

#### PROGRAMME OUTCOMES (POs):

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

change.
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**PROGRAMME SPECIFIC OUTCOMES (PSOs):**

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

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



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Phone: 08659-222933, Fax: 08659-222931

## **FRESHMAN ENGINEERING DEPARTMENT**

### **COURSE HANDOUT**

#### **PART-A**

Name of Course Instructor: **M. ANURADHA**

Course Name & Code : CE LAB, 23FE51

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

Credits: 01

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

A.Y. : 2023-24

PREREQUISITE: NIL

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

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

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

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

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

#### **List of Activities:**

- 1.a. Vowels & Consonants
- b. Neutralization / Accent rules
2. Communication Skills: JAM
3. Conversational Practice: Roleplay

4. e-mail Writing
5. Resume writing, Cover letter, SOP
6. Group Discussions - methods & Practice
7. Debates – Methods and practice
8. PPT Presentations
9. Poster Presentations
10. Interview Skills: Mock Interviews

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

**Suggested Software:**

1. Walden Infotech
2. Young India Films

**Reference Books:**

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

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

**UNIT-I:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Introduction to syllabus	03	21-9-2023		TLM4	
9.	Self Introduction & Introducing others	03	28-9-2023		TLM4	
10.	Vowels & Consonants	03	05-10-2023		TLM1, TLM5	
11.	Neutralization / Accent rules	03	12-10-2023		TLM1, TLM5	
12.	JAM-I(Short and Structured Talks)	03	19-10-2023		TLM4	
13.	Role Play-I(Formal and Informal)	03	26-10-2023		TLM4	
14.	e-mail Writing, Resume writing, Cover letter, SOP	03	02-11--2023		TLM1, TLM5	
15.	Group Discussion	03	16-11-2023		TLM4, TLM6	
16.	Debate	03	23-11-2023		TLM4, TLM6	
17.	PPT & Poster Presentation	03	07-12-2023		TLM2, TLM4	
18.	PPT & Poster Presentation	03	14-12-2023		TLM2, TLM4	
19.	Mock Interviews	03	21-01-2024		TLM1, TLM6	
20.	Lab Internal Exam	03	28-12-2023			
<b>No. of classes required to complete Syllabus:39</b>				<b>No. of classes taken:</b>		

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

<b>TLM3</b>	Tutorial	<b>TLM6</b>	Group Discussion/Project
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**PROGRAMME OUTCOMES (POs):**

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

	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>				<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



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Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF CIVIL ENGINEERING

### COURSE HANDOUT

#### PART-A

Name of Course Instructor: C RAJAMALLU

Course Name & Code : Basic Civil and Mechanical Engineering & 20CM01

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

Credits: 3

Program/Sem/Sec : B.Tech, I SEM- CSM-A SEC

A.Y.: 2023-24

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. ( <b>Understand</b> )
CO2:	Outline the concepts of surveying and obtain the theoretical measurement of distances, angles and levels through surveying. ( <b>Understand</b> )
CO3:	Classify the various materials used in construction and highway engineering and identify their appropriate usage as per the needs. ( <b>Understand</b> )
CO4:	Illustrate the fundamental principles involved in transportation network system, their individual components and their engineering importance. ( <b>Understand</b> )
CO5:	Explain the quality parameters of various water sources and functions of selected water storage and conveyance structures. ( <b>Understand</b> )

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
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. 38<sup>th</sup> Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10<sup>th</sup> 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
21.	Introduction CO's & PO's, Subject	1	19-09-2023		TLM2	
22.	<b>Basics of Civil Engineering:</b> Role of Civil Engineers in Society	1	20-09-2023		TLM2	
23.	Various Disciplines of Civil Engineering- Structural Engineering-	1	21-09-2023		TLM2	
24.	Geo-technical Engineering- Transportation Engineering, Hydraulics and Water Resources Engineering	1	22-09-2023		TLM2	
25.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	25-09-2023		TLM2	
26.	Construction Materials-Cement -types	1	26-09-2023		TLM2	
27.	Aggregate types- Bricks- classifications, Steel-properties - types	1	27-09-2023		TLM2	
28.	Cement concrete- Applications	1	29-09-2023		TLM2	
29.	Introduction to Prefabricated construction Techniques	1	03-10-2023		TLM2	
<b>No. of classes required to complete UNIT-I: 9</b>				<b>No. of classes taken:</b>		

**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
30.	Objectives of Surveying, Horizontal Measurements	1	04-10-2023		TLM2	
31.	Compass Surveying overview- Angular Measurements and Introduction to Bearings	1	05-10-2023		TLM2	
32.	Simple problems on bearings	1	06-10-2023		TLM1	
33.	-Problems -practice		09-10-2023		TLM1	
34.	Levelling introduction		10-10-2023		TLM1	
35.	Levelling instruments used for levelling	1	11-10-2023		TLM2	
36.	Simple problems on levelling and bearings	1	12-10-2023		TLM2	

37.	problems on levelling	1	13-10-2023		<b>TLM2</b>	
38.	Problems -practice	1	16-10-2023		<b>TLM2</b>	
39.	Contour mapping	1	17-10-2023		<b>TLM2</b>	
<b>No. of classes required to complete UNIT-II:10</b>				<b>No. of classes taken:</b>		

### 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
40.	<b>Transportation Engineering</b> Importance of Transportation in Nation's economic development	1	18-10-2023		<b>TLM2</b>	
41.	Types of Highway Pavements	1	19-10-2023		<b>TLM2</b>	
42.	Flexible Pavements - Rigid Pavements Simple Differences	1	25-10-2023		<b>TLM2</b>	
43.	Basics of Harbour, Tunnel,	1	26-10-2023		<b>TLM2</b>	
44.	Basics of Airport, and Railway Engineering	1	27-10-2023		<b>TLM2</b>	
45.	<b>Water Resources and Environmental Engineering</b> Introduction, Sources of water-	1	30-10-2023		<b>TLM2</b>	
46.	Quality of water- Specifications	1	31-10-2023		<b>TLM2</b>	
47.	Introduction to Hydrology	1	01-11-2023		<b>TLM2</b>	
48.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	02-11-2023		<b>TLM2</b>	
49.	(Simple introduction to Dams and Reservoirs), Over view on importance of roads and infra	1	03-11-2023		<b>TLM2</b>	
50.	<b>Mid-1 exams</b>		<b>06-11-2023 to 11-11-2023</b>			
<b>No. of classes required to complete UNIT-III:10</b>				<b>No. of classes taken:</b>		

#### Teaching Learning Methods

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

### PART-C

#### EVALUATION PROCESS (R17 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10



Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

## PART-D

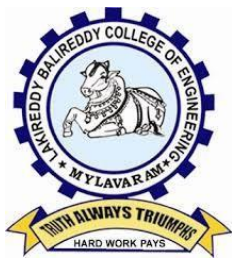
### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	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.
<b>PO 3</b>	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.
<b>PO 4</b>	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.
<b>PO 5</b>	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
<b>PO 6</b>	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.
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<b>PO 8</b>	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	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.
<b>PO 11</b>	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.
<b>PO 12</b>	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):

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>C RAJAMALLU</b>	<b>B RAMAKRISHNA</b>		
<b>Signature</b>				



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Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF FRESHMAN ENGINEERING

### COURSE HANDOUT

#### PART-A

Name of Course Instructor: Dr. Lakshmi V R Babu Syamala

Course Name & Code : Chemistry & 23FE02

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

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

Credits:03

A.Y. : 2023-24

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, 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. Billmeyer 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.	Fundamentals Of Quantum Mechanics	1	19-09-2023		TLM1	
2.	Schrodinger Wave Equation, Significance of $\Psi$ and $\Psi^2$	1	20-09-2023		TLM1	
3.	Particle In one dimensional box	1	23-09-2023		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear Diatomic Molecules- Energy level diagrams ( $H_2$ to $Ne_2$ )	1	25-09-2023		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO)	1	26-09-2023		TLM1	
6.	Energy level diagrams-Summary	1	27-09-2023		TLM1	
7.	$\pi$ -molecular orbitals of butadiene	1	30-09-2023		TLM1	
8.	$\pi$ -molecular orbitals of benzene	1	03-10-2023		TLM1	
9.	Calculation of Bond order	1	04-10-2023		TLM1	
10.	Revision and assignment	1	07-10-2023		TLM1	
No. of classes required to complete UNIT-I: 10				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	09-10-2023		TLM1	
2.	Semiconductors - Basic concept & applications	1	10-10-2023		TLM1	
3.	Super conductors - Introduction	1	11-10-2023		TLM1	

4.	Super conductors - Basic concept & applications	1	14-10-2023		TLM1	
5.	Supercapacitors - Introduction	1	16-10-2023		TLM1	
6.	Supercapacitors - Basic concept- classification & applications	1	17-10-2023		TLM1	
7.	Nano materials - Introduction	1	18-10-2023		TLM2	
8.	Nano materials - classification	1	25-10-2023		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	28-10-2023		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	2	30-10-2023 & 31-10-2023		TLM2	
11.	Revision and assignment	1	1-11-2023		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	04-11-2023		TLM1	
2.	Cell potential calculations and numerical problems	1	13-11-2023		TLM1	
3.	Potentiometry- potentiometric titrations (redox titrations)	1	14-11-2023		TLM1	
4.	Concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations)	1	15-11-2023		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	18-11-2023		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries- working of the batteries including cell reactions	1	20-11-2023		TLM1	
7.	Fuel cells, hydrogen-oxygen fuel cell- working of the cells	1	21-11-2023		TLM1	
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	22-11-2023		TLM1	
9.	Revision and assignment	1	25-11-2023		TLM1	

No. of classes required to complete UNIT-III: 09	No. of classes taken:
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#### 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	27-11-2023		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	28-11-2023		TLM1	
3.	Mechanisms of polymer formation	1	29-11-2023		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	02-12-2023		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	04-12-2023		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	05-12-2023		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	06-12-2023		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	09-12-2023		TLM1	
9.	Revision and assignment	1	11-12-2023		TLM1	
No. of classes required to complete UNIT-IV: 09				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	12-12-2023		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	13-12-2023		TLM1	
3.	UV-Visible Spectroscopy	1	16-12-2023		TLM1	
4.	electronic transition, Instrumentation	1	18-12-2023		TLM1	
5.	IR spectroscopies, fundamental modes	1	19-12-2023		TLM1	

6.	selection rules, Instrumentation	1	20-12-2023		TLM1
7.	Chromatography-Basic Principle	1	23-12-2023		TLM1
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	26-12-2023		TLM1
9.	Revision and assignment	1	27-12-2023		TLM1
No. of classes required to complete UNIT-V: 09				No. of classes taken:	

### TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	30-12-2023		TLM1	

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

### PART-C

#### EVALUATION PROCESS (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
<b>Total Marks = CIE + SEE</b>	<b>100</b>

## PART-D

### PROGRAMME OUTCOMES (POs):

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

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

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF FRESHMANENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** Dr. Lakshmi V R Babu Syamala

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

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

**Credits:1.5**

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

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

**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 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:** 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):**

##### **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 Engineering chemistry lab	3	20-09-2023		TLM1		
2.	Preparation of a Bakelite	3	27-09-2023		TLM4	CO1	
3.	Determination of amount of HCl using standard Na <sub>2</sub> CO <sub>3</sub> solution	3	04-10-2023		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	11-10-2023		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	18-10-2023		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	25-10-2023		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	01-11-2023		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	15-11-2023		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	22-12-2023		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	29-12-2023		TLM4	CO5	
11.	Additional experiment/repeat	3	06-12-2023		TLM4	CO1	
12.	Additional experiment/repeat	3	13-12-2023		TLM4	CO1	
11.	Internal Exam	3	20-12-2023		TLM4	CO4	
	Total						

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

## 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:

- Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 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.
- 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.
- 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.
- 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.
- 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.
- Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Dr.Lakshmi V R Babu Syamala</b>	<b>Dr.V.Parvathi</b>	<b>Dr.V.Parvathi</b>	<b>Dr.A.Rami Reddy</b>
<b>Signature</b>				



**FRESHMAN ENGINEERING DEPARTMENT**

**COURSE HANDOUT**

**Part-A**

<b>PROGRAM</b>	: I B. Tech., I-Sem., CSE-A
<b>ACADEMIC YEAR</b>	: 2023-24
<b>COURSE NAME &amp; CODE</b>	: Linear Algebra & Calculus
<b>L-T-P STRUCTURE</b>	: 3-0-0
<b>COURSE CREDITS</b>	: 3
<b>COURSE INSTRUCTOR</b>	: G. Vijaya Lakshmi
<b>COURSE COORDINATOR</b>	: Dr. A. Rami Reddy
<b>PRE-REQUISITES</b>	: Basics of Matrices, Differentiation, Integration

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

**COURSE OUTCOMES (COs)**

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

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

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

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

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

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

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

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

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

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

**BOS APPROVED TEXT BOOKS:**

**T1** Dr. B.S. Grewal, "Higher Engineering Mathematics", 44<sup>th</sup> Edition, Khanna Publishers, New Delhi, 2017.

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

**BOS APPROVED REFERENCE BOOKS:**

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

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

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

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

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

**Part-B**

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

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	8	07-09-2023 TO 16-09-2023	08-09-2023 TO 16-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM2			
3.	Course Outcomes, Program Outcomes	1	20-09-2023		TLM2			

#### UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	21-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	23-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	26-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	27-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	27-09-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	30-09-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	03-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	04-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	07-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	09-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	10-10-2023		TLM1	CO1	T1,T2	
17.	<b>TUTORIAL 1</b>	1	11-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to Unit II	1	12-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	14-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	17-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	18-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	25-10-2023		TLM1	CO2	T1,T2	
24.	Diagonalization of a matrix	1	26-10-2023		TLM1	CO2	T1,T2	
25.	Quadratic Forms	1	28-10-2023		TLM1	CO2	T1,T2	

26.	Nature of Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	
27.	Reduction of Quadratic form to Canonical form	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Orthogonal Transformation	1	01-11-2023		TLM1	CO2	T1,T2	
29.	Orthogonal Transformation	1	02-11-2023		TLM1	CO2	T1,T2	
30.	<b>TUTORIAL 2</b>	1	04-11-2023		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

**I MID EXAMINATIONS (06-11-2023 TO 11-11-2023)**

**UNIT-III: Calculus**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
31.	Introduction to Unit III	1	13-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	14-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	15-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	16-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	18-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem	1	22-11-2023		TLM1	CO3	T1,T2	
39.	Maclaurin's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
40.	Problems and applications	1	27-11-2023		TLM1	CO3	T1,T2	
41.	<b>TUTORIAL 3</b>	1	25-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		11			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
42.	Introduction to Unit IV, Functions of several variables.	1	28-11-2023		TLM1	CO4	T1,T2	
43.	Continuity and Differentiability	1	29-11-2023		TLM1	CO4	T1,T2	
44.	Partial Derivatives	1	30-11-2023		TLM1	CO4	T1,T2	
45.	Total derivatives, Chain rule, Directional Derivative	1	02-12-2023		TLM1	CO4	T1,T2	
46.	Taylor's Series expansion	1	04-12-2023		TLM1	CO4	T1,T2	
47.	Maclaurin's series expansion	1	05-12-2023		TLM1	CO4	T1,T2	
48.	Jacobian	1	06-12-2023		TLM1	CO4	T1,T2	
49.	Functional Dependence	1	07-12-2023		TLM1	CO4	T1,T2	
50.	Maxima and Minima	1	11-12-2023		TLM1	CO4	T1,T2	

51.	Lagrange Multiplier Method	1	12-12-2023		TLM1	CO4	T1,T2	
52.	<b>TUTORIAL 4</b>	1	09-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		11			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
53.	Introduction to Unit V	1	13-12-2023		TLM1	CO5	T1,T2	
54.	Double Integrals - Cartesian coordinates	1	14-12-2023		TLM1	CO5	T1,T2	
55.	Double Integrals- Polar co ordinates	1	16-12-2023		TLM1	CO5	T1,T2	
56.	Triple Integrals - Cartesian coordinates	1	18-12-2023		TLM1	CO5	T1,T2	
57.	Triple Integrals - Spherical coordinates	1	19-12-2023		TLM1	CO5	T1,T2	
58.	Change of order of Integration	1	20-12-2023		TLM1	CO5	T1,T2	
59.	Change of order of Integration	1	21-12-2023		TLM1	CO5	T1,T2	
60.	Change of variables	1	23-12-2023		TLM1	CO5	T1,T2	
61.	Finding area by double Integral	1	26-12-2023		TLM1	CO5	T1,T2	
62.	Finding Volume by double and triple Integral	1	27-12-2023		TLM1	CO5	T1,T2	
63.	<b>TUTORIAL 5</b>	1	30-12-2023		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			No. of classes taken:			

**Content beyond the Syllabus**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
64.	Other applications of double integral	1	28-12-2023		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
<b>II MID EXAMINATIONS (01-01-2024 TO 06-01-2024)</b>								

Teaching Learning Methods			
<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/SwayamPrabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	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	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	<b>Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

<b>G.VIJAYA LAKSHMI</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>
Course Instructor	Course Coordinator	Module Coordinator	HOD



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),

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

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

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

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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### COURSE HANDOUT

#### PART-A

Name of Course Instructor: Mr. P. RAJASEKHAR

Course Name & Code : IT Workshop Lab & 23IT51

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

Credits: 1

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

A.Y.: 2023-24

PREREQUISITE : NIL

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

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

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

CO1	Identify the components of a PC and Assemble & disassemble the same. <b>(Understand)</b>
CO2	Experiment with installation of Operating System and Secure a computer from Cyber threats. <b>(Apply)</b>
CO3	Develop presentation /documentation using Office tools and LaTeX <b>(Apply)</b>
CO4	Build dialogs and documents using ChatGPT. <b>(Apply)</b>
CO5	Improve individual / teamwork skills, communication and report writing skills with ethical values

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

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

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

#### REFERENCE BOOKS:

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

<b>R5</b>	LaTeX Companion, Leslie Lamport, PHI/Pearson.
<b>R6</b>	IT Essentials PC Hardware and Software Companion Guide, David Anfinson and KenQuamme. –CISCO Press, Pearson Education, 3rd edition.
<b>R7</b>	IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan– CISCO Press, Pearson Education, 3rd edition.

## **PART-B**

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

<b>S.No.</b>	<b>Topics to be covered</b>	<b>No. of Classes Required</b>	<b>Tentative Date of Completion</b>	<b>Actual Date of Completion</b>	<b>Teaching Learning Methods</b>	<b>HOD Sign Weekly</b>	
<b>PC Hardware &amp; Software Installation</b>							
51.	Task-1	3	03-10-2023		DM5		
52.	Task-2	3	10-10-2023		DM5		
53.	Task-3	3	17-10-2023		DM5		
54.	Task-4	3	31-09-2023		DM5		
55.	Task-5	3	31-10-2023		DM5		
<b>Internet &amp; World Wide Web</b>							
56.	Task-1	3	07-11-2023		DM5		
57.	Task-2	3	07-11-2023		DM5		
58.	Task-3	3	14-11-2023		DM5		
59.	Task-4	3	14-11-2023		DM5		
<b>LaTeX and WORD</b>							
60.	Task-1	3	21-11-2023		DM5		
61.	Task-2	3	21-11-2023		DM5		
62.	Task-3	3	28-11-2023		DM5		
63.	Task-4	3	28-11-2023		DM5		
<b>EXCEL</b>							
64.	Task-1	3	05-12-2023		DM5		
65.	Task-2	3	05-12-2023		DM5		
<b>LOOKUP/VLOOKUP</b>							
66.	Task-1	3	12-12-2023		DM5		
<b>POWER POINT</b>							
67.	Task-1	3	19-12-2023		DM5		
68.	Task-2	3	26-12-2023		DM5		
69.	Task-3	3	26-12-2023		DM5		
<b>AI TOOLS – ChatGPT</b>							
70.	Task-1	3	02-01-2024		DM5		
71.	Task-2	3	09-01-2024		DM5		
72.	Task-3	3	09-01-2024		DM5		
73.	Internal exam	3	16-01-2024		DM5		

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

## PART-C

### PROGRAMME OUTCOMES (POs):

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

### PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.P.Rajasekhar	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	Dr. D. Veeraiah
Signature				



## COURSE HANDOUT

### PART-A

Name of Course Instructor	: B. Sreenivasa Reddy	
Course Name & Code	: Communicative English & 23FE50	
L-T-P Structure	: 2-0-0	Credits: 02
Program/Sem/Sec	: B. Tech, I Sem – CSE- B	
A.Y.	: 2023-24	

**PREREQUISITE: NIL**

#### **COURSE EDUCATIONAL OBJECTIVES (CEOs):**

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

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

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

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

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

### PART-B

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

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

**UNIT-I:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	20-09-23 22-09-23		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	25-09-23		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	27-09-23		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	02	29-09-23 04-10-23		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	06-10-23		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms	01	09-10-23		TLM2 TLM5	CO1	T1,T2	
7.	Affixes, Root Words	01	11-10-23		TLM2 TLM5	CO1	T1,T2	
<b>No. of classes required to complete UNIT-I: 09</b>					<b>No. of classes taken:</b>			

**UNIT-II:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8.	Nature: The Brook by Alfred Tennyson	02	13-10-23 16-10-23		TLM1 TLM 6	CO2	T1,T2	
9.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	18-10-23		TLM2 TLM5	CO2	T1,T2	
10.	Structure of Paragraph – Paragraph Writing	01	25-10-23		TLM1 TLM6 TLM5	CO2	T1,T2	
11.	Cohesive Devices-linkers	01	27-10-23		TLM2 TLM6	CO2	T1,T2	
12.	Use of Articles and zero article, Prepositions	02	30-10-23 01-11-23		TLM2 TLM6	CO2	T1,T2	
13.	Homophones, Homographs, Homonyms	01	03-11-23		TLM2 TLM5	CO2	T1,T2	
<b>No. of classes required to complete UNIT-II: 08</b>				<b>No. of classes taken:</b>				

**UNIT-III:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Biography: Elon Musk	02	13-11-23 15-11-23		TLM1 TLM 6	CO3	T1,T2	
15.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	17-11-23		TLM2 TLM5	CO3	T1,T2	
16.	Summarizing, Note-making, Paraphrasing	01	20-11-23		TLM1 TLM6 TLM5	CO3	T1,T2	
17.	Verbs- Tenses, Subject-verb agreement	02	22-11-23 24-11-23		TLM2 TLM6	CO3	T1,T2	
18.	Compound words, Collocations	01	27-11-23		TLM2 TLM5	CO3	T1,T2	
<b>No. of classes required to complete UNIT-III: 07</b>							<b>No. of classes taken:</b>	

**UNIT-IV:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Inspiration: The Toys of Peace- by Saki	02	29-11-23 01-12-23		TLM1 TLM 6	CO4	T1,T2	
20.	Study of graphic elements in text to display complicated data	01	04-12-23		TLM2 TLM5	CO4	T1,T2	
21.	Letter Writing : Official Letters, Resumes	01	06-12-23		TLM1 TLM6 TLM5	CO4	T1,T2	
22.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	08-12-23 11-12-23		TLM2 TLM6	CO4	T1,T2	
23.	Words often confused, Jargons	01	13-12-23		TLM2 TLM5	CO4	T1,T2	
<b>No. of classes required to complete UNIT-IV: 07</b>							<b>No. of classes taken:</b>	

**UNIT-V:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24.	Motivation: The Power of Interpersonal Communication	02	15-12-23 18-12-23		TLM1 TLM 6	CO5	T1,T2	
25.	Reading Comprehension	01	20-12-23		TLM2 TLM5	CO5	T1,T2	
26.	Structured Essays on specific topics	01	22-12-23		TLM1 TLM6 TLM5	CO5	T1,T2	
27.	Editing Texts – Correcting Common	01	27-12-23		TLM2 TLM6	CO5	T1,T2	

	errors						
28.	Technical Jargon	01	29-12-23		TLM2 TLM5	CO5	T1,T2
<b>No. of classes required to complete UNIT-V: 06</b>						<b>No. of classes taken:</b>	

### Content beyond the Syllabus

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Word Analogy	01	29-12-2023		TLM2 &5	
<b>No. of classes required to complete</b>				<b>No. of classes taken:</b>		

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

### PART-C

#### EVALUATION PROCESS (R23 Regulation):

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

### PART-D

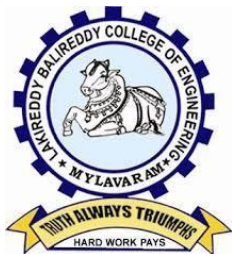
#### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.



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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>B. Sreenivasa Reddy</b>	<b>Dr. R. Padma</b>	<b>Dr.A. Ramireddy</b>	<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified  
 Institution Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada  
 L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.  
 Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF FRESHMANENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** Mr.S,Vijaya Dasaradha

**Course Name & Code** : Chemistry&23FE02

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

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

**Credits:03**

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

**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
<b>1 = Slight (Low)                      2 = Moderate (Medium)                      3 = Substantial (High)</b>												

**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. Billmeyer Jr, 3rd Edition

**PART-B****COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: STRUCTURE AND BONDING****MODELS**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Bridge Course	1	19-09-2023		TLM1	
2.		1	20-09-2023		TLM1	
3.		1	22-09-2023		TLM1	
4.		1	25-09-2023		TLM1	
5.	Fundamentals Of Quantum Mechanics	1	26-09-2023		TLM1	
6.	Schrodinger Wave Equation	1	27-09-2023		TLM1	
7.	Significance of $\Psi$ and $\Psi^2$	1	29-09-2023		TLM1	
8.	Particle In one dimensional box	1	03-10-2023		TLM2	
9.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules	1	04-10-2023		TLM1	
10.	Energy level diagrams of $O_2$ and CO	1	06-10-2023		TLM1	
11.	$\pi$ -molecular orbitals of butadiene	1	09-10-2023		TLM2	
12.	$\pi$ -molecular orbitals of benzene	1	10-10-2023		TLM1	
13.	Calculation of Bond order	1	11-10-2023		TLM1	
14.	Practice of Molecular orbital diagrams	1	13-10-2023		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	16-10-2023		TLM1	
2.	Semiconductors - Basic concept&applications	1	17-10-2023		TLM1	
3.	Super conductors - Introduction	1	18-10-2023		TLM2	
4.	Super conductors - Basic concept&applications	1	25-10-2023		TLM1	
5.	Supercapacitors - Introduction	1	27-10-2023		TLM1	
6.	Supercapacitors - Basic concept-classification&applicatio ns	1	30-10-2023		TLM1	
7.	Nano materials - Introduction	1	31-10-2023		TLM2	
8.	Nano materials - classification	1	01-11-2023		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	03-11-2023		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	1	03-11-2023		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.	Electrochemical cell, Nernst equation	1	13-11-2023		TLM1	
2.	Cell potential calculations and numerical problems	1	14-11-2023		TLM1	
3.	Potentiometry-potentiometric titrations (redox titrations)	1	15-11-2023		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	17-11-2023		TLM2	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	20-11-2023		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells –	1	21-11-2023&		TLM1	

	lithium-ion batteries-working of the batteries including cell reactions		22-11-23		
7.	Fuel cells, hydrogen-oxygen fuel cell- working of the cells	1	24-11-2023		TLM2
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	27-11-2023		TLM1
No. of classes required to complete UNIT-III: 09				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	28-11-2023		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	29-11-2023		TLM1	
3.	Mechanisms of polymer formation	1	01-12-2023		TLM2	
4.	Plastics -Thermo and Thermosetting plastics	1	04-12-2023		TLM1	
5.	Preparation, properties and applications of - PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	05-12-2023 & 06-12-2023		TLM1	
6.	Elastomers-Buna-S, Buna-N-preparation, properties and applications	1	08-12-2023 & 11-12-2023		TLM2	
7.	Conducting polymers - polyacetylene, polyaniline, - mechanism of conduction and applications	1	12-12-2023		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	13-12-2023		TLM1	
No. of classes required to complete UNIT-IV: 10				No. of classes taken:		

#### UNIT-V: INSTRUMENTAL METHODS AND APPLICATIONS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Electromagnetic spectrum	1	15-12-2023		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	18-12-2023		TLM1	

3.	UV-Visible Spectroscopy	1	19-12-2023		TLM1
4.	electronic transition, Instrumentation	1	20-12-2023		TLM1
5.	IR spectroscopies, fundamental modes	1	22-12-2023		TLM2
6.	selection rules, Instrumentation	1	26-12-2023		TLM1
7.	Chromatography-Basic Principle	1	27-12-2023		TLM2
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	29-12-2023		TLM1
No. of classes required to complete UNIT-V: 08				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	29-12-2023		TLM1	

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

### PART-C

#### EVALUATION PROCESS (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
<b>Total Marks = CIE + SEE</b>	<b>100</b>

## PART-D

### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.S.Vijaya Dasaradha	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				



**FRESHMAN ENGINEERING DEPARTMENT**

**COURSE HANDOUT**

**Part-A**

<b>PROGRAM</b>	: I B. Tech., I-Sem., CSE B
<b>ACADEMIC YEAR</b>	: 2023-24
<b>COURSE NAME &amp; CODE</b>	: Linear Algebra & Calculus
<b>L-T-P STRUCTURE</b>	: 3-0-0
<b>COURSE CREDITS</b>	: 3
<b>COURSE INSTRUCTOR</b>	: Dr. A. Rami Reddy
<b>COURSE COORDINATOR</b>	: Dr. A. Rami Reddy
<b>PRE-REQUISITES</b>	: Basics of Matrices, Differentiation, Integration

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

**COURSE OUTCOMES (COs)**

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

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

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

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

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

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

**BOS APPROVED TEXT BOOKS:**

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

**BOS APPROVED REFERENCE BOOKS:**

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



**Part-B**

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

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	08-09-2023 TO 15-09-2023	08-09-2023 TO 15-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM1			
3.	Course Outcomes, Program Outcomes	1	21-09-2023		TLM2			

**UNIT-I: Matrices**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	22-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	23-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	26-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	29-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	30-09-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	03-10-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	06-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	07-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	09-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	10-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	12-10-2023		TLM1	CO1	T1,T2	
17.	<b>TUTORIAL 1</b>	1	13-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to Unit II	1	14-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	17-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	19-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	26-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	27-10-2023		TLM1	CO2	T1,T2	

24.	Diagonalization of a matrix	1	28-10-2023		TLM1	CO2	T1,T2	
25.	Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	
26.	Nature of Quadratic Forms	1	31-10-2023		TLM1	CO2	T1,T2	
27.	Reduction of Quadratic form to Canonical form	1	2-11-2023		TLM1	CO2	T1,T2	
28.	Orthogonal Transformation	1	03-11-2023		TLM1	CO2	T1,T2	
29.	<b>TUTORIAL 2</b>	1	04-11-2023		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		12			No. of classes taken:			

**I MID EXAMINATIONS (06-11-2023 TO 11-11-2023)**

**UNIT-III: Calculus**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
30.	Introduction to Unit III	1	13-11-2023		TLM1	CO3	T1,T2	
31.	Mean Value theorem	1	14-11-2023		TLM1	CO3	T1,T2	
32.	Rolle's theorem	1	16-11-2023		TLM1	CO3	T1,T2	
33.	Lagrange's mean value theorem	1	17-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	18-11-2023		TLM1	CO3	T1,T2	
35.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
37.	Taylor's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
38.	Maclaurin's theorem	1	24-11-2023		TLM1	CO3	T1,T2	
39.	Problems and applications	1	25-11-2023		TLM1	CO3	T1,T2	
40.	<b>TUTORIAL 3</b>	1	27-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		11			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
41.	Introduction to Unit IV, Functions of several variables.	1	28-11-2023		TLM1	CO4	T1,T2	
42.	Continuity and Differentiability	1	30-11-2023		TLM1	CO4	T1,T2	
43.	Partial Derivatives	1	01-12-2023		TLM1	CO4	T1,T2	
44.	Total derivatives, Chain rule, Directional Derivative	1	02-12-2023		TLM1	CO4	T1,T2	
45.	Taylor's Series expansion	1	04-12-2023		TLM1	CO4	T1,T2	
46.	Maclaurin's series expansion	1	05-12-2023		TLM1	CO4	T1,T2	
47.	Jacobian	1	07-12-2023		TLM1	CO4	T1,T2	

48.	Functional Dependence	1	08-12-2023		TLM1	CO4	T1,T2	
49.	Maxima and Minima	1	09-12-2023		TLM1	CO4	T1,T2	
50.	Lagrange Multiplier Method	1	11-12-2023		TLM1	CO4	T1,T2	
51.	<b>TUTORIAL 4</b>	1	12-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		11			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
52.	Introduction to Unit-V	1	14-12-2023		TLM1	CO5	T1,T2	
53.	Double Integrals - Cartesian coordinates	1	15-12-2023		TLM1	CO5	T1,T2	
54.	Double Integrals- Polar co ordinates	1	16-12-2023		TLM1	CO5	T1,T2	
55.	Triple Integrals - Cartesian coordinates	1	18-12-2023		TLM1	CO5	T1,T2	
56.	Triple Integrals - Spherical coordinates	1	19-12-2023		TLM1	CO5	T1,T2	
57.	Change of order of Integration	1	21-12-2023		TLM1	CO5	T1,T2	
58.	Change of order of Integration	1	22-12-2023		TLM1	CO5	T1,T2	
59.	Change of variables	1	23-12-2023		TLM1	CO5	T1,T2	
60.	Finding area by double Integral	1	26-12-2023		TLM1	CO5	T1,T2	
61.	Finding Volume by double and triple Integral	1	28-12-2023		TLM1	CO5	T1,T2	
62.	<b>TUTORIAL 5</b>	1	29-12-2023		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			No. of classes taken:			

**Content beyond the Syllabus**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
63.	Other applications of double integral	1	30-12-2023		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			

**II MID EXAMINATIONS (01-01-2024 TO 06-01-2024)**

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

**PART-C**

**EVALUATION PROCESS (R20 Regulation):**

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

<b>DR. K.R. KAVITHA</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>
Course Instructor	Course Coordinator	Module Coordinator	HOD



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF CIVIL ENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** EESHWAR RAM.J

**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

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

**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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
<b>CO1</b>	1	-	-	-	2	-	2	-	-	-	-	-	2	-	2	
<b>CO2</b>	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	
<b>CO3</b>	1	-	-	-	2	-	2	-	-	-	-	-	-	-	2	
<b>CO4</b>	1	-	-	-	1	-	-	-	-	-	-	3	-	-	-	
<b>CO5</b>	-	-	-	-	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. 38<sup>th</sup> Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10<sup>th</sup> 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	19/09/2023		<b>TLM2</b>	
2.	<b>Basics of Civil Engineering:</b> Role of Civil Engineers in Society	1	20/09/2023		<b>TLM2</b>	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	21/09/2023		<b>TLM2</b>	
4.	Geo-technical Engineering- Transportation Engineering	1	23/09/2023		<b>TLM2</b>	
5.	Hydraulics and Water Resources Engineering	1	25/09/2023		<b>TLM2</b>	
6.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	26/09/2023		<b>TLM1</b>	
7.	Construction Materials-Cement -types	1	27/09/2023		<b>TLM4</b>	
8.	Aggregate types- Bricks- classifications- Steel-properties - types Cement concrete- Applications	1	30/09/2023		<b>TLM4</b>	
9.	Introduction to Prefabricated construction Techniques Over view- Prefabricated construction	1	03/10/2023		<b>TLM4</b>	
<b>No. of classes required to complete UNIT-I: 12</b>				<b>No. of classes taken:</b>		

**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	1	05/10/2023		<b>TLM2</b>	
11.	Horizontal Measurements	1	07/10/2023		<b>TLM2</b>	
12.	Angular Measurements	1	09/10/2023		<b>TLM2</b>	
13.	Compass Surveying overview-	1	10/10/2023		<b>TLM2</b>	
14.	Introduction to Bearings	1	11/10/2023		<b>TLM2</b>	
15.	Levelling introduction-	1	12/10/2023		<b>TLM2</b>	

16.	Levelling instruments used for levelling	1	14/10/2023		<b>TLM3</b>	
17.	Simple problems on levelling and bearings- problems on levelling	1	16/10/2023		<b>TLM2</b>	
18.	Simple problems on and bearings	1	17/10/2023		<b>TLM3</b>	
19.	Problems -practice	1	18/10/2023		<b>TLM3</b>	
20.	Contour mapping	1	19/10/2023		<b>TLM2</b>	
<b>No. of classes required to complete UNIT-II:14</b>				<b>No. of classes taken:</b>		

### 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.	<b>Transportation Engineering</b> Importance of Transportation in Nation's economic development	1	25/10/2023		<b>TLM2</b>	
22.	Types of Highway Pavements	1	26/10/2023		<b>TLM2</b>	
23.	Flexible Pavements - Basics of Harbour, Tunnel,- Rigid Pavements Simple Differences	1	28/10/2023		<b>TLM2</b>	
24.	Basics of Airport, and Railway Engineering	1	30/10/2023		<b>TLM2</b>	
25.	<b>Water Resources and Environmental Engineering</b> Introduction, Sources of water-	1	31/10/2023		<b>TLM2</b>	
26.	Quality of water- Specifications	1	01/11/2023		<b>TLM2</b>	
27.	Introduction to Hydrology	1	02/11/2023		<b>TLM2</b>	
28.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	03/11/2023		<b>TLM2</b>	
29.	(Simple introduction to Dams and Reservoirs).	1	03/11/2023		<b>TLM2</b>	
<b>No. of classes required to complete UNIT-III:12</b>				<b>No. of classes taken:</b>		

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

### PART-C

#### EVALUATION PROCESS (R17 Regulation):

Evaluation Task	Marks
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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):

<b>PO 1</b>	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	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.
<b>PO 3</b>	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.
<b>PO 4</b>	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.
<b>PO 5</b>	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
<b>PO 6</b>	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.
<b>PO 7</b>	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.
<b>PO 8</b>	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	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.
<b>PO 11</b>	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.
<b>PO 12</b>	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):**

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>				
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

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

### COURSE HANDOUT

#### PART-A

Name of Course Instructor : Mr. A. Sudhakar  
Course Name & Code : Introduction to Programming (23CS01)  
L-T-P Structure : 3-0-0 Credits: 3  
Program/Sem/Sec : B.Tech./I/B A.Y.: 2023-24

**PRE-REQUISITE: NIL**

#### **COURSE EDUCATIONAL OBJECTIVE (CEO):**

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

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

<b>CO1:</b>	Understand basics of computers, the concept of algorithm and algorithmic thinking.	Understand – Level 2
<b>CO2:</b>	Analyze a problem and develop an algorithm to solve it.	Analyze – Level 4
<b>CO3:</b>	Implement various algorithms using the C programming language.	Apply – Level 3
<b>CO4:</b>	Understand more advanced features of C language.	Understand – Level 2
<b>CO5:</b>	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
<b>CO1</b>	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO2</b>	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO3</b>	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO4</b>	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO5</b>	3	2	2	-	-	-	-	-	-	-	-	-	2	-	-
	1 – Low				2 – Medium				3 – High						

#### **TEXTBOOKS:**

- T1:** The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice Hall, 1988 edition, 2015
- T2:** Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill Education, 1996

**REFERENCE BOOKS:**

- R1:** Computing fundamentals and C Programming, Balagurusamy, E., McGraw-Hill Education, 2008.
- R2:** Programming in C, Reema Thareja, Oxford, 2016, 2nd edition
- R3:** C Programming, A Problem Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE, 3rd edition

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

#### UNIT – I: Introduction to Programming and Problem Solving

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Discussion of CEO's and CO's	1	20-09-2023		TLM2	
2.	History of Computers	1	22-09-2023		TLM2	
3.	Basic organization of a computer: ALU, input-output units.	2	25-09-2023 26-09-2023		TLM2	
4.	Memory, program counter	1	26-09-2023		TLM2	
5.	Introduction to Programming Languages,	1	27-09-2023		TLM2	
6.	Basics of a Computer Program- Algorithms	1	29-09-2023		TLM2	
7.	Flowcharts (Using Dia Tool), pseudo code.	1	03-10-2023		TLM2	
8.	Introduction to Compilation and Execution	1	03-10-2023		TLM2	
9.	Primitive Data Types	2	04-10-2023 06-10-2023		TLM2	
10.	Variables, and Constants, Basic Input and Output operations	1	09-10-2023		TLM2	
11.	Type Conversion, and Casting	1	10-10-2023		TLM2	
12.	<b>Problem solving techniques:</b> Algorithmic approach, characteristics of algorithm	1	10-10-2023		TLM2	
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	11-10-2023		TLM2	
14.	Time and space complexities of algorithms.	1	13-10-2023		TLM2	
<b>No. of classes required to complete UNIT – I: 15</b>				<b>No. of classes taken:</b>		

#### UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs	1	16-10-2023		TLM2	
16.	Conditional Statements					
	if, if-else	1	17-10-2023		TLM2	
17.	switch	1	17-10-2023		TLM2	
18.	Example programs on Decision Making and Branching	1	18-10-2023		TLM2	
19.	Loops: while , Example programs	2	25-10-2023 27-10-2023		TLM2	
20.	do-while, for, Example programs	2	30-10-2023 31-10-2023		TLM2	
21.	on Loops	1	31-10-2023		TLM2	
22.	Break and Continue	1	01-11-2023		TLM2	
23.	Example programs on Loops	1	03-11-2023		TLM2	
<b>No. of classes required to complete UNIT – II: 11</b>				<b>No. of classes taken:</b>		

### UNIT – III: Arrays and Strings

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
24.	Arrays Introduction, Declaration	1	13-11-2023		TLM2	
25.	Array indexing, Accessing elements	1	14-11-2023		TLM2	
26.	memory model	1	14-11-2023		TLM2	
27.	programs with array of integers	1	15-11-2023		TLM2	
28.	Introduction to two dimensional arrays	1	17-11-2023		TLM2	
29.	2D Array indexing, Accessing elements	1	20-11-2023		TLM2	
30.	programs with 2D arrays	1	21-11-2023		TLM2	
31.	Introduction to Strings	1	21-11-2023		TLM2	
32.	Reading and Writing Operations on Strings	1	22-11-2023		TLM2	
33.	String Handling Functions	1	24-11-2023		TLM2	
34.	Example Programs using Strings	1	27-11-2023		TLM2	
<b>No. of classes required to complete UNIT – III: 11</b>				<b>No. of classes taken:</b>		

### 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
35.	Introduction to Pointers	1	28-11-2023		TLM2	
36.	dereferencing and address operators	1	28-11-2023		TLM2	
37.	pointer and address arithmetic	1	29-11-2023		TLM2	
38.	array manipulation using pointers	2	01-12-2023		TLM2	
			04-12-2023			
39.	User-defined data types	1	05-12-2023		TLM2	
40.	Structures , Definition and Initialization	2	05-12-2023		TLM2	
			06-12-2023			
41.	Example programs	1	08-12-2023		TLM2	
42.	Unions	2	11-12-2023		TLM2	
			12-12-2023			
43.	Example programs	1	12-12-2023		TLM2	
				<b>No. of classes taken:</b>		

### UNIT – V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
44.	Introduction to Functions	1	13-12-2023		TLM2	
45.	Function Declaration and Definition	1	15-12-2023		TLM2	
46.	Function call Return Types	1	18-12-2023		TLM2	
47.	Arguments	1	19-12-2023		TLM2	
48.	modifying parameters inside functions using pointers	2	19-12-2023		TLM2	
			20-12-2023			
49.	arrays as parameters	1	22-12-2023		TLM2	
50.	Scope and Lifetime of Variables	1	26-12-2023		TLM2	
51.	Introduction to Files	1	26-12-2023		TLM2	

52.	Basics of File Handling	1	27-12-2023		TLM2	
53.	Operations on Files	1	29-12-2023		TLM2	
<b>No. of classes required to complete UNIT - V: 11</b>				<b>No. of classes taken:</b>		

### Content Beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
54.	Introduction to Data Structures	1	30-12-2023		TLM2	

### Teaching Learning Methods

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

## PART-C

### EVALUATION PROCESS (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 $((M1+Q1+A1), (M2+Q2+A2))$	<b>M=30</b>
<b>Cumulative Internal Examination (CIE): M</b>	<b>30</b>
<b>Semester End Examination (SEE)</b>	<b>70</b>
<b>Total Marks = CIE + SEE</b>	<b>100</b>

## PART-D

### PROGRAMME OUTCOMES (POs):

P01	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
P03	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
P04	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
P05	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
P06	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
P07	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
P08	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
P09	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
P011	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
P012	<b>Life-long learning:</b> 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):

PS01	To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.
PS02	To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.
PS03	To provide a concrete foundation and enrich their abilities for Employment and Higher studies in Artificial Intelligence and Data science with ethical values.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. A. Sudhakar	Dr. B. Srinivasa Rao	Dr. K. Naga Prasanthi	Dr. D. Veeraiah
Signature				





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

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

**Suggested Software:**

1.                    Walden Infotech
2.                    Young India Films

**Reference Books:**

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

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

**UNIT-I:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	23-09-2023		TLM4	
2.	Self Introduction & Introducing others	03	30-09-2023		TLM4	
3.	Vowels & Consonants	03	07-10-2023		TLM1, TLM5	
4.	Neutralization / Accent rules	03	28-10-2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	04-11-2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	18-11-2023		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	25-11-2023		TLM1, TLM5	
8.	Group Discussion	03	02-12-2023		TLM4, TLM6	

9.	Debate	03	16-12-2023		TLM4, TLM6
10.	PPT & Poster Presentation	03	23-12-2023		TLM2, TLM4
11.	Mock Interviews / Lab Internal Exam	03	30-12-2023		TLM1, TLM6
<b>No. of classes required to complete Syllabus: 33</b>				<b>No. of classes taken:</b>	

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

### Laboratory Examination:

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

### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
<b>PO 5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
<b>PO 6</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
<b>PO 7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering

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

	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>B. Sreenivasa Reddy</b>	<b>Dr. R. Padma</b>	<b>Dr. A. Ramireddy</b>	<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF FRESHMANENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** Mr.S.Vijaya Dasaradha

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

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

**Program/Sem/Sec** : B.Tech/Isem/CSE-B

**Credits:1.5**

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

**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 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:** 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	-	-	-	-	-	-	-
<b>1 = Slight (Low)</b>			<b>2 = Moderate (Medium)</b>				<b>3 = Substantial (High)</b>					

**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-B

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to Engineering chemistry lab	3	22-09-2023		TLM1		
2.	Preparation of a Bakelite	3	29-09-2023		TLM4	C01	
3.	Determination of amount of HCl using standard Na <sub>2</sub> CO <sub>3</sub> solution	3	06-10-2023		TLM4	C01	
4.	Determination of Strength of an acid in Pb-Acid battery	3	13-10-2023		TLM4	C01	
5.	Estimation of Ferrous Iron by Dichrometry	3	27-10-2023		TLM4	C01	
6.	Conductometric titration of strong acid vs. strong base	3	03-11-2023		TLM4	C01	
7.	Conductometric titration of weak acid vs. strong base	3	17-11-2023		TLM4	C01	
8.	Potentiometry - determination of redox potentials and emfs	3	24-11-2023		TLM4	C01	
9.	Preparation of nanomaterials by precipitation method	3	01-12-2023		TLM4	C02	
10.	Verify Lambert-Beer's law	3	08-12-2023		TLM4	C04	
11.	Wavelength measurement of sample through UV-Visible Spectroscopy	3	15-12-2023		TLM4	C04	
12.	Identification of simple organic compounds by IR	3	22-12-2023		TLM4	C04	
13.	Internal Exam	3	29-12-2023		TLM4		
	Total						

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

## Part - C

### EVALUATION PROCESS:

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 engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data,

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Mr.S.Vijaya Dasaradha</b>	<b>Dr.V.Parvathi</b>	<b>Dr.V.Parvathi</b>	<b>Dr.A.Rami Reddy</b>
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

[hodcse@lbrce.ac.in](mailto:hodcse@lbrce.ac.in), [cseoffice@lbrce.ac.in](mailto:cseoffice@lbrce.ac.in), Phone: 08659-222 933, Fax: 08659-222931

## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### COURSEHANDOUT

#### PART-A

Name of Course/Instructor	: Mr. A. Sudhakar	
Course Name & Code	: Computer Programming Lab (23CS51)	
L-T-P Structure	: 0-0-3	Credits: 1.5
Program/Sem/Sec	: B.Tech.–CSE/I Sem-B	A.Y. :2023-24

**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:

<b>CO1</b> :	Read, understand, and trace the execution of programs written in C language. (Understand)	Apply–Level2
<b>CO2</b> :	Select the right control structure for solving the problem. (Apply)	Apply–Level3
<b>CO3</b> :	Develop C programs which utilize memory efficiently using programming constructs like pointers. (Apply)	Apply–Level3
<b>CO4</b> :	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (Apply).	Apply–Level3
<b>CO5:</b>	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
<b>CO1</b>	3	2	-	-	3	-	-	-	-	-	-	-	2	-	-
<b>CO2</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>CO3</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>CO4</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>CO5</b>	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-
1 -Low			2 -Medium						3- High						



**PART-B**

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

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		20-09-2023	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		27-09-2023	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		04-10-2023	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		11-10-2023	DM5
5.	Week5: Exercise Programs on Branching and logical expressions	03		18-10-2023	DM5
6.	Week6: Exercise Programs on Loops, while and for loops	03		25-10-2023	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		01-11-2023	DM5
8.	Week8: Exercise Programs on 2 D arrays, sorting and Strings.	03		15-11-2023	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		22-11-2023	DM5
10.	Week10: Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03		29-11-2023	DM5
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03		06-12-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		13-12-2023	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		20-12-2023	DM5
14.	Week 14: Exercise Programs on File handling.	03		27-12-2023	DM5

15.	Lab Internal	03		03-01-2024	DM5
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DeliveryMethods			
DM1	ChalkandTalk	DM4	Assignment/Test/Quiz
DM2	ICTTools	DM5	Laboratory/FieldVisit
DM3	Tutorial	DM6	Web-basedLearning

### PART-C

PO1	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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<b>PO11</b>	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
<b>PO12</b>	<b>Life-long learning:</b> Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

**PROGRAMMESPECIFICOUTCOMES(PSOs):**

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Mr. A. Sudhakar</b>	<b>Dr. B. Srinivas Rao</b>	<b>Dr. K. Naga Prasanthi</b>	<b>Dr. D. Veeraiah</b>
<b>Signature</b>				



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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

## COURSE HANDOUT

### PART-A

**Name of Course Instructor:** K Eswaree Devi

**Course Name & Code** : IT Workshop Lab & 23IT51

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

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

**Credits:** 1

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

**PREREQUISITE** : NIL

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

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

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

<b>CO1</b>	Identify the components of a PC and Assemble & disassemble the same. <b>(Understand)</b>
<b>CO2</b>	Experiment with installation of Operating System and Secure a computer from Cyber threats. <b>(Apply)</b>
<b>CO3</b>	Develop presentation /documentation using Office tools and LaTeX <b>(Apply)</b>
<b>CO4</b>	Build dialogs and documents using ChatGPT. <b>(Apply)</b>
<b>CO5</b>	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
C01	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C02	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C03	3	-	-	-	2	-	-	-	-	-	-	-	2	-	-
C04	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C05	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
	1 - Low			2 -Medium				3 -High							

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

**REFERENCE BOOKS:**

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

**PART-B****COURSE DELIVERY PLAN (LESSON PLAN):**

<b>S.No.</b>	<b>Topics to be covered</b>	<b>No. of Classes Required</b>	<b>Tentative Date of Completion</b>	<b>Actual Date of Completion</b>	<b>Teaching Learning Methods</b>	<b>HOD Sign Weekly</b>	
<b>PC Hardware &amp; Software Installation</b>							
1.	Task-1	3	05-10-2023		DM5		
2.	Task-2	3	12-10-2023		DM5		
3.	Task-3	3	19-10-2023		DM5		
4.	Task-4	3	26-09-2023		DM5		
5.	Task-5	3	02-11-2023		DM5		
<b>Internet &amp; World Wide Web</b>							
6.	Task-1	3	09-11-2023		DM5		
7.	Task-2	3	09-11-2023		DM5		
8.	Task-3	3	16-11-2023		DM5		
9.	Task-4	3	16-11-2023		DM5		
<b>LaTex and WORD</b>							
10.	Task-1	3	23-11-2023		DM5		
11.	Task-2	3	23-11-2023		DM5		
12.	Task-3	3	30-11-2023		DM5		
13.	Task-4	3	30-11-2023		DM5		
<b>EXCEL</b>							
14.	Task-1	3	07-12-2023		DM5		
15.	Task-2	3	07-12-2023		DM5		

LOOKUP/VLOOKUP					
16.	Task-1	3	14-12-2023		DM5
POWER POINT					
17.	Task-1	3	21-12-2023		DM5
18.	Task-2	3	28-12-2023		DM5
19.	Task-3	3	28-12-2023		DM5
AI TOOLS – ChatGPT					
20.	Task-1	3	04-01-2024		DM5
21.	Task-2	3	11-01-2024		DM5
22.	Task-3	3	11-01-2024		DM5
23.	Internal exam	3	18-01-2024		DM5

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

### PART-C

#### PROGRAMME OUTCOMES (POs):

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

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

#### PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	Mrs. K Eswaree Devi	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	Dr. D. Veeraiah
<b>Signature</b>				



**FRESHMAN ENGINEERING DEPARTMENT**

**COURSE HANDOUT**

**Part-A**

<b>PROGRAM</b>	: I B. Tech., I-Sem., CSE C
<b>ACADEMIC YEAR</b>	: 2023-24
<b>COURSE NAME &amp; CODE</b>	: Linear Algebra & Calculus
<b>L-T-P STRUCTURE</b>	: 3-0-0
<b>COURSE CREDITS</b>	: 3
<b>COURSE INSTRUCTOR</b>	: Dr. D. VIJAY KUMAR
<b>COURSE COORDINATOR</b>	: Dr. A. Rami Reddy
<b>PRE-REQUISITES</b>	: Basics of Matrices, Differentiation, Integration

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

**COURSE OUTCOMES (COs)**

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

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

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

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

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

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

**BOS APPROVED TEXT BOOKS:**

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

**BOS APPROVED REFERENCE BOOKS:**

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



**Part-B**

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

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	08-09-2023 TO 15-09-2023	08-09-2023 TO 15-09-2023	TLM1			
2.	Introduction to the course	1	18-09-2023		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-09-2023		TLM2			

**UNIT-I: Matrices**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	21-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	23-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	25-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	27-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-09-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	30-09-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	03-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	04-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	06-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	07-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	09-10-2023		TLM1	CO1	T1,T2	
17.	<b>TUTORIAL 1</b>	1	11-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14				No. of classes taken:		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
18.	Introduction to Unit II	1	12-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	13-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	14-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	16-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	18-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	19-10-2023		TLM1	CO2	T1,T2	

24.	Diagonalization of a matrix	1	25-10-2023		TLM1	CO2	T1,T2
25.	Quadratic Forms	1	26-10-2023		TLM1	CO2	T1,T2
26.	Nature of Quadratic Forms	1	27-10-2023		TLM1	CO2	T1,T2
27.	Reduction of Quadratic form to Canonical form	1	30-10-2023		TLM1	CO2	T1,T2
28.	Orthogonal Transformation	1	01-11-2023		TLM1	CO2	T1,T2
29.	Orthogonal Transformation	1	02-11-2023 03 -11 - 23		TLM1	CO2	T1,T2
30.	<b>TUTORIAL 2</b>	1	04-11-2023		TLM3	CO2	T1,T2
No. of classes required to complete UNIT-II		13			No. of classes taken:		

**I MID EXAMINATIONS (06-11-2023 TO 11-11-2023)**

**UNIT-III: Calculus**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
31.	Introduction to Unit III	1	13-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	15-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	16-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	17-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	18-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	22-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
39.	Maclaurin's theorem	1	24-11-2023		TLM1	CO3	T1,T2	
40.	Problems and applications	1	25-11-2023		TLM1	CO3	T1,T2	
41.	<b>TUTORIAL 3</b>	1	29-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		11			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
42.	Introduction to Unit IV, Functions of several variables.	1	30-11-2023		TLM1	CO4	T1,T2	
43.	Continuity and Differentiability	1	01-12-2023		TLM1	CO4	T1,T2	
44.	Partial Derivatives	1	02-12-2023		TLM1	CO4	T1,T2	
45.	Total derivatives, Chain rule, Directional Derivative	1	04-12-2023		TLM1	CO4	T1,T2	
46.	Taylor's Series expansion	1	06-12-2023		TLM1	CO4	T1,T2	

47.	Maclaurin's series expansion	1	07-12-2023		TLM1	CO4	T1,T2	
48.	Jacobian	1	08-12-2023		TLM1	CO4	T1,T2	
49.	Functional Dependence	1	09-12-2023		TLM1	CO4	T1,T2	
50.	Maxima and Minima	1	11-12-2023		TLM1	CO4	T1,T2	
51.	Lagrange Multiplier Method	1	13-12-2023		TLM1	CO4	T1,T2	
52.	<b>TUTORIAL 4</b>	1	14-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		11			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
53.	Introduction to Unit-V	1	15-12-2023		TLM1	CO5	T1,T2	
54.	Double Integrals - Cartesian coordinates	1	16-12-2023		TLM1	CO5	T1,T2	
55.	Double Integrals- Polar co ordinates	1	18-12-2023		TLM1	CO5	T1,T2	
56.	Triple Integrals - Cartesian coordinates	1	20-12-2023		TLM1	CO5	T1,T2	
57.	Triple Integrals - Spherical coordinates	1	21-12-2023		TLM1	CO5	T1,T2	
58.	Change of order of Integration	1	22-12-2023		TLM1	CO5	T1,T2	
59.	Change of order of Integration	1	23-12-2023		TLM1	CO5	T1,T2	
60.	Change of variables	1	27-12-2023		TLM1	CO5	T1,T2	
61.	Finding area by double Integral	1	28-12-2023		TLM1	CO5	T1,T2	
62.	Finding Volume by double and triple Integral	1	29-12-2023		TLM1	CO5	T1,T2	
63.	<b>TUTORIAL 5</b>	1	30-12-2023		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			No. of classes taken:			

#### Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
64.	Other applications of double integral	1	28-12-2023		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
<b>II MID EXAMINATIONS (01-01-2024 TO 06-01-2024)</b>								

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

**PART-C**

**EVALUATION PROCESS (R20 Regulation):**

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

**PART-D**

**PROGRAMME OUTCOMES (POs):**

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

<b>Dr. D. VIJAY KUMAR</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>
Course Instructor	Course Coordinator	Module Coordinator	HOD



## **FRESHMAN ENGINEERING DEPARTMENT**

### **COURSE HANDOUT**

#### **PART-A**

**Name of Course Instructor: D.Chaithanya**

**Course Name & Code : Communicative English & 23FE50**

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

**Credits: 02**

**Program/Sem/Sec : B. Tech, I Sem – cse-c**

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

**PREREQUISITE: NIL**

**COURSE EDUCATIONAL OBJECTIVES (CEOs):**

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

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

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

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

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

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

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

### UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	<b>Human Values: Gift of Magi</b>	02	19/9/2023 22/9/2023		TLM1 TLM 6	CO1	T1,T2	
2.	<b>Skimming to get main idea; Scanning for specific pieces of information</b>	01	23/9/2023		TLM2 TLM5	CO1	T1,T2	
3.	<b>Mechanics of Writing: Capitalization, Spelling, Punctuation &amp; Parts of Sentences</b>	01	26/9/2023		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	<b>Parts of speech</b>	02	29/9/2023 30/9/2023		TLM2 TLM6	CO1	T1,T2	
5.	<b>Basic Sentence Structures, Forming questions</b>	01	3/10/2023		TLM2 TLM6	CO1	T1,T2	
6.	<b>Synonyms, Antonyms, Affixes, Root Words</b>	01	6/10/2023		TLM2 TLM5	CO1	T1,T2	
<b>No. of classes required to complete UNIT-I: 08</b>						<b>No. of classes taken:</b>		

### UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COS	Text Book followed	HOD Sign Weekly
7.	<b>Nature: The Brook by Alfred Tennyson</b>	02	7/10/2023 10/10/2023		TLM1 TLM 6	CO2	T1,T2	
8.	<b>Identifying Sequence of ideas, Linking ideas into a Paragraph</b>	01	13/10/2023		TLM2 TLM5	CO2	T1,T2	
9.	<b>Structure of Paragraph – Paragraph Writing</b>	01	17/10/2023		TLM1 TLM6 TLM5	CO2	T1,T2	
10.	<b>Cohesive Devices-linkers</b>	01	27/10/2023		TLM2 TLM6	CO2	T1,T2	
11.	<b>Use of Articles and zero article, Prepositions</b>	02	28/10/2023 31/10/2023		TLM2 TLM6	CO2	T1,T2	
12.	<b>Homophones,</b>	01	3/11/20233		TLM2 TLM5	CO2	T1,T2	

	<b>Homographs, Homonyms</b>							
<b>No. of classes required to complete UNIT-II: 08</b>						<b>No. of classes taken:</b>		

**UNIT-III:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
13.	<b>Biography: Elon Musk</b>	02	4/11/2023 14/11/2023		TLM1 TLM 6	CO3	T1,T2	
14.	<b>Reading and making basic inferences - recognizing and interpreting the text clues for comprehension</b>	01	17/11/2023		TLM2 TLM5	CO3	T1,T2	
15.	<b>Summarizing, Note-making, Paraphrasing</b>	02	18/11/2023 21/11/2023		TLM1 TLM6 TLM5	CO3	T1,T2	
16.	<b>Verbs- Tenses, Subject-verb agreement</b>	03	24/11/2023 25/11/2023 28/11/2023		TLM2 TLM6	CO3	T1,T2	
17.	<b>Compound words, Collocations</b>	01	1/12/2023		TLM2 TLM5	CO3	T1,T2	
<b>No. of classes required to complete UNIT-III: 09</b>						<b>No. of classes taken:</b>		

**UNIT-IV:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	<b>Inspiration: The Toys of Peace- by Saki</b>	02	2/12/2023 5/12/2023		TLM1 TLM 6	CO4	T1,T2	
19.	<b>Study of graphic elements in text to display complicated data</b>	01	8/12/2023		TLM2 TLM5	CO4	T1,T2	
20.	<b>Letter Writing : Official Letters, Resumes</b>	02	12/12/2023 15/12/2023		TLM1 TLM6 TLM5	CO4	T1,T2	
21.	<b>Reporting verbs, Direct &amp; Indirect Speech, Active &amp; Passive voice</b>	02	16/12/2023 19/12/2023		TLM2 TLM6	CO4	T1,T2	
22.	<b>Words often confused, Jargons</b>	01	22/12/2023		TLM2 TLM5	CO4	T1,T2	
<b>No. of classes required to complete UNIT-IV: 08</b>						<b>No. of classes taken:</b>		

**UNIT-V:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
23.	<b>Motivation: The Power of Interpersonal Communication</b>	02	23/12/2023 26/12/2023		TLM1 TLM 6	CO5	T1,T2	
24.	<b>Reading Comprehension, Structured Essays on</b>	01	29/12/2023		TLM2 TLM5	CO5	T1,T2	

	<b>specific topics</b>						
25.	<b>Editing Texts - Correcting Common errors , Technical Jargon</b>	01	30/12/2023		TLM2 TLM6	CO5	T1,T2
<b>No. of classes required to complete UNIT-V: 05</b>					<b>No. of classes taken:</b>		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Word Analogy	1	30/12/2023		TLM2 &5	
2.					TLM2 &5	
3.					TLM2 &5	
<b>No. of classes required to complete UNIT-V: 07</b>				<b>No. of classes taken:</b>		

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

### PART-C

#### EVALUATION PROCESS (R23 Regulation):

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

### PART-D

#### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information



	to provide valid conclusions.
<b>PO 5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
<b>PO 6</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
<b>PO 7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
<b>PO 11</b>	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
<b>PO 12</b>	<b>Life-long learning:</b> Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

### PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>D. Chaithanya</b>	<b>Dr. R.Padma</b>	<b>Dr. R.Padma</b>	<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF CIVIL ENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** Dr. K.V. Ramana

**Course Name & Code** : Basic Civil and Mechanical Engineering &20CM01

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

**Credits:** 3

**Program/Sem/Sec** : B.Tech, I SEM- CSE-C SEC

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

**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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
<b>CO1</b>	1	-	-	-	2	-	2	-	-	-	-	-	2	-	2
<b>CO2</b>	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-
<b>CO3</b>	1	-	-	-	2	-	2	-	-	-	-	-	-	-	2
<b>CO4</b>	1	-	-	-	1	-	-	-	-	-	-	3	-	-	-
<b>CO5</b>	-	-	-	-	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. 38<sup>th</sup> Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10<sup>th</sup> 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	19-09-2023		<b>TLM2</b>	
2.	<b>Basics of Civil Engineering:</b> Role of Civil Engineers in Society	1	20-09-2023		<b>TLM2</b>	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	21-09-2023		<b>TLM2</b>	
4.	Geo-technical Engineering- Transportation Engineering, Hydraulics and Water Resources Engineering	1	23-09-2023		<b>TLM2</b>	
5.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	25-09-2023		<b>TLM2</b>	
6.	Construction Materials-Cement -types	1	26-09-2023		<b>TLM2</b>	
7.	Aggregate types- Bricks- classifications, Steel-properties - types	1	27-09-2023		<b>TLM2</b>	
8.	Cement concrete- Applications	1	30-09-2023		<b>TLM2</b>	
9.	Introduction to Prefabricated construction Techniques	1	03-10-2023		<b>TLM2</b>	
<b>No. of classes required to complete UNIT-I: 9</b>				<b>No. of classes taken:</b>		

**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	04-10-2023		<b>TLM2</b>	
11.	Compass Surveying overview- Angular Measurements and Introduction to Bearings	1	05-10-2023		<b>TLM2</b>	
12.	Simple problems on bearings	1	07-10-2023		<b>TLM1</b>	
13.	-Problems -practice		09-10-2023		<b>TLM1</b>	
14.	Levelling introduction		10-10-2023		<b>TLM1</b>	

15.	Levelling instruments used for levelling	1	11-10-2023		<b>TLM2</b>	
16.	Simple problems on levelling and bearings	1	12-10-2023		<b>TLM2</b>	
17.	problems on levelling	1	14-10-2023		<b>TLM2</b>	
18.	Problems -practice	1	16-10-2023		<b>TLM2</b>	
19.	Contour mapping	1	17-10-2023		<b>TLM2</b>	
<b>No. of classes required to complete UNIT-II:10</b>				<b>No. of classes taken:</b>		

### 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
20.	<b>Transportation Engineering</b> Importance of Transportation in Nation's economic development	1	18-10-2023		<b>TLM2</b>	
21.	Types of Highway Pavements	1	19-10-2023		<b>TLM2</b>	
22.	Flexible Pavements - Rigid Pavements Simple Differences	1	21-10-2023		<b>TLM2</b>	
23.	Basics of Harbour, Tunnel,	1	26-10-2023		<b>TLM2</b>	
24.	Basics of Airport, and Railway Engineering	1	28-10-2023		<b>TLM2</b>	
25.	<b>Water Resources and Environmental Engineering</b> Introduction, Sources of water-	1	30-10-2023		<b>TLM2</b>	
26.	Quality of water- Specifications	1	31-10-2023		<b>TLM2</b>	
27.	Introduction to Hydrology	1	01-11-2023		<b>TLM2</b>	
28.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	02-11-2023		<b>TLM2</b>	
29.	(Simple introduction to Dams and Reservoirs), Over view on importance of roads and infra	1	04-11-2023		<b>TLM2</b>	
30.	<b>Mid-1 exams</b>		<b>06-11-2023 to 11-11-2023</b>			
<b>No. of classes required to complete UNIT-III:10</b>				<b>No. of classes taken:</b>		

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

### PART-C

**EVALUATION PROCESS (R17 Regulation):**

<b>Evaluation Task</b>	<b>Marks</b>
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 $((M1+Q1+A1), (M2+Q2+A2))$	<b>M=30</b>
<b>Cumulative Internal Examination (CIE): M</b>	<b>30</b>
<b>Semester End Examination (SEE)</b>	<b>70</b>
Total Marks = CIE + SEE	<b>100</b>

**PART-D****PROGRAMME OUTCOMES (POs):**

<b>PO 1</b>	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	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.
<b>PO 3</b>	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.
<b>PO 4</b>	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.
<b>PO 5</b>	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
<b>PO 6</b>	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.
<b>PO 7</b>	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.
<b>PO 8</b>	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	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.
<b>PO 11</b>	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.
<b>PO 12</b>	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):**

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Dr. K.V. Ramana</b>	<b>B. Ramakrishna</b>		<b>Dr. J. Venkateswara Rao</b>
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution  
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada  
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

## COURSE HANDOUT

### PART-A

Name of Course Instructor : Mr. Govindu Surla  
Course Name & Code : Introduction to Programming (23CS01)  
L-T-P Structure : 3-0-0 Credits: 3  
Program/Sem/Sec : B.Tech./I/C A.Y.: 2023-24

**PRE-REQUISITE: NIL**

#### **COURSE EDUCATIONAL OBJECTIVE (CEO):**

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

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

<b>CO1</b>	Understand basics of computers, the concept of algorithm and algorithmic thinking.	Understand – Level 2
<b>CO2</b>	Analyze a problem and develop an algorithm to solve it.	Analyze – Level 4
<b>CO3</b>	Implement various algorithms using the C programming language.	Apply – Level 3
<b>CO4</b>	Understand more advanced features of C language.	Understand – Level 2
<b>CO5</b>	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	
<b>CO1</b>	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
<b>CO2</b>	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-	
<b>CO3</b>	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
<b>CO4</b>	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
<b>CO5</b>	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	19-09-2023			
2.	History of Computers	1	20-10-2023			
3.	Basic organization of a computer: ALU, input-output units.	2	21-10-2023 23-09-2023			
4.	Memory, program counter	1	25-09-2023			
5.	Introduction to Programming Languages,	1	26-09-2023			
6.	Basics of a Computer Program- Algorithms	1	27-09-2023			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	30-09-2023			
8.	Introduction to Compilation and Execution	1	03-10-2023			
9.	Primitive Data Types	2	04-10-2023 05-10-2023			
10.	Variables, and Constants, Basic Input and Output operations	1	07-10-2023			
11.	Type Conversion, and Casting	1	09-10-2023			
12.	<b>Problem solving techniques:</b> Algorithmic approach, characteristics of algorithm	1	10-10-2023			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	11-10-2023			
14.	Time and space complexities of algorithms.	1	12-10-2023			
<b>No. of classes required to complete UNIT – I: 15</b>				<b>No. of classes taken:</b>		

#### UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs	1	14-10-2023			
16.	Conditional Statements					
	if, if-else	1	16-10-2023			
17.	switch	1	17-10-2023			
18.	Example programs on Decision Making and Branching	1	18-10-2023			
19.	Loops: while , Example programs	2	19-10-2023 25-10-2023			
20.	do-while, for, Example programs	2	26-10-2023 28-10-2023			
21.	on Loops	1	30-10-2023			
22.	Break and Continue	1	31-10-2023			
23.	Example programs on Loops	1	01-11-2023			
24.	Revision	1	02-11-2023			
<b>No. of classes required to complete UNIT – II: 12</b>				<b>No. of classes taken:</b>		

**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	04-11-2023			
26.	Array indexing, Accessing elements	1	13-11-2023			
27.	memory model	1	14-11-2023			
28.	programs with array of integers	1	15-11-2023			
29.	Introduction to two dimensional arrays	1	16-11-2023			
30.	2D Array indexing, Accessing elements	1	18-11-2023			
31.	programs with 2D arrays	1	20-11-2023			
32.	Introduction to Strings	1	21-11-2023			
33.	Reading and Writing Operations on Strings	1	22-11-2023			
34.	String Handling Functions	1	23-11-2023			
35.	Example Programs using Strings	1	25-11-2023			
<b>No. of classes required to complete UNIT – III: 11</b>				<b>No. of classes taken:</b>		

**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	27-11-2023			
37.	dereferencing and address operators	1	28-11-2023			
38.	pointer and address arithmetic	1	29-11-2023			
39.	array manipulation using pointers	2	30-11-2023			
			02-12-2023			
40.	User-defined data types	1	04-12-2023			
41.	Structures , Definition and Initialization	2	05-12-2023			
			06-12-2023			
42.	Example programs	1	07-12-2023			
43.	Unions	2	09-12-2023			
			11-12-2023			
44.	Example programs	1	12-12-2023			
45.	Revision	1	13-12-2023			
<b>No. of classes required to complete UNIT – IV: 13</b>				<b>No. of classes taken:</b>		

**UNIT – V:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Functions	1	14-12-2023			
47.	Function Declaration and Definition	1	16-12-2023			
48.	Function call Return Types	1	18-12-2023			
49.	Arguments	1	19-12-2023			
50.	modifying parameters inside functions using pointers	2	20-12-2023			
			21-12-2023			
51.	arrays as parameters	1	23-12-2023			
52.	Scope and Lifetime of Variables	1	26-12-2023			

53.	Introduction to Files	1	27-12-2023			
54.	Basics of File Handling	1	28-12-2023			
55.	Operations on Files	1	30-12-2023			
<b>No. of classes required to complete UNIT – V: 11</b>				<b>No. of classes taken:</b>		

### Content Beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Application Development using C	1	30-12-2023			
57.	Introduction to Data Structures	1	30-12-2023			

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

### PART-C

#### EVALUATION PROCESS (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))	<b>M=30</b>
Cumulative Internal Examination (CIE): M	<b>30</b>
Semester End Examination (SEE)	<b>70</b>
Total Marks = CIE + SEE	<b>100</b>

## PART-D

### PROGRAMME OUTCOMES (POs):

P01	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
P03	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
P04	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
P05	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
P06	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
P07	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
P08	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
P09	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
P011	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
P012	<b>Life-long learning:</b> 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):

PS01	To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.
PS02	To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.
PS03	To provide a concrete foundation and enrich their abilities for Employment and Higher studies in Artificial Intelligence and Data science with ethical values.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	S. Govindu	Dr. B. Srinivasa Rao	Dr. K. Naga Prasanthi	Dr. D.Veeraiah
Signature				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified  
 Institution Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada  
 L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.  
 Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF FRESHMANENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** Dr. V.Parvathi

**Course Name & Code** :Chemistry & 23FE02

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

**Program/Sem/Sec** : B.Tech/Isem/CSE-C

**Credits:03**

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

**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

C01	Understand the fundamentals of quantum mechanics and molecular orbital energy diagrams for molecules(Understand)
C02	Summarize the suitability of advanced materials like semiconductors, superconductors, super capacitors and nano materials, in advanced fields(Understand)
C03	Apply Nernst equation in calculating cell potentials and understand conductometric, potentiometric titrations, electrochemical sensors and compare batteries for different applications(Understand)
C04	Outline the importance of polymers and conducting polymers in advanced technologies(Understand)
C05	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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	-	-	-	-	-	-	-	-	-	-	1
C02	3	2	2	2	-	2	2	-	-	-	-	2
C03	3	3	2	2	-	2	2	-	-	-	-	2
C04	3	2	2	2	-	2	2	-	-	-	-	2
C05	3	2	1	1	-	-	-	-	-	-	-	1
<b>1 = Slight (Low)                      2 = Moderate (Medium)                      3 = Substantial (High)</b>												

**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. Billmeyer Jr, 3rd Edition

**PART-B****COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: STRUCTURE AND BONDING MODELS**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Bridge Course	1	19-09-2023		TLM1	
2.		1	20-09-2023		TLM1	
3.		1	23-09-2023		TLM1	
4.		1	25-09-2023		TLM1	
5.	Fundamentals Of Quantum Mechanics	1	26-09-2023		TLM1	
6.	Schrodinger Wave Equation	1	30-09-2023		TLM1	
7.	Significance of $\Psi$ and $\Psi^2$	1	03-10-2023		TLM1	
8.	Particle In one dimensional box	1	04-10-2023		TLM1	
9.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules	1	07-10-2023		TLM1	
10.	Energy level diagrams of $O_2$ and CO	1	09--10-2023		TLM1	
11.	$\pi$ -molecular orbitals of butadiene	1	10-10-2023		TLM1	
12.	$\pi$ -molecular orbitals of benzene	1	11-10-2023		TLM1	
13.	Calculation of Bond order	1	14-10-2023		TLM1	
14.	Practice of Molecular orbital diagrams	1	16-10-2023		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	17-10-2023		TLM1	
2.	Semiconductors - Basic concept&applications	1	18-10-2023		TLM1	
3.	Super conductors - Introduction	1	25-10-2023		TLM1	
4.	Super conductors - Basic concept&applications	1	28-10-2023		TLM1	
5.	Supercapacitors - Introduction	1	30-10-2023		TLM1	
6.	Supercapacitors - Basic concept-classification&applications	1	31-10-2023		TLM1	
7.	Nano materials - Introduction	1	01-11-2023		TLM2	
8.	Nano materials - classification	1	01-11-2023		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	04-11-2023		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	1	04-11-2023		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.	Electrochemical cell, Nernst equation	1	13-11-2023		TLM1	
2.	Cell potential calculations and numerical problems	1	14-11-2023		TLM1	
3.	Potentiometry-potentiometric titrations (redox titrations)	1	15-11-2023		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	18-11-2023		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	20-11-2023		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells –	1	21-11-2023		TLM1	

	lithium-ion batteries-working of the batteries including cell reactions				
7.	Fuel cells, hydrogen-oxygen fuel cell- working of the cells	1	22-11-2023		TLM1
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	25-11-2023		TLM1
No. of classes required to complete UNIT-III: 08				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	27-11-2023		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	28-11-2023		TLM1	
3.	Mechanisms of polymer formation	1	29-11-2023		TLM1	
4.	Plastics -Thermo and Thermosetting plastics	1	02-12-2023		TLM1	
5.	Preparation, properties and applications of - PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	04-12-2023		TLM1	
6.	Elastomers-Buna-S, Buna-N-preparation, properties and applications	1	05-12-2023		TLM1	
7.	Conducting polymers - polyacetylene, polyaniline, - mechanism of conduction and applications	1	06-12-2023		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	09-12-2023		TLM1	
No. of classes required to complete UNIT-IV: 08				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	11-12-2023		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	12-12-2023		TLM1	



3.	UV-Visible Spectroscopy	1	13-12-2023		TLM1
4.	electronic transition, Instrumentation	1	16-12-2023		TLM1
5.	IR spectroscopies, fundamental modes	1	18-12-2023		TLM1
6.	selection rules, Instrumentation	1	19-12-2023		TLM1
7.	Chromatography-Basic Principle	1	20-12-2023		TLM1
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	23-12-2023		TLM1
9	Revision	1	26-12-2023		
10	Revision	1	27-12-2023		
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	30-12-2023		TLM1	

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

### PART-C

#### EVALUATION PROCESS (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):

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

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)**

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),  
 ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution  
 Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada  
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 Phone: 08659-222933, Fax: 08659-222931

## **FRESHMAN ENGINEERING DEPARTMENT**

### **COURSE HANDOUT**

#### **PART-A**

**Name of Course Instructor: D.Chaithanya**

**Course Name & Code : CE LAB, 23FE51**

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

**Credits: 01**

**Program/Sem/Sec : B. Tech CSE-C- I SEM**

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

**PREREQUISITE: NIL**

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

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

<b>CO1</b>	Understand the different aspect of the English language proficiency with emphasis on LSRW skills.	L2
<b>CO2</b>	Apply Communication Skills through various language learning activities	L3
<b>CO3</b>	Identifying the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking, comprehension.	L2
<b>CO4</b>	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
<b>CO1.</b>	-	-	-	2	-	-	-	-	3	3	-	2
<b>CO2.</b>	-	-	-	2	-	-	-	-	3	3	-	2
<b>CO3.</b>	-	-	-	2	-	-	-	-	3	3	-	2
<b>CO4.</b>	-	-	-	2	-	-	-	-	3	3	-	2
<b>1 = Slight (Low)</b>			<b>2= Moderate (Medium)</b>					<b>3 = Substantial (High)</b>				

## **List of Activities:**

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

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

## **Suggested Software:**

1. Walden Infotech
2. Young India Films

## **Reference Books:**

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

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

### **UNIT-I:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	22/9/2023		TLM4	
2.	Self Introduction & Introducing others	03	29/9/2023		TLM4	
3.	Vowels & Consonants	03	6/10/2023		TLM1, TLM5	
4.	Neutralization / Accent rules	03	13/10/2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	27/10/2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	3/11/2023		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	17/11/2023		TLM1, TLM5	

8.	Group Discussion	03	24/11/2023		TLM4, TLM6
9.	Debate	03	1/12/2023		TLM4, TLM6
10.	PPT & Poster Presentation	03	8/12/2023 15/1/2023		TLM2, TLM4
11.	Mock Interviews	03	22/12/2023		TLM1, TLM6
12.	Lab Internal Exam	03	29/12/2023		
<b>No. of classes required to complete Syllabus: 24</b>				<b>No. of classes taken:</b>	

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

### Laboratory Examination:

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

### PROGRAMME OUTCOMES (POs):

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

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

	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>D.Chaithanya</b>	<b>Dr .R. Padma</b>	<b>Dr.R.Padma</b>	<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

[hodcse@lbrce.ac.in](mailto:hodcse@lbrce.ac.in), [cseoffice@lbrce.ac.in](mailto:cseoffice@lbrce.ac.in), Phone: 08659-222 933, Fax: 08659-222931

## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### COURSEHANDOUT

#### PART-A

Name of Course Instructor	: S. Govindu	
Course Name & Code	: Computer Programming Lab (20CS51)	
L-T-P Structure	: 0-0-3	Credits: 1.5
Program/Sem/Sec	: B.Tech.–CSE/I Sem-C	A.Y. :2023-24

**PRE-REQUISITE: Fundamentals of Mathematics.**

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

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

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

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PS02	PS03
<b>C01</b>	3	2	-	-	3	-	-	-	-	-	-	-	2	-	-
<b>C02</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>C03</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>C04</b>	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
<b>C05</b>	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-
			1 -Low					2 -Medium					3- High		



## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		25-09-2023	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		25-09-2023	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		09-10-2023	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		09-10-2023	DM5
5.	Week5: Exercise Programs on Branching and logical expressions	03		16-10-2023	DM5
6.	Week6: Exercise Programs on Loops, while and for loops	03		30-10-2023	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		30-11-2023	DM5
8.	Week8: Exercise Programs on 2 D arrays, sorting and Strings.	03		13-11-2023	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		20-11-2023	DM5
10.	Week10: Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03		27-11-2023	DM5
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03		04-12-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		11-12-2023	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		18-12-2023	DM5
14.	Week 14: Exercise Programs on File handling.	03		18-12-2023	DM5
15.	Lab Internal	03		22-12-2023	DM5

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

## PART-C

### PROGRAMME OUTCOMES (POs):

<b>P01</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>P02</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>P03</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>P04</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
<b>P05</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
<b>P06</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice.
<b>P07</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
<b>P08</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>P09</b>	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>P010</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
<b>P011</b>	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
<b>P012</b>	<b>Life-long learning:</b> Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

**PROGRAMMESPECIFICOUTCOMES(PSOs):**

<b>PSO1</b>	The ability to apply Software Engineering practices and strategies in software projectdevelopmentusingopen-sourceprogrammingenvironmentforthesuccessoforganization.
<b>PSO2</b>	The ability to design and develop computer programs in networking, web applications and IoT asper the society needs.
<b>PSO3</b>	To inculcate an ability to analyze, design and implement database applications.

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>S. Govindu</b>	<b>Dr. B. Srinivas Rao</b>	<b>Dr. K. Naga Prasanthi</b>	<b>Dr. D. Veeraiah</b>
<b>Signature</b>				



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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### COURSE HANDOUT

#### PART-A

Name of Course Instructor: Ms. T. VINEETHA

Course Name & Code : IT WORKSHOP Lab & 23IT51

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

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

PREREQUISITE : NIL

Credits: 1

A.Y.: 2023-24

#### COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

C01	Identify the components of a PC and Assemble & disassemble the same. (Understand)
C02	Experiment with installation of Operating System and Secure a computer from Cyber threats. (Apply)
C03	Develop presentation / documentation using Office tools and LaTeX (Apply)
C04	Build dialogs and documents using ChatGPT. (Apply)
C05	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
C01	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C02	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C03	3	-	-	-	2	-	-	-	-	-	-	-	2	-	-
C04	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
C05	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low

2 - Medium

3 - High

**REFERENCE BOOKS:**

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

**PART-B****COURSE DELIVERY PLAN (LESSON PLAN):**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly	
<b>PC Hardware &amp; Software Installation</b>							
1.	Task-1	3	12-9-2023		DM5		
2.	Task-2	3	19-9-2023		DM5		
3.	Task-3	3	26-9-2023		DM5		
4.	Task-4	3	26-09-2023		DM5		
5.	Task-5	3	3-10-2023		DM5		
<b>Internet &amp; World Wide Web</b>							
6.	Task-1	3	10-10-2023		DM5		
7.	Task-2	3	10-10-2023		DM5		
8.	Task-3	3	17-10-2023		DM5		
9.	Task-4	3	31-10-2023		DM5		
<b>LaTex and WORD</b>							
10.	Task-1	3	31-10-2023		DM5		
11.	Task-2	3	07-11-2023		DM5		
12.	Task-3	3	14-11-2023		DM5		
13.	Task-4	3	21-11-2023		DM5		
<b>EXCEL</b>							
14.	Task-1	3	28-11-2023		DM5		
15.	Task-2	3	28-11-2023		DM5		
<b>LOOKUP/VLOOKUP</b>							

16.	Task-1	3	5-12-2023		DM5
<b>POWER POINT</b>					
17.	Task-1	3	12-12-2023		DM5
18.	Task-2	3	19-12-2023		DM5
19.	Task-3	3	19-12-2023		DM5
<b>AI TOOLS - ChatGPT</b>					
20.	Task-1	3	26-12-2023		DM5
21.	Task-2	3	09-01-2024		DM5
22.	Task-3	3	09-01-2024		DM5
23.	Internal exam	3	16-01-2024		DM5

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

### **PART-C**

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

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
<b>PO 5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
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<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

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

#### PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	Ms. T. Vineetha	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	Dr. D. Veeraiah
<b>Signature</b>				



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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 Lab&23FE53

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

**Program/Sem/Sec** : B.Tech/Isem/CSE-C

**Credits:1.5**

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

**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 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:** 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	-	-	-	-	-	-	-
<b>1 = Slight (Low)</b>			<b>2 = Moderate (Medium)</b>				<b>3 = Substantial (High)</b>					

**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 Engineering chemistry lab	3	21-09-2023		TLM1		
2.	Preparation of a Bakelite	3	05-10-2023		TLM4	CO1	
3.	Determination of amount of HCl using standard Na <sub>2</sub> CO <sub>3</sub> solution	3	12-10-2023		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	19-10-2023		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	26-10-2023		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	02-11-2023		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	09-11-2023		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	16-11-2023		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	23-12-2023		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	07-12-2023		TLM4	CO4	
11.	Wavelength measurement of sample through UV-Visible Spectroscopy	3	14-12-2023		TLM4	CO4	
12.	Identification of simple organic compounds by IR	3	21-12-2023		TLM4	CO4	
13.	Internal Exam	3	28-12-2023		TLM4		
	Total						

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

## Part - C

### EVALUATION PROCESS:

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 engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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  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.

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Dr.V.Parvathi</b>	<b>Dr.V.Parvathi</b>	<b>Dr.V.Parvathi</b>	<b>Dr.A.Rami Reddy</b>
<b>Signature</b>				



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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### COURSE HANDOUT

#### PART-A

Name of Course Instructor : Mr. S Srinivasa Reddy  
Course Name & Code : Introduction to Programming (23CS01)  
L-T-P Structure : 3-0-0 Credits: 3  
Program/Sem/Sec : B.Tech./I/D A.Y.: 2023-24

**PRE-REQUISITE: NIL**

#### **COURSE EDUCATIONAL OBJECTIVE (CEO):**

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

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

<b>CO1:</b>	Understand basics of computers, the concept of algorithm and algorithmic thinking.	Understand – Level 2
<b>CO2:</b>	Analyze a problem and develop an algorithm to solve it.	Analyze – Level 4
<b>CO3:</b>	Implement various algorithms using the C programming language.	Apply – Level 3
<b>CO4:</b>	Understand more advanced features of C language.	Understand – Level 2
<b>CO5:</b>	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	
<b>CO1</b>	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
<b>CO2</b>	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-	
<b>CO3</b>	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
<b>CO4</b>	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-	
<b>CO5</b>	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	19-09-2023			
2.	History of Computers	1	21-09-2023			
3.	Basic organization of a computer: ALU, input-output units.	2	22-09-2023 23-09-2023			
4.	Memory, program counter	1	25-09-2023			
5.	Introduction to Programming Languages,	1	26-09-2023			
6.	Basics of a Computer Program- Algorithms	1	29-09-2023			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	30-09-2023			
8.	Introduction to Compilation and Execution	1	03-10-2023			
9.	Primitive Data Types	2	05-10-2023 06-10-2023			
10.	Variables, and Constants, Basic Input and Output operations	1	07-10-2023			
11.	Type Conversion, and Casting	1	09-10-2023			
12.	<b>Problem solving techniques:</b> Algorithmic approach, characteristics of algorithm	1	10-10-2023			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	12-10-2023			
14.	Time and space complexities of algorithms.	1	13-10-2023			
<b>No. of classes required to complete UNIT – I: 15</b>				<b>No. of classes taken:</b>		

#### UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs Conditional Statements	1	14-10-2023			
16.	if, if-else	1	16-10-2023			
17.	switch.	1	17-10-2023			
18.	Example programs on Decision Making and Branching	1	19-10-2023			
19.	Loops: while , Example programs	2	26-10-2023 27-10-2023			
20.	do-while, for, Example programs	2	28-10-2023 30-10-2023			
21.	on Loops	1	31-11-2023			
22.	Break and Continue	1	02-11-2023			
23.	Example programs on Loops	1	03-11-2023			
24.	Revision	1	04-11-2023			
<b>No. of classes required to complete UNIT – II: 12</b>				<b>No. of classes taken:</b>		

**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	13-11-2023			
26.	Array indexing, Accessing elements	1	14-11-2023			
27.	memory model	1	16-11-2023			
28.	programs with array of integers	1	17-11-2023			
29.	Introduction to two dimensional arrays	1	18-11-2023			
30.	2D Array indexing, Accessing elements	1	20-11-2023			
31.	programs with 2D arrays	1	21-11-2023			
32.	Introduction to Strings	1	23-11-2023			
33.	Reading and Writing Operations on Strings	1	24-11-2023			
34.	String Handling Functions	1	25-11-2023			
35.	Example Programs using Strings	1	27-11-2023			
<b>No. of classes required to complete UNIT – III: 11</b>				<b>No. of classes taken:</b>		

**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	28-11-2023			
37.	dereferencing and address operators	1	30-11-2023			
38.	pointer and address arithmetic	1	01-12-2023			
39.	array manipulation using pointers	2	02-12-2023			
			04-12-2023			
40.	User-defined data types	1	05-12-2023			
41.	Structures , Definition and Initialization	2	07-12-2023			
			08-12-2023			
42.	Example programs	1	09-12-2023			
43.	Unions	2	11-12-2023			
			12-12-2023			
44.	Example programs	1	14-12-2023			
45.	Revision	1	15-12-2023			
<b>No. of classes required to complete UNIT – IV: 13</b>				<b>No. of classes taken:</b>		

**UNIT – V: Functions and File Handling**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Functions	1	16-12-2023			
47.	Function Declaration and Definition	1	18-12-2023			
48.	Function call Return Types	1	19-12-2023			
49.	Arguments	1	21-12-2023			
50.	modifying parameters inside functions using pointers	2	22-12-2023			
			23-12-2023			
51.	arrays as parameters	1	26-12-2023			
52.	Scope and Lifetime of Variables	1	28-12-2023			

53.	Introduction to Files	1	29-12-2023			
54.	Basics of File Handling	1	30-12-2023			
55.	Operations on Files	1	02-01-2023			
<b>No. of classes required to complete UNIT – V: 11</b>				<b>No. of classes taken:</b>		

### Content Beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Application Development using C	1	04-01-2023			
57.	Introduction to Data Structures	1	05-01-2023			
58.	Introduction to Data Structures	1	06-01-2023			

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

## PART-C

### EVALUATION PROCESS (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))	<b>M=30</b>
<b>Cumulative Internal Examination (CIE): M</b>	<b>30</b>
<b>Semester End Examination (SEE)</b>	<b>70</b>
<b>Total Marks = CIE + SEE</b>	<b>100</b>



## PART-D

### PROGRAMME OUTCOMES (POs):

P01	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
P03	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
P04	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
P05	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
P06	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
P07	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
P08	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
P09	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
P011	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
P012	<b>Life-long learning:</b> 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):

PS01	To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.
PS02	To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.
PS03	To provide a concrete foundation and enrich their abilities for Employment and Higher studies in Artificial Intelligence and Data science with ethical values.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	S. Srinivasa Reddy	Dr. B. Srinivasa Rao	Dr. K. Nagaprasanthi	Dr. D. Veeraiah
Signature				



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., CSE-D
ACADEMIC YEAR : 2023-24
COURSE NAME & CODE : Linear Algebra & Calculus
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Dr. K. Bhanu Lakshmi
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):

Table with 13 columns (COs, PO1-PO12) and 6 rows (CO1-CO5) showing correlation levels (1, 2, 3, or -).

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", 44ndEdition, Khanna Publishers, New Delhi, 2017.
T2 Erwin Kreyszig, "Advanced Engineering Mathematics", 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

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

Part-B

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

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	8	08-09-2023 TO 16-09-2023	08-09-2023 TO 16-09-2023	TLM1			
2.	Introduction to the course	1	20-09-2023		TLM2			
3.	Course Outcomes, Program Outcomes	1	22-09-2023		TLM2			

**UNIT-I: Matrices**

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

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

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

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

**I MID EXAMINATIONS (06-11-2023 TO 11-11-2023)**

**UNIT-III: Calculus**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
31.	Introduction to Unit III	1	13-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	15-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	17-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	17-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	18-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	22-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem	1	24-11-2023		TLM1	CO3	T1,T2	
39.	Maclaurin's theorem	1	24-11-2023		TLM1	CO3	T1,T2	
40.	Problems and applications	1	25-11-2023		TLM1	CO3	T1,T2	
41.	<b>TUTORIAL 3</b>	1	27-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		11			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
42.	Introduction to Unit IV, Functions of several variables.	1	29-11-2023		TLM1	CO4	T1,T2	
43.	Continuity and Differentiability	1	01-12-2023		TLM1	CO4	T1,T2	
44.	Partial Derivatives	1	01-12-2023		TLM1	CO4	T1,T2	
45.	Total derivatives, Chain rule, Directional Derivative	1	02-12-2023		TLM1	CO4	T1,T2	

46.	Taylor's Series expansion	1	04-12-2023		TLM1	CO4	T1,T2	
47.	Maclaurin's series expansion	1	06-12-2023		TLM1	CO4	T1,T2	
48.	Jacobian	1	08-12-2023		TLM1	CO4	T1,T2	
49.	Functional Dependence	1	08-12-2023		TLM1	CO4	T1,T2	
50.	Maxima and Minima	1	11-12-2023		TLM1	CO4	T1,T2	
51.	Lagrange Multiplier Method	1	13-12-2023		TLM1	CO4	T1,T2	
52.	<b>TUTORIAL 4</b>	1	09-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		11			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
53.	Introduction to Unit V	1	15-12-2023		TLM1	CO5	T1,T2	
54.	Double Integrals - Cartesian coordinates	1	15-12-2023		TLM1	CO5	T1,T2	
55.	Double Integrals- Polar coordinates	1	16-12-2023		TLM1	CO5	T1,T2	
56.	Triple Integrals - Cartesian coordinates	1	18-12-2023		TLM1	CO5	T1,T2	
57.	Triple Integrals - Spherical coordinates	1	20-12-2023		TLM1	CO5	T1,T2	
58.	Change of order of Integration	1	22-12-2023		TLM1	CO5	T1,T2	
59.	Change of order of Integration	1	22-12-2023		TLM1	CO5	T1,T2	
60.	Change of variables	1	23-12-2023		TLM1	CO5	T1,T2	
61.	Finding area by double Integral	1	27-12-2023		TLM1	CO5	T1,T2	
62.	Finding Volume by double and triple Integral	1	29-12-2023		TLM1	CO5	T1,T2	
63.	<b>TUTORIAL 5</b>	1	30-12-2023		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			No. of classes taken:			

#### Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
64.	Other applications of double integral	1	29-12-2023		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
<b>II MID EXAMINATIONS (01-01-2024 TO 06-01-2024)</b>								

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

<b>TLM3</b>	Tutorial	<b>TLM6</b>	Group Discussion/Project
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**PART-C**

**EVALUATION PROCESS (R20 Regulation):**

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

**PART-D**

**PROGRAMME OUTCOMES (POs):**

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

Dr. K. Bhanu Lakshmi	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>	<b>Dr. A. RAMI REDDY</b>
Course Instructor	Course Coordinator	Module Coordinator	HOD





# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF CIVIL ENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** M.KARTHIK KUMAR

**Course Name & Code** : Basic Civil and Mechanical Engineering &20CM01

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

**Credits:** 3

**Program/Sem/Sec** : B.Tech, I SEM- CSE-D SEC

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

**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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
<b>CO1</b>	1	-	-	-	2	-	2	-	-	-	-	-	2	-	2
<b>CO2</b>	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-
<b>CO3</b>	1	-	-	-	2	-	2	-	-	-	-	-	-	-	2
<b>CO4</b>	1	-	-	-	1	-	-	-	-	-	-	3	-	-	-
<b>CO5</b>	-	-	-	-	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. 38<sup>th</sup> Edition.
4. Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10<sup>th</sup> 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	19-09-2023		<b>TLM2</b>	
2.	<b>Basics of Civil Engineering:</b> Role of Civil Engineers in Society	1	21-09-2023		<b>TLM2</b>	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	22-09-2023		<b>TLM2</b>	
4.	Geo-technical Engineering- Transportation Engineering, Hydraulics and Water Resources Engineering	1	23-09-2023		<b>TLM2</b>	
5.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	25-09-2023		<b>TLM2</b>	
6.	Construction Materials-Cement -types	1	26-09-2023		<b>TLM2</b>	
7.	Aggregate types- Bricks- classifications, Steel-properties - types	1	29-09-2023		<b>TLM2</b>	
8.	Cement concrete- Applications	1	30-09-2023		<b>TLM2</b>	
9.	Introduction to Prefabricated construction Techniques	1	03-10-2023		<b>TLM2</b>	
<b>No. of classes required to complete UNIT-I: 9</b>				<b>No. of classes taken:</b>		

**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	05-10-2023		<b>TLM2</b>	
11.	Compass Surveying overview- Angular Measurements and Introduction to Bearings	1	06-10-2023		<b>TLM2</b>	
12.	Simple problems on bearings	1	07-10-2023		<b>TLM1</b>	
13.	-Problems -practice	1	09-10-2023		<b>TLM1</b>	
14.	Levelling introduction	1	10-10-2023		<b>TLM1</b>	

15.	Levelling instruments used for levelling	1	12-10-2023		<b>TLM2</b>	
16.	Simple problems on levelling and bearings	1	13-10-2023		<b>TLM2</b>	
17.	problems on levelling	1	14-10-2023		<b>TLM2</b>	
18.	Problems -practice	1	16-10-2023		<b>TLM2</b>	
19.	Contour mapping	1	17-10-2023		<b>TLM2</b>	
<b>No. of classes required to complete UNIT-II:10</b>				<b>No. of classes taken:</b>		

### 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
20.	<b>Transportation Engineering</b> Importance of Transportation in Nation's economic development	1	19-10-2023		<b>TLM2</b>	
21.	Types of Highway Pavements	1	25-10-2023		<b>TLM2</b>	
22.	Flexible Pavements - Rigid Pavements Simple Differences	1	26-10-2023		<b>TLM2</b>	
23.	Basics of Harbour, Tunnel,	1	27-10-2023		<b>TLM2</b>	
24.	Basics of Airport, and Railway Engineering	1	28-10-2023		<b>TLM2</b>	
25.	<b>Water Resources and Environmental Engineering</b> Introduction, Sources of water-	1	30-10-2023		<b>TLM2</b>	
26.	Quality of water- Specifications	1	31-10-2023		<b>TLM2</b>	
27.	Introduction to Hydrology	1	02-11-2023		<b>TLM2</b>	
28.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	03-11-2023		<b>TLM2</b>	
29.	(Simple introduction to Dams and Reservoirs), Over view on importance of roads and infra	1	04-11-2023		<b>TLM2</b>	
30.	<b>Mid-1 exams</b>		<b>06-11-2023 to 11-11-2023</b>			
<b>No. of classes required to complete UNIT-III:10</b>				<b>No. of classes taken:</b>		

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

## PART-C

### EVALUATION PROCESS (R17 Regulation):

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

## PART-D

### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	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.
<b>PO 3</b>	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.
<b>PO 4</b>	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.
<b>PO 5</b>	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
<b>PO 6</b>	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.
<b>PO 7</b>	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.
<b>PO 8</b>	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	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.
<b>PO 11</b>	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.
<b>PO 12</b>	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):**

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>M.KARTHIK KUMAR</b>	<b>M.KARTHIK KUMAR</b>	<b>B.RAMAKRISHNA</b>	
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)

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Phone: 08659-222933, Fax: 08659-222931

## COURSE HANDOUT

### PART-A

Name of Course Instructor : K. Sridevi  
 Course Name & Code : Communicative English & 23FE50  
 L-T-P Structure : 2-0-0 Credits: 02  
 Program/Sem/Sec : B. Tech, I Sem – CSE-D  
 A.Y. : 2023-24

**PREREQUISITE: NIL**

#### **COURSE EDUCATIONAL OBJECTIVES (CEOs):**

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

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

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

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

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

## PART-B

### COURSE DELIVERY PLAN (LESSON PLAN):

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

#### UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	20-09-2023 21-09-2023		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	23-09-2023		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	27-09-2023		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of speech	01	30-09-2023		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures, Forming questions	01	04-10-2023		TLM2 TLM6	CO1	T1,T2	
6.	Synonyms, Antonyms	01	05-10-2023		TLM2 TLM5	CO1	T1,T2	
7.	Affixes, Root Words	01	07-10-2023		TLM2 TLM5	CO1	T1,T2	
<b>No. of classes required to complete UNIT-I: 08</b>							<b>No. of classes taken:</b>	

#### UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8.	Nature: The Brook by Alfred Tennyson	02	11-10-2023 12-10-2023		TLM1 TLM 6	CO2	T1,T2	
9.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	14-10-2023		TLM2 TLM5	CO2	T1,T2	
10.	Structure of Paragraph – Paragraph Writing	01	18-10-2023		TLM1 TLM6 TLM5	CO2	T1,T2	
11.	Cohesive Devices-linkers	01	19-10-2023 25-10-2023		TLM2 TLM6	CO2	T1,T2	
12.	Use of Articles and zero article, Prepositions	02	26-10-2023 28-11-2023 01-11-2023		TLM2 TLM6	CO2	T1,T2	
13.	Homophones, Homographs, Homonyms	01	02-11-2023 04-11-2023		TLM2 TLM5	CO2	T1,T2	
<b>No. of classes required to complete UNIT-II: 08</b>							<b>No. of classes taken:</b>	

**UNIT-III:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Biography: Elon Musk	02	15-11-2023 16-11-2023		TLM1 TLM 6	CO3	T1,T2	
15.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	18-11-2023		TLM2 TLM5	CO3	T1,T2	
16.	Summarizing, Note-making, Paraphrasing	01	22-11-2023		TLM1 TLM6 TLM5	CO3	T1,T2	
17.	Verbs- Tenses, Subject-verb agreement	02	23-11-2023 25-11-2023		TLM2 TLM6	CO3	T1,T2	
18.	Compound words, Collocations	01	29-11-2023		TLM2 TLM5	CO3	T1,T2	
<b>No. of classes required to complete UNIT-III: 07</b>							<b>No. of classes taken:</b>	

**UNIT-IV:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Inspiration: The Toys of Peace- by Saki	02	30-11-2023 02-12-2023		TLM1 TLM 6	CO4	T1,T2	
20.	Study of graphic elements in text to display complicated data	01	06-12-2023		TLM2 TLM5	CO4	T1,T2	
21.	Letter Writing : Official Letters, Resumes	01	07-12-2023		TLM1 TLM6 TLM5	CO4	T1,T2	
22.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	09-12-2023 13-12-2023		TLM2 TLM6	CO4	T1,T2	
23.	Words often confused, Jargons	01	14-12-2023		TLM2 TLM5	CO4	T1,T2	
<b>No. of classes required to complete UNIT-IV: 07</b>							<b>No. of classes taken:</b>	

**UNIT-V:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24.	Motivation: The Power of Interpersonal Communication	01	16-12-2023		TLM1 TLM 6	CO5	T1,T2	
25.	Reading Comprehension	01	20-12-2023		TLM2 TLM5	CO5	T1,T2	
26.	Structured Essays on specific topics	01	21-12-2023		TLM1 TLM6 TLM5	CO5	T1,T2	
27.	Editing Texts – Correcting Common errors	01	23-12-2023 27-12-2023		TLM2 TLM6	CO5	T1,T2	
28.	Technical Jargon	01	28-12-2023		TLM2 TLM5	CO5	T1,T2	
<b>No. of classes required to complete UNIT-V: 05</b>							<b>No. of classes taken:</b>	

## Content beyond the Syllabus

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Word Analogy	01	30-12-2023		TLM2 &5	
<b>No. of classes required to complete</b>				<b>No. of classes taken:</b>		

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

## PART-C

### EVALUATION PROCESS (R23 Regulation):

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

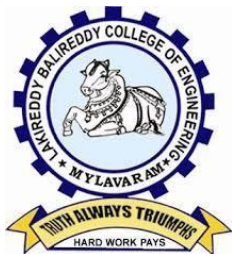


## PART-D

### PROGRAMME OUTCOMES (POs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty		Dr. R. Padma	Dr.A. Ramireddy	Dr. A. Ramireddy
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 Babu Syamala

**Course Name & Code** : Chemistry & 23FE02

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

**Program/Sem/Sec** : B.Tech./I sem/CSE-D

**Credits:03**

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

**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

C01	Understand the fundamentals of quantum mechanics and molecular orbital energy diagrams for molecules. (Understand)
C02	Summarize the suitability of advanced materials like semiconductors, superconductors, super capacitors and nanomaterials in advanced fields. (Understand)
C03	Apply Nernst equation in calculating cell potentials and understand conductometric, potentiometric titrations, electrochemical sensors and compare batteries for different applications. (Understand)
C04	Outline the importance of polymers and conducting polymers in advanced technologies. (Understand)
C05	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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	-	-	-	-	-	-	-	-	-	-	1
C02	3	2	2	2	-	2	2	-	-	-	-	2
C03	3	3	2	2	-	2	2	-	-	-	-	2
C04	3	2	2	2	-	2	2	-	-	-	-	2
C05	3	2	1	1	-	-	-	-	-	-	-	1
<b>1 = Slight (Low)                      2 = Moderate (Medium)                      3 = Substantial (High)</b>												

**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. Billmeyer 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.	Fundamentals Of Quantum Mechanics	1	19-09-2023		TLM1	
2.	Schrodinger Wave Equation, Significance of $\Psi$ and $\Psi^2$	1	22-09-2023		TLM1	
3.	Particle In one dimensional box	1	23-09-2023		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear Diatomic Molecules-Energy level diagrams ( $H_2$ to $Ne_2$ )	1	25-09-2023		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO)	1	26-09-2023		TLM1	
6.	Energy level diagrams-Summary	1	29-09-2023		TLM1	
7.	$\pi$ -molecular orbitals of butadiene	1	30-09-2023		TLM1	
8.	$\pi$ -molecular orbitals of benzene	1	03-10-2023		TLM1	
9.	Calculation of Bond order	1	06-10-2023		TLM1	
10.	Revision and assignment	1	07-10-2023		TLM1	
No. of classes required to complete UNIT-I: 10				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	09-10-2023		TLM1	
2.	Semiconductors - Basic concept & applications	1	10-10-2023		TLM1	
3.	Super conductors - Introduction	1	13-10-2023		TLM1	
4.	Super conductors - Basic concept & applications	1	14-10-2023		TLM1	
5.	Supercapacitors - Introduction	1	16-10-2023		TLM1	
6.	Supercapacitors - Basic concept- classification & applications	1	17-10-2023		TLM1	
7.	Nano materials - Introduction	1	27-10-2023		TLM2	
8.	Nano materials - classification	1	28-10-2023		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	30-10-2023		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	2	31-10-2023 & 03-11-2023		TLM2	
11.	Revision and assignment	1	04-11-2023		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	13-11-2023		TLM1	
2.	Cell potential calculations and numerical problems	1	14-11-2023		TLM1	
3.	Potentiometry- potentiometric titrations (redox titrations)	1	17-11-2023		TLM1	
4.	Concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations)	1	18-11-2023		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	20-11-2023		TLM1	

6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries- working of the batteries including cell reactions	1	21-11-2023		TLM1
7.	Fuel cells, hydrogen-oxygen fuel cell- working of the cells	1	24-11-2023		TLM1
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	25-11-2023		TLM1
9.	Revision and assignment	1	27-11-2023		TLM1
No. of classes required to complete UNIT-III: 09				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	28-11-2023		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	01-12-2023		TLM1	
3.	Mechanisms of polymer formation	1	02-12-2023		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	04-12-2023		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	05-12-2023		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	08-12-2023		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	09-12-2023		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	11-12-2023		TLM1	
9.	Revision and assignment	1	12-12-2023		TLM1	
No. of classes required to complete UNIT-IV: 09				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	15-12-2023		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	16-12-2023		TLM1	
3.	UV-Visible Spectroscopy	1	18-12-2023		TLM1	
4.	electronic transition, Instrumentation	1	19-12-2023		TLM1	
5.	IR spectroscopies, fundamental modes	1	22-12-2023		TLM1	
6.	selection rules, Instrumentation	1	23-12-2023		TLM1	
7.	Chromatography-Basic Principle	1	26-12-2023		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	29-12-2023		TLM1	
9.	Revision and assignment	1	30-12-2023		TLM1	
No. of classes required to complete UNIT-V: 09				No. of classes taken:		

### TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	30-12-2023		TLM1	

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

### PART-C

#### EVALUATION PROCESS (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
<b>Total Marks = CIE + SEE</b>	<b>100</b>

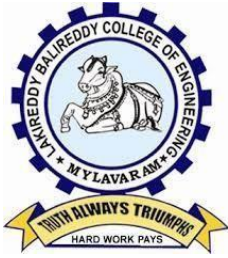
## PART-D

### PROGRAMME OUTCOMES (POs):

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

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				





# LAKIREDDYBALIREDDYCOLLEGE OFENGINEERING

(AUTONOMOUS)

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

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

L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P. - 521230.

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

## COURSE HANDOUT

### PART-A

Name of Course/Instructor	: S.SRINIVASA REDDY	
Course Name & Code	: Computer Programming Lab (20CS51)	
L-T-P Structure	: 0-0-3	Credits: 1.5
Program/Sem/Sec	: B.Tech. – CSE/ISem-D	A.Y. : 2023-24

**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:

<b>CO1</b> :	Read, understand, and trace the execution of programs written in C language. (Understand)	Apply – Level 2
<b>CO2</b> :	Select the right control structure for solving the problem. (Apply)	Apply – Level 3
<b>CO3</b> :	Develop C programs which utilize memory efficiently using programming constructs like pointers. (Apply)	Apply – Level 3
<b>CO4</b> :	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (Apply).	Apply – Level 3
<b>CO5</b> :	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):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		28-09-2023	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		05-10-2023	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		12-10-2023	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		19-10-2023	DM5
5.	Week5: Exercise Programs on Branching and logical expressions	03		26-10-2023	DM5
6.	Week6: Exercise Programs on Loops, while and for loops	03		02-11-2023	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		16-11-2023	DM5
8.	Week8: Exercise Program on 2 D arrays, sorting and Strings.	03		23-11-2023	DM5
9.	Week9: Exercise Program on Pointers, structures and dynamic memory allocation	03		30-11-2023	DM5
10.	Week10: Exercise Program on Bit fields, Self-Referential Structures, Linked lists	03		07-12-2023	DM5
11.	Week 11: Exercise Program on Functions, call by value, scope and extent.	03		14-12-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		21-12-2023	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		28-12-2023	DM5
14.	Week 14: Exercise Programs on File handling.	03		29-12-2023	DM5
15.	Lab Internal	03		04-01-2023	DM5

**DeliveryMethods**

<b>DM1</b>	ChalkandTalk	<b>DM4</b>	Assignment/Test/Quiz
<b>DM2</b>	ICTTools	<b>DM5</b>	Laboratory/FieldVisit
<b>DM3</b>	Tutorial	<b>DM6</b>	Web-basedLearning

## PART-C

### PROGRAMME OUTCOMES (POs):

P01	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching mathematics, natural sciences, and engineering sciences.
P03	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for environmental considerations.
P04	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide solutions.
P05	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools to complex engineering activities with an understanding of the limitations.
P06	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice.
P07	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
P08	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering profession.
P09	<b>Individual and teamwork:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multi-disciplinary environments.
P010	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering community and society, and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
P011	<b>Project management and finance:</b> Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member or leader in a team, to manage projects and in multidisciplinary environments.
P012	<b>Life-long learning:</b> Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the technology that changes rapidly.

**PROGRAMMESPECIFICOUTCOMES(PSOs):**

<b>PS01</b>	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
<b>PS02</b>	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
<b>PS03</b>	To inculcate an ability to analyze, design and implement database applications.

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>S. Srinivasa Reddy</b>	<b>Dr. B. Srinivas Rao</b>	<b>Dr.K. Naga Prasanthi</b>	<b>Dr. D. Veeraiah</b>
<b>Signature</b>				



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

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

Phone: 08659-222933, Fax: 08659-222931

## COURSE HANDOUT

### PART-A

Name of Course Instructor: K. Sridevi

Course Name & Code : CE LAB, 23FE51

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

Credits: 01

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

A.Y. : 2023-24

PREREQUISITE: NIL

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

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

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

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

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

List of Activities:

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

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

**Suggested Software:**

1.                   Walden Infotech
2.                   Young India Films

**Reference Books:**

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

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

**UNIT-I:**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	19-09-2023		TLM4	
2.	Self Introduction & Introducing others	03	26-09-2023		TLM4	
3.	Vowels & Consonants	03	3-10-2023		TLM1, TLM5	
4.	Neutralization / Accent rules	03	10-10-2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	17-10-2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	31-10-2023		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	14-11-2023		TLM1, TLM5	
8.	Group Discussion	03	21-11-2023		TLM4, TLM6	

9.	Debate	03	28-11-2023		TLM4, TLM6
10.	PPT & Poster Presentation	03	05-12-2023 12-12-2023		TLM2, TLM4
11.	Mock Interviews	03	19-12-2023		TLM1, TLM6
12.	Lab Internal Exam	03	26-12-2023		
<b>No. of classes required to complete Syllabus: 24</b>				<b>No. of classes taken:</b>	

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

### Laboratory Examination:

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

### PROGRAMME OUTCOMES (POs):

<b>PO 1</b>	<b>Engineering knowledge:</b> Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
<b>PO 2</b>	<b>Problem analysis:</b> Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
<b>PO 3</b>	<b>Design/development of solutions:</b> Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
<b>PO 4</b>	<b>Conduct investigations of complex problems:</b> Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
<b>PO 5</b>	<b>Modern tool usage:</b> Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
<b>PO 6</b>	<b>The engineer and society:</b> Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
<b>PO 7</b>	<b>Environment and sustainability:</b> Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
<b>PO 8</b>	<b>Ethics:</b> Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
<b>PO 9</b>	<b>Individual and team work:</b> Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
<b>PO 10</b>	<b>Communication:</b> Communicate effectively on complex engineering activities with the engineering



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

	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Ms. K. Sridevi</b>	<b>Dr. R. Padma</b>	<b>Dr. A. Ramireddy</b>	<b>Dr. A. Ramireddy</b>
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

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

[hodcse@lbrce.ac.in](mailto:hodcse@lbrce.ac.in), [cseoffice@lbrce.ac.in](mailto:cseoffice@lbrce.ac.in), Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

### COURSE HANDOUT

#### PART-A

Name of Course Instructor: **Ch.Nagamani**

Course Name & Code : **IT WORKSHOP Lab & 23IT51**

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

Credits: **1**

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

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

PREREQUISITE : **NIL**

#### **COURSE EDUCATIONAL OBJECTIVES (CEOs):**

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

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

<b>CO1</b>	Identify the components of a PC and Assemble & disassemble the same. (Understand)
<b>CO2</b>	Experiment with installation of Operating System and Secure a computer from Cyber threats. (Apply)
<b>CO3</b>	Develop presentation / documentation using Office tools and LaTeX (Apply)
<b>CO4</b>	Build dialogs and documents using ChatGPT. (Apply)
<b>CO5</b>	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
<b>CO1</b>	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO2</b>	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO3</b>	3	-	-	-	2	-	-	-	-	-	-	-	2	-	-
<b>CO4</b>	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
<b>CO5</b>	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

1 - Low

2 - Medium

3 - High

**REFERENCE BOOKS:**

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

**PART-B****COURSE DELIVERY PLAN (LESSON PLAN):**

<b>S.No.</b>	<b>Topics to be covered</b>	<b>No. of Classes Required</b>	<b>Tentative Date of Completion</b>	<b>Actual Date of Completion</b>	<b>Teaching Learning Methods</b>	<b>HOD Sign Weekly</b>	
<b>PC Hardware &amp; Software Installation</b>							
1.	Task-1	3	11-9-2023		<b>DM5</b>		
2.	Task-2	3	25-9-2023		<b>DM5</b>		
3.	Task-3	3	9-10-2023		<b>DM5</b>		
4.	Task-4	3	16-10-2023		<b>DM5</b>		
5.	Task-5	3	16-10-2023		<b>DM5</b>		
<b>Internet &amp; World Wide Web</b>							
6.	Task-1	3	30-10-2023		<b>DM5</b>		
7.	Task-2	3	30-10-2023		<b>DM5</b>		
8.	Task-3	3	13-11-2023		<b>DM5</b>		
9.	Task-4	3	13-11-2023		<b>DM5</b>		
<b>LaTex and WORD</b>							
10.	Task-1	3	20-11-2023		<b>DM5</b>		
11.	Task-2	3	20-11-2023		<b>DM5</b>		
12.	Task-3	3	27-11-2023		<b>DM5</b>		
13.	Task-4	3	27-11-2023		<b>DM5</b>		
<b>EXCEL</b>							
14.	Task-1	3	4-12-2023		<b>DM5</b>		

15.	Task-2	3	4-12-2023		DM5
<b>LOOKUP/VLOOKUP</b>					
16.	Task-1	3	11-12-2023		DM5
<b>POWER POINT</b>					
17.	Task-1	3	18-2-2023		DM5
18.	Task-2	3	18-12-2023		DM5
19.	Task-3	3	1-1-2024		DM5
<b>AI TOOLS - ChatGPT</b>					
20.	Task-1	3	8-1-2024		DM5
21.	Task-2	3	8-1-2024		DM5
22.	Task-3	3	15-1-2024		DM5
23.	Internal exam	3			DM5

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

### **PART-C**

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

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

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

### PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	Ms Ch.Nagamani	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	Dr. D.Veeraiah
<b>Signature</b>				



# LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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Phone: 08659-222933, Fax: 08659-222931

## DEPARTMENT OF FRESHMANENGINEERING

### COURSE HANDOUT

#### PART-A

**Name of Course Instructor:** Dr. Lakshmi V R Babu Syamala

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

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

**Credits:1.5**

**Program/Sem/Sec** : B.Tech./I sem/CSE-D

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

**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 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:** 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	-	-	-	-	-	-	-
<b>1 = Slight (Low)</b>			<b>2 = Moderate (Medium)</b>					<b>3 = Substantial (High)</b>				

**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 Engineering chemistry lab	3	20-09-2023		TLM1		
2.	Preparation of a Bakelite	3	27-09-2023		TLM4	CO1	
3.	Determination of amount of HCl using standard Na <sub>2</sub> CO <sub>3</sub> solution	3	04-10-2023		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	11-10-2023		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	18-10-2023		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	25-10-2023		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	01-11-2023		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	15-11-2023		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	22-12-2023		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	29-12-2023		TLM4	CO5	
11.	Additional experiment/repeat	3	06-12-2023		TLM4	CO1	
12.	Additional experiment/repeat	3	13-12-2023		TLM4	CO1	
11.	Internal Exam	3	20-12-2023		TLM4	CO4	
	Total						

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

## Part - C

### EVALUATION PROCESS:

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 engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data,



- and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
  6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
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  8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
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  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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<b>Title</b>	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>Head of the Department</b>
<b>Name of the Faculty</b>	<b>Dr.Lakshmi V R Babu Syamala</b>	<b>Dr.V.Parvathi</b>	<b>Dr.V.Parvathi</b>	<b>Dr.A.Rami Reddy</b>
<b>Signature</b>				