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 ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. G. SrinivasuluCourse Name & Code: DLC-20EC02L-T-P Structure: 3-0-0Program/Sem/Sec: B. Tech. II-Sem., ECE A Sec

Regulation: R20 **Credits:** 03 **A.Y.:** 2022-23

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the basic concepts of number systems and Boolean algebra, logic gates and realization of Boolean expressions using logic gates, realization of combinational and sequential circuits and concepts of Finite State Machines and ASM Charts.

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

CO1	Summarize the key differences between number systems and their usage in Digital
	electronics circuits. (Understand – L2)
CO2	Identify the minimization techniques of Boolean expressions to implement digital
	circuits using basic logic gates and logic circuits. (Apply – L3)
CO3	Apply the minimization and realization methods for design of Combinational and
	Sequential logic circuits. (Apply – L3)
CO4	Analyze the Combinational, Sequential, Finite state machines and Algorithmic State
	Machines for implementation of digital logic circuits. (Analyze – L4)

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	2	3	1	-	-	-	-	-	-	-	-	1	-	2	-
CO2	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
CO3	2	3	3	-	I	-	-	-	-	-	-	2	-	3	-
CO4	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
		1	- Low			2	-Medi	ium			3	- High			

TEXTBOOKS:

T1 Morris Mano, "Digital Design", PHI Publishers, 4th Edition

T2 Ananda Kumar, "Switching Theory and Logic Design", PHI Publishers.

REFERENCE BOOKS:

R1 Charles H. Roth, "Fundamentals of Logic Design", Cengage learning Publishers

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Number Systems

c		No. of	Tentative	Actual	Teaching	HOD
D. No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
190.		Required	Completion	Completion	Methods	Weekly
	Introduction to course,					
1.	Course Outcomes,	1	13.03.2023			
	Introduction to UNIT-I					
2.	Number systems	1	14.03.2023			

3.	Decimal to binary, Octal,	1	15.03.2023			
	Hexadecimal conversion		17.02.2022			
	Binary, Octal,	1	17.03.2023			
4.	conversion;	1				
	Binary, Octal,		18.03.2023			
5.	Hexadecimal internal conversion	1				
6.	1's & 2's complement of	1	20.03.2023			
0.	binary numbers,	•				
7.	Binary arithmetics	1	24.03.2023			
8.	Signed Binary numbers	1	25.03.2023			
9	Binary codes –BCD,	1	27.03.2023			
7.	Excess-3 code	1				
10.	Binary codes- Gray code	1	29.03.2023			
	Error detecting and		31.03.2023			
11.	correcting codes –	1				
	Hamming code					
12.	Assignment-I	1	01.04.2023			
	No. of classes required to	No. of	classes tak	en:		

UNIT-II: Boolean Algebra and Logic gates

G		No. of	Tentative	Actual	Teaching	HOD
D. No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
10.		Required	Completion	Completion	Methods	Weekly
12	Introduction to Boolean	1	02.04.2023			
13.	algebra	1				
	Boolean postulates, De-		03.04.2023			
14.	Morgan's Theorem,	1				
	Principle of Duality					
1.7	Minimization of Boolean	1	08.04.2023			
15.	expressions	1				
	Sum of Products (SOP),		10.04.2023			
16.	Product of Sums (POS),	1				
	minterm & maxterm					
	Simplification of		12.04.2023			
17.	Boolean functions using	1				
	Karnaugh map (K-map)					
	Simplification Boolean		15.04.2023			
10	functions using K-map	1				
18.	with don't care	1				
	conditions					
	Minimization of Boolean		17.04.2023			
10	expressions using Quine-	1				
19.	Mc Cluskey Tabular	1				
	Method					
20	La ria Catas	1	19.04.2023			
20.	Logic Gates	1				
21	Realization of Boolean	1	21.04.2023			
21.	functions	1				
22.	Tutorial &Assignment	1	24.04.2023			
No.	of classes required to com	plete UNIT-	-II: 10	No. of classes	s taken:	

UNIT-III:	Com	binationa	l Logic	Circuits
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S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Complet ion	Teaching Learning Methods	HOD Sign Weekly
23.	Introduction to Combinational Circuits	1	26.04.2023			
24.	Adders: Half & Full Adder	1	28.04.2023			
25.	Subtractors: Half & Full Subtractor	1	29.04.2023			
26.	Parallel adder - Carry look ahead adder	1	01.05.2023			
27.	BCD adder, Magnitude Comparator	1	03.05.2023			
28.	Decoder	1	05.05.2023			
29.	Encoder	1	06.05.2023			
30.	Multiplexer & Demultiplexer	1	15.05.2023			
31.	Parity generator	1	17.05.2023			
32.	Code converters- binary to gray, gray to binary & BCD to Excess-3 codes	1	19.05.2023			
33.	Tutorial & Assignment-III	1	20.05.2023			
No.	of classes required to comple	ete UNIT-I	II: 11	No. of c	classes take	en:

UNIT-IV: Sequential Logic Circuits

c		No. of	Tentative	Actual	Teaching	HOD		
D. No	Topics to be covered	Classes	Date of	Date of	Learning	Sign		
190.		Required	Completion	Completion	Methods	Weekly		
34.	Introduction to Sequential Logic Circuits.	1	22.05.2023					
35.	SR and JK Latch	1	24.05.2023					
36.	SR, JK– Characteristic and excitation tables	1	26.05.2023					
37.	Flip flops- T, D	1	27.05.2023					
38.	Conversion of FFs	1	29.05.2023					
39.	Shift Registers	1	31.05.2023					
40.	Universal Shift Register	1	02.06.2023					
41.	Asynchronous counters	1	03.06.2023					
42.	Synchronous counters	1	05.06.2023					
43.	Assignment-IV	1	07.06.2023					
No.	No. of classes required to complete UNIT-IV: 10 No. of classes taken:							

UNIT-V: Finite state machines & Algorithmic State Machines

S.	Tanias to be servered	No. of	Tentative	Actual	Teaching	HOD
No.	Topics to be covered	Classes	Date of	Date of	Learning	Sign

		Required	Completion	Completion	Methods	Weekly		
44.	Introduction to FSM	1	09.06.2023					
45.	Introduction to Mealy and Moore machines	1	12.06.2023					
46.	Difference between Mealy and Moore machines	1	14.06.2023					
47.	Conversion Mealy to Moore machines	1	16.06.2023					
48.	Conversion Moore to Mealy machines	1	17.06.2023					
49.	Conversion Examples	1	19.06.2023					
50.	Conversion Examples	1	21.06.2023					
51.	Features of ASM chart	1	23.06.2023					
52.	System design using data control subsystems	1	24.06.2023					
53.	Control implementations	1	26.06.2023					
54.	Mealy examples	1	28.06.2023					
55.	Moore examples	1	30.06.2023					
56.	Tutorial and Assignment	1	03.07.2023					
No. o	of classes required to com	plete UNIT	-V:13	No. of classes	s taken:			
S.		No. of	Tentative	Actual	Teaching	HOD		
No.	Topics to be covered	Classes	Date of	Date of	Learning	Sign		
		Required	Completion	Completion	Methods	Weekly		
57.	Implementation of real time examples	1	07.07.2023					
T	Teaching Learning Methods							

Teaching Learning Methods							
	TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visi	it)		
	TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCS)			
	TLM3	Tutorial	TLM6	Group Discussion/Project			
	EVALUATI	<u>PA</u> ON PROCESS (R20 Regulation):	<u>RT-C</u>				
Ì	valuation T	ask			N		

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))	<mark>M=30</mark>

Cumulative Internal Examination (CIE): M

Semester End Examination (SEE)

Total Marks = CIE + SEE

<mark>70</mark> 100

30

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To Attain a solid foundation in Electronics & Communication Engineering										
	fundamentals with an attitude to pursue continuing education										
PEO 2	To Function professionally in the rapidly changing world with advances in technology										
PEO 3	To Contribute to the needs of the society in solving technical problems using										
	Electronics & Communication Engineering principles, tools and practices										
PEO 4	To Exercise leadership qualities, at levels appropriate to their experience, which										
	addresses issues in a responsive, ethical, and innovative manner?										

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering
	fundamentals, and an engineering specialization to the solution of complex
	engineering problems
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze
	complex engineering problems reaching substantiated conclusions using first
	principles of mathematics, natural sciences, and engineering sciences
PO 3	Design/development of solutions: Design solutions for complex engineering
	problems and design system components or processes that meet the specified needs
	with appropriate consideration for the public health and safety, and the cultural,
	societal, and environmental considerations
PO 4	Conduct investigations of complex problems: Use research-based knowledge and
	research methods including design of experiments, analysis and interpretation of data,
	and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and
	modern engineering and 11 tools including prediction and modelling to complex
DO 6	The orgineer and acciety. Apply reasoning informed by the contextual knowledge to
PUO	assess societal health safety least and cultural issues and the consequent
	assess societal, health, salety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
	responsionates recevant to the professional engineering practice
PO 7	Environment and sustainability . Understand the impact of the professional
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PO 7 PO 8	 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
PO 7 PO 8 PO 9	 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
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PO 7 PO 8 PO 9 PO 10	 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
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PO 7 PO 8 PO 9 PO 10 PO 11	 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 Project management and finance: Demonstrate knowledge and understanding of the
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PO 7 PO 8 PO 9 PO 10 PO 11	 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 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
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PO 7 PO 8 PO 9 PO 10 PO 11 PO 12	 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 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 Life-long learning: Recognize the need for, and have the preparation and ability to appear in independent and life long learning in the breadest extert of technological design documents
PO 7 PO 8 PO 9 PO 10 PO 11 PO 12	 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 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 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 echanges
PO 7 PO 8 PO 9 PO 10 PO 11 PO 12	 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 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 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

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		Dr. C. Sriniyaculu	Mr. C. Vankata Daa	Dr. C. Sriniwaculu	Dr. V. Amar Dah				

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Electronics & Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor:CH. MALLIKHARJUNARAOCourse Name & Code: Programming for problem solving using CL-T-P Structure:3-0-0Program/Sem/Sec: B.Tech/II/AA.Y

Credits: 3 **A.Y.:** 2022-2023

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, User defined structures, basics of files and its I/O operations.

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

CO1	Familiar with syntax and semantics of the basic programming language constructs.
CO2	Constructs derived data types like arrays in solving a problem.
CO3	Decompose a problem into modules and reconstruct it using various ways of user defined functions
CO4	Define user-defined data types like structures and unions and its applications to solve problems
CO5	Discuss various file I/O operations and its application.

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	-	-	-	-	•	-	•	-	2	-	-
CO5	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
1 - Low				2	-Med	ium			3	- High					

TEXTBOOKS:

T1 1. ReemaThareja, Programming in C, OxfordUniversityPress,2ndEdition,2015.

REFERENCE BOOKS:

R1	1. Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers,
	7th Edition, 2013.
R2	2. E Balagurusamy, Computer Programming, McGraw Hill Education, 8th Edition.
R3	3. C: The Complete Reference, McGraw Hall Education, 4th Edition
R4	4. PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011.
R5	5. Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2005.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

	UNIT-I:	Introduction to	o Problem sol	lving through (C-Programming,	C-Programming,	Control statements
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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, Problem Specification	1	13.03.2023		TLM1	
2.	Algorithm / pseudo code	1	16.03.2023		TLM1	
3.	flowchart, examples	1	17.03.2023		TLM1	
4.	Structure of C program, identifiers,	1	18.03.2023		TLM2	
5.	basic data types and sizes	1	20.03.2023		TLM1	
6.	Constants, variables, Input-output statements	1	23.03.2023		TLM1	
7.	operators,	1	24.03.2023		TLM2	
8.	expressions, type conversions, conditional expressions	1	25.03.2023		TLM1	
9.	precedence of operators and order of evaluation.	1	27.03.2023		TLM2	
10.	if, if else, else if ladder and	1	31.03.2023		TLM1	
11.	switch statements	1	01.04.2023		TLM1	
12.	while, do-while and for statements,	1	03.04.2023		TLM1	
13.	break, continue, goto and labels.	1	06.04.2023		TLM1	
No.	of classes required to complete	6	No. of classe	es taken:1	0	

UNIT-II: Arrays, Character Arrays, Applications of Arrays

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	concept, declaration, definition,	1	10.04.2023		TLM1	
15.	accessing elements, storing elements	1	13.04.2023		TLM1	
16.	two dimensional and multi- dimensional arrays	1	15.04.2023		TLM2	
17.	Declaration, initialization, reading, writing strings	1	17.04.2023		TLM1	
18.	string handling functions,	1	20.04.2023		TLM1	
19.	Pre-processor Directives, and macros.	1	21.04.2023		TLM1	
20.	Pre-processor Directives, and macros.	1	24.04.2023		TLM1	
21.	Linear search	1	27.04.2023		TLM1	
22.	Binary search	1	28.04.2023		TLM2	
23.	Bubble sort	1	29.04.2023		TLM1	
24.	Example programms	1	01.05.2023		TLM1	
25.	Example programms	1	04.05.2023		TLM1	
No.	of classes required to complete	No. of classe	s taken:1	0		

UNIT-III: Pointers, Functions, Storage classes

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	concepts, declaring and initialization	1	05.05.2023	-	TLM1	

	of pointer variables						
27.	pointer expressions, pointer arithmetic	1	06.05.2023	TLM1			
28.	pointers and arrays, pointers and character arrays	1	8.5.2023	TLM1			
29.	Pointers to pointers.	1	11.5.2023	TLM1			
30.	Exercise programs		12.5.2023	TLM1			
31.	basics, category of functions, parameter passing techniques	1	13.5.2023	TLM2			
32.	Recursive functions, comparison with Iteration.	1	29.5.2023	TLM1			
33.	Functions with arrays, Standard library functions	1	01.6.2023	TLM2			
34.	Exercise programs	1	02.6.2023	TLM1			
35.	Dynamic memory management functions, command line arguments.	1	03.6.2023	TLM1			
36.	Storage classes - auto, register	1	05.6.2026	TLM1			
37.	Storage classes -static and extern,	1	08.6.2023	TLM1			
	No. of classes required to complete UNIT-III: 10 No. of classes taken:						

UNIT-IV: Derived 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
38.	Derived types- structures	1	9.6.2023		TLM1	
39.	declaration, definition, and initialization of structures	1	10.6.2023		TLM1	
40.	accessing structures	1	12.6.2023		TLM1	
41.	nested structures	1	15.6.2023		TLM2	
42.	arrays of structures	1	16.6.2023		TLM1	
43.	structures and functions,	1	17.6.2023		TLM1	
44.	pointers to structures	1	19.6.2023		TLM2	
45.	self-referential structures	1	22.6.2023		TLM1	
46.	unions, typedef	1	23.6.2023		TLM1	
47.	Example Programs	1	24.6.2023		TLM1	
No.	of classes required to complete	No. of classe	es taken:			

UNIT-V: Files

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly	
48.	Files – concept of a file	1	26.6.2023		TLM1		
49.	Concepts of files,text files	1	30.6.2023		TLM2		
50.	binary files, streams,	1	1.7.2023		TLM1		
51.	standard I/O	1	3.7.2023		TLM1		
52.	Formatted I/O	1	6.7.2023		TLM2		
53.	file I/O operations	1	7.7.2023		TLM1		
54.	error handling	1	8.7.2023		TLM2		
No. o	No. of classes required to complete UNIT-V: 11 No. of classes taken:11						

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

			Prabha/MOOCS)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

	write effective reports and design documentation, make effective presentations, and give					
	and receive clear instructions.					
	Project management and finance: Demonstrate knowledge and understanding of the					
PO 11	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.					
DO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in					
PU 12	independent and life-long learning in the broadest context of technological change.					

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Communication: Design and develop modern communication technologies for building the
	inter disciplinary skills to meet current and future needs of industry.
	VLSI and Embedded Systems: Design and Analyze Analog and Digital Electronic Circuits or
PSO 2	systems and Implement real time applications in the field of VLSI and Embedded Systems using
	relevant tools
PSO 3	Signal Processing: Apply the Signal processing techniques to synthesize and realize the issues
F30 3	related to real time applications

Title	Course Instructor	Course Instructor Course Coordinator		Head of the Department	
Name of the Faculty	CH.Mallikharjuna Rao	Dr.P.Venkat Rao	Dr.P.LachiReddy	Dr.Y.Amarbabu	
Signature					



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM/SEM/SEC	: I B. Tech., II-Sem., ECE - A
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: Linear algebra & Transformation Techniques & 20FE04
L-T-P STRUCTURE	: 3-1-0
COURSE CREDITS	:3
COURSE INSTRUCTOR	: Dr. K. Jhansi Rani
COURSE COORDINATOR	: Dr. K. Jhansi Rani
PRE-REQUISITES	: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the students learn Matrix algebra and introduced with transformation techniques such as Laplace transformation and Z – Transformations.

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

CO1	Investigate the consistency of the system of equations and solve them. (Apply L3)
CO1	Determine the Eigen vectors and inverse, powers of a matrix by using Cayley - Hamilton
02	theorem. (Apply L3)
CO3	Use the concepts of Laplace transforms to various forms of functions. (Understand L2)
CO4	Solve Ordinary differential equations by using Laplace Transformations. (Apply L3)
CO5	Apply Z- Transformations to solve difference equations. (Apply L3)

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

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

TEXTBOOKS:

- **T1** Dr. B.S. Grewal, "Higher Engineering Mathematics", 42ndEdition, Khanna Publishers, New Delhi, 2012.
- **T2** Dr. B. V. Ramana, "Higher Engineering Mathematics", 1stEdition, TMH, New Delhi, 2010.

REFERENCE BOOKS:

- **R1** M. D. Greenberg, "Advanced Engineering Mathematics", 2nd Edition, TMH Publications, New Delhi, 2011.
- **R2** Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, John Wiley & sons, New Delhi, 2011.
- **R3** W.E. Boyce and R. C. Diprima, "Elementary Differential Equations", 7th Edition, John Wiley & sons, New Delhi,2011.

<u>PART-B</u> COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	13/03/23		TLM1	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
2.	Introduction to UNIT I	1	14/03/23		TLM1	
3.	Matrices and rank of a matrix	1	15/03/23		TLM1	
4.	Echelon form of a matrix	1	18/03/23		TLM1	
5.	Normal form of a matrix	1	20/03/23		TLM1	
6.	Normal form of a matrix	1	21/03/23		TLM1	
7.	PAQ form	1	25/03/23		TLM1	
8.	Solution of Non-homogeneous linear system of equations	1	27/03/23		TLM1	
9.	Solution of Non-homogeneous Linear system of equations	1	28/03/23		TLM1	
10.	Solution of Homogeneous Linear system of equations	1	29/03/23		TLM1	
11.	Tutorial 1	1	01/04/23		TLM3	
12.	Solution of Homogeneous Linear system of equations	1	03/04/23		TLM1	
No.	of classes required to complete UNIT-I: 1	1		No. of classe	s taken:	

UNIT-I: Linear System of Equations

UNIT-II: Eigen values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Introduction to UNIT II	1	04/04/23		TLM1	
14.	Eigen values of a matrix	1	08/04/23		TLM1	
15.	Eigen values and Eigen vectors of a matrix.	1	10/04/23		TLM1	
16.	Eigen values and Eigen vectors of a matrix.	1	11/04/23		TLM1	
17.	Eigen values and Eigen vectors of a matrix.	1	12/04/23		TLM1	
18.	Properties	1	15/04/23		TLM1	
19.	Properties		17/04/23			
20.	Cayley – Hamilton Theorem.	1	18/04/23		TLM1	
21.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	19/04/23		TLM1	
22.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	24/04/23		TLM1	
23.	Tutorial 2	1	29/04/23		TLM3	
No.	No. of classes required to complete UNIT-II: 11 No. of classes taken:					

UNIT-III: Laplace Transforms

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.	Introduction to Unit-III	1	25/04/23		TLM1	
25.	Standard forms of Laplace Transforms.	1	26/04/23		TLM1	
26.	Linear Property, Shifting Theorem.	1	01/05/23		TLM1	
27.	Change of scale property, Multiplication by t.	1	02/05/23		TLM1	
28.	Multiplication by t.	1	03/05/23		TLM1	

II MID EXAMINATIONS (08-05-2023 TO 13-05-2023)				
29.	Division by t	1	06/05/23	TLM1
30.	Laplace transforms of derivatives.	1	15/05/23	TLM 1
31.	Laplace transforms of Integrals.	1	16/05/23	TLM1
32.	Tutorial 3	1	17/05/23	TLM3
33.	Unit step function and Dirac's delta function.	1	20/05/23	TLM1
34.	Application of Laplace Transforms.	1	22/05/23	TLM1
No. of classes required to complete UNIT-III: 11 No. of classes taken:				

UNIT-IV: Inverse Laplace Transforms

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 UNIT IV.	1	23/05/23		TLM1	
36.	Linear property.	1	24/05/23		TLM1	
37.	First Shifting properties.	1	27/05/23		TLM1	
38.	Inverse transforms properties	1	29/05/23		TLM1	
39.	Problems	1	30/05/23		TLM1	
40.	Inverse Laplace transform by using partial fractions.	1	31/05/23		TLM1	
41.	Inverse Laplace transform by using partial fractions.	1	03/06/23		TLM1	
42.	Inverse Laplace Transform by using Convolution theorem.	1	05/06/23		TLM1	
43.	Inverse Laplace Transform by using Convolution theorem.	1	06/06/23		TLM1	
44.	Solving of Ordinary differential equation by Laplace transform method.	1	07/06/23		TLM1	
45.	Solving of Ordinary differential equation by Laplace transform method.	1	10/06/23		TLM1	
46.	Tutorial 4	1	12/06/23		TLM3	
No.	No. of classes required to complete UNIT-IV: 12 No. of classes taken:					

UNIT-V: Z- Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
47.	Introduction to UNIT V.	1	13/06/23		TLM1	
48.	Standard forms of Z- Transform.	1	14/06/23		TLM1	
49.	Damping rule	1	17/06/23		TLM1	
50.	Shifting Rule	1	19/06/23		TLM1	
51.	Initial and final value theorems.	1	20/06/23		TLM1	
52.	Other properties	1	21/06/23		TLM1	
53.	Inverse Z – Transforms by using partial fractions.	1	24/06/23		TLM1	
54.	Inverse Z – Transform by using convolution theorem.	1	26/06/23		TLM1	
55.	Solving of Difference equations by using Z – Transforms.	1	27/06/23		TLM1	
56.	Solving of Difference equations by using Z – Transforms.	1	28/06/23		TLM1	
57.	Revision	1	01/07/23		TLM1	
58.	Tutorial 5	1	03/07/23		TLM3	
No. of	No. of classes required to complete UNIT-V: 12 No. of classes taken:					

Contents 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
59.	Solving Simultaneous equations using Laplace Transforms	2	04/07/23 05/07/23		TLM2	

II MID EXAMINATIONS (10-07-2023 TO 15-07-2023)

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & 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))	<mark>M=30</mark>
Cumulative Internal Examination (CIE): M	<mark>30</mark>
Semester End Examination (SEE)	<mark>70</mark>
Total Marks = $CIE + SEE$	100

PROGRAMME OUTCOMES (POs):

PART-D

PO 1	Engineering knowledge : Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering
PO 2	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
PO 3	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
PO 4	including design of experiments, analysis and interpretation of data and synthesis of the information to
	Modern tool usage: Create select and apply appropriate techniques resources and modern
PO 5	engineering and IT tools including prediction and modeling to complex engineering activities
100	with an understanding of the limitations.
	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal,
PO 6	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
PO 7	societal and environmental contexts, and demonstrate the knowledge of and need for sustainable
-	development.
PO 8	Etnics: Apply etnical principles and commit to professional etnics and responsibilities and norms of the
	Individual and team work: Function effectively as an individual and as a member or leader in diverse
PO 9	teams, and in multidisciplinary settings.
	Communication : Communicate effectively on complex engineering activities with the engineering
PO 10	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.
	Project management and finance: Demonstrate knowledge and understanding of the engineering and
PO 11	management principles and apply these to one's own work, as a member and leader in a team, to
	manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in
	independent and ine-iong learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. K. Jhansi Rani	Dr. K. Jhansi Rani	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Signature				

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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor:Mr.K.Jamili ReddyCourse Name & Code: Engineering Chemistry&20FE06L-T-P Structure:3-0-0Program/Sem/Sec: B.Tech/IIsem-ECE-A

Credits:03 A.Y. : 2022-23

PREREQUISITE: Electrode potential, Cell potential of a cell/EMF of a cell, primary & secondary batteries, isotropy and anisotropy in crystals, qualitative and quantitative analysis.

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to strengthen the basic concepts of electrochemistry, corrosion, nanotechnology, polymers, liquid crystals and analytical techniques

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

C01	Apply Nernst Equation for calculating electrode cell potentials and compare batteries for
	different applications.
CO2	Apply principles of corrosion for design and effective maintenance of various equipment.
CO3	Analyse the suitability of advanced materials like nano materials in electronics and medici
CO4	Identify the importance of liquid crystals, polymers in advanced technologies.
CO5	Apply the principles of analytical techniques in chemical analysis.

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

COs	P01	P0 2	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3	2	1		2	2					2
CO 2	3	2	2	1		2	1					2
CO 3	3	2	2	1		1	1					2
CO4	3	2	2	1		1	1					2
CO5	3	2	1	1		1	1					2

TEXTBOOKS:

T1 Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.

Jain, Jain, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, **T2** 16th Edition, 2015.

REFERENCE BOOKS:

- **R1** Shikha Agarwal, "A text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
- **R2** S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S. Chand Publications, New Delhi, 12th Edition, 2010.
- **R3** Y. Bharathi Kumari, Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: ELECTRO CHEMISTRY & BATTERIES

		No. of	Tentative	Actual	Teaching	HOD
S.No.	Topics to be covered	Classes	Date of	Date of	Learning	Sign
		Required	Completion	Completion	Methods	Weekly
1.	Introduction to Course and Cos	1	13-03-23		TLM1	
2.	Introduction to Unit-I	1	14-03-23		TLM1	
3.	Applications of Electro chemical Series,	1	16-03-23		TLM1	
4.	Calculation of EMF of Cell,	1	17-03-23		TLM1	
5.	Practice exercises on applications of Electro chemical series,	1	20-03-23		TLM1	
6.	Calomel Electrode, Nernst equation derivation	1	21-03-23		TLM2	
7.	Applications of Nernst Equation	1	23-03-23		TLM1	
8.	Glass Electrode	1	24-03-23		TLM2	
9.	Lead-acid Battery	1	27-03-23		TLM2	
10.	Lithium-ion Battery	1	28-03-23		TLM2	
11.	H ₂ – O ₂ Fuel cell, Mg-Cu reserve battery.	1	31-03-23		TLM2	
12.	Revision of unit 1	1	03-04-23		TLM1	
13.	Assignment	1	04-04-23		TLM1	
No. of	classes required to complete	e UNIT-I: 13		No. of classes	taken:	

UNIT-II: SCIENCE OF CORROSION

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.	Definition, Examples, dry corrosion	1	06-04-23		TLM1	weeniy
2.	corrosion by other gases and liquid metal corrosion dry corrosion, pilling bed worth rule.	1	10-04-23		TLM1	
3.	Conditions to occur wet corrosion. Mechanism- oxygen absorption,	1	11-04-23		TLM2	
4.	Hydrogen evolution, types of wet corrosion	1	13-04-23		TLM2	
5.	Galvanic Corrosion, passivity and Galvanic series.	1	17-04-23		TLM2	
6.	Concentration Cell Corrosi	1	18-04-23		TLM2	
7.	ContdConcentrationcell Corrosion	1	20-04-23		TLM2	
8.	Factors influencing corrosion Nature of metal.	1	21-04-23		TLM1	
9.	Factors influencing corrosion Nature of environment	1	24-04-23		TLM1	
10.	Cathodic Protection	1	25-04-23		TLM2	
11.	Electroplating, metal cladding.	1	27-04-23		TLM2	
12.	Revision	1	28-04-23		TLM1	
13.	Assignment	1	01-05-23		TLM1	
No. of	classes required to complete	UNIT-II: 13		No. of classes	taken:	

UNIT-III: CHEMISTRY OF ENGINEERING MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction, types of nano-materials,	1	02-05-23		TLM1	
2.	Gas-Phase Synthesis of nanomaterials,	1	04-05-23		TLM2	
3.	Applications of nanomaterials.	1	05-05-23		TLM1	
4.	Discussion on MID-I marks evaluation	1	15-05-23		TLM2	
5.	Materials in Electronic devices.	1	16-05-23		TLM2	
6.	Contd Materials in Electronic devices.		18-05-23		TLM2	
7.	Characteristics of Molecular motors and	1	19-05-23		TLM2	

	machines					
8.	Rotaxanes and Catenanes as artificial molecular machines	1	22-05-23		TLM2	
9.	Contdrotaxanes and Catenanes as artificial molecular machines	1	23-05-23		TLM2	
10.	Automated light powered molecular motor	1	25-05-23		TLM2	
11.	Revision	1	26-05-23		TLM1	
12.	Assignment	1	29-05-23		TLM1	
No. of	classes required to complet	e UNIT-III: 1	2	No. of classes	taken:	

UNIT-IV: LIQUID CRYSTALS & POLYMERS

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.	Classification of liquid crystals, Thermotropic liquid crystals.	1	30-05-23		TLM2	
2.	Lyotropic liquid crystals.	1	01-06-23		TLM2	
3.	Applications of liquid crystals.	1	02-06-23		TLM2	
4.	Introduction and types of polymrerisations,	1	05-06-23		TLM1	
5.	Plastics	1	06-06-23		TLM1	
6.	Rubbers	1	08-06-23		TLM1	
7.	Conducting polymers.	1	09-06-23		TLM1	
8.	Bio-degradable polymers	1	12-06-23		TLM1	
9.	Revision	1	13-06-23		TLM1	
10.	Assignment	1	15-06-23		TLM1	
No. of	classes required to complete	e UNIT-IV: 10)	No. of classes	taken:	

UNIT-V: ANALYTICAL TECHNIQUES

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.	Types of analysis	1	16-06-23		TLM2	
2.	Principle of conductometric titrations. strong acid vs strong base titration	1	19-06-23		TLM2	
3.	Strong acid vs weak base titrations, Strong base vs weak acid.	1	20-06-23		TLM2	
4.	Weak acid vs weak base titrations.	1	22-06-23		TLM2	

5.	Principle of potentiometry Acid-base titration	1	23-06-23		TLM2	
6.	Oxidation - Reduction titration.	1	26-06-23		TLM2	
7.	Determination of iron by using thiocynate reagent.	1	27-06-23		TLM2	
8.	Revision	1	30-06-23		TLM1	
9.	Assignment	1	03-07-23		TLM1	
No. of cla	No. of classes required to complete UNIT-V: 09			No. of classes	taken:	

Topics beyond the syllabus:

Sl.No	Topics to be	No.of	Tentative	Actual Date	Teaching	HoD Sign
	coverd	Classes	Date of	of	Learning	
		Required	Completion	Completion	Methods	
1.	Batteries used in mobile phones of popular companies.	1	04-07-23		TLM1	
2.	Industrial applications of electroplating	1	06-07-23		TLM1	
3.	Polymers in industrial applications.	1	07-07-23		TLM1	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & 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))	<mark>M=30</mark>
Cumulative Internal Examination (CIE): M	<mark>30</mark>
Semester End Examination (SEE)	<mark>70</mark>
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.K.Jamili Reddy	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor:Dr P.Rakesh KumarCourse Name & Code: CONSTITUTION OF INDIA -20MC01Regulation: R20L-T-P Structure: 2-0-0Credits: 00Program/Sem/Sec: B. Tech. II-Sem., ECE A-SecA.Y.: 2022-23

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution.
- To understand the structure of Executive, Legislature and Judiciary.
- To understand Philosophy of fundamental rights and duties.
- To understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commission of India.
- To understand the Central and State relation, financial and administrative.

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

CO1	Understand history and philosophy of constitution with reference to						
	Preamble, Fundamental Rights and Duties						
CO2	Understand the concept of Unitary and Federal Government along with						
	the role of President, Prime Minister and Judicial System.						
CO3	Understand the structure of the state government, Secretariat, Governor						
	and Chief Minister and their functions						
CO4	learn local administration viz. Panchayat, Block, Municipality and						
	Corporation						
CO5	learn about Election Commission and the process and about SC, ST, OBC						
	and women						

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	1	•	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	1	•	-	-	-	-	-	-
1 - Low				2	-Medi	ium			3	- High					

TEXT BOOKS:

- **T1** Dr.B.R. Ambedkar, The Constitution of India, General Press First edition 2020., New Delhi
- T2 Dr.B. R. Ambedkar, The Constitution of India, Government of India

REFERENCE BOOKS:

- **R1** Durga Das Basu, Introduction to the Constitution of India, Prentice Hall of India Pvt.Ltd., New Delhi.
- **R2** Subash Kashyap, Indian Constitution, National Book Trust.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Introduction to Indian Constitution

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 Course	1	16-03-2023		TLM2	
2.	Introduction to Indian Constitution	1	17-03-2023		TLM2	
3.	Sources and Constitutional History, Features	1	23-03-2023		TLM2	
4.	Citizenship, Preamble	1	24-03-2023		TLM2	
5.	Fundamental Rights and Duties	1	31-03-2023		TLM2	
6.	Directive Principles of State Policy.	1	06-04-2023		TLM2	
No. of	f classes required to complete UNI	IT-I:6		No. of class	ses taken:	

UNIT-II: Union Government and its Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Union Government and its		13-04-2023		TLM2	
1.	Administration Structure of the	1				
	Indian Union.					
2	President: Role, Power and	1	20-04-2023		TLM2	
2.	Position.	1				
2	Prime Minister (PM) and Council	1	21-04-2023		TLM2	
5.	of Ministers	1				
4.	Cabinet and Central Secretariat	1	27-04-2023		TLM2	
5.	Lok Sabha, Rajya Sabha	1	28-04-2023		TLM2	
	The Supreme Court and High	1	28-04-2023		TLM2	
6.	Court: Powers and Functions.	1				
No. of	f classes required to complete UN	IT-II:6		No. of clas	ses taken:	

UNIT-III: State Government and its Administration

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	State Government and its	1	04-05-2023		TLM2	
1.	Administration	1				
2.	Governor – Role and Position	1	05-05-2023		TLM2	
3.	Chief Minister (CM)	1	18-05-2023		TLM2	
4.	Council of Ministers.	1	19-05-2023		TLM2	
5.	State Secretariat: Organization	1	25-05-2023		TLM2	
6.	Structure and Functions	1	26-05-2023		TLM2	
No. o	f classes required to complete UN	No. of class	ses taken:			

UNIT-IV : A Local Administration

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.	A Local Administration Role and Importance	1	01-06-2023		TLM2	
2.	Municipalities – Mayor and Role of Elected Representative	1	02-06-2023		TLM2	
3.	Functions of Panchayati Raj Institution	1	08-06-2023		TLM2	

4	Zilla Panchayat, Elected Officials,	1	09-06-2023	TLM2			
т.	and their roles						
5	Village level – Role of Elected	1	15-06-2023	TLM2			
5.	officials.						
6.	Role of Appointed officials.	1	16-06-2023	TLM2			
No. of	No. of classes required to complete UNIT-IV:5 No. of classes taken:						

UNIT-V : Election Commission

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.	Election Commission – Role of Chief Election Commissioner	1	22-06-2023		TLM2	
2.	Role of Election Commissionerate	1	23-06-2023		TLM2	
3.	State Election Commission: Functions	1	30-06-2023		TLM2	
4.	Commissions for the welfare of SC/ST/OBC	1	06-07-2023		TLM2	
5.	Commissions for the welfare of Women.	1	07-07-2023		TLM2	
No. of classes required to complete UNIT-V:5 No. of classes taken:						

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

PART-C

EVALUATION PROCESS (R20 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))	<mark>M=30</mark>
Cumulative Internal Examination (CIE): M	<mark>30</mark>
Semester End Examination (SEE)	<mark>70</mark>
Total Marks = CIE + SEE	100

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To Attain a solid foundation in Electronics & Communication Engineering fundamentals						
	with an attitude to pursue continuing education						
PEO 2	To Function professionally in the rapidly changing world with advances in technology						
PEO 3	To Contribute to the needs of the society in solving technical problems using Electronics						
	& Communication Engineering principles, tools and practices						
PEO 4	To Exercise leadership qualities, at levels appropriate to their experience, which addresses						
	issues in a responsive, ethical, and innovative manner?						

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics science engineering					
101	fundamentals, and an anginaering specialization to the solution of complex angineering					
	problems					
PO 2	Problem analyzic: Identify, formulate, review research literature, and analyze complex.					
102	angingering problems reaching substantiated conclusions using first principles of					
	mothematics, natural sciences, and angineering sciences					
DO 2	Design (development of solutions) Design solutions for complex ensineering methods					
FU S	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					
DO 4	environmental considerations					
PU 4	Conduct investigations of complex problems: Use research-based knowledge					
	and research methods including design of experiments, analysis and interpretation of					
	data, and synthesis of the information to provide valid conclusions					
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources,					
	and modern engineering and 11 tools including prediction and modelling to					
	complex engineering activities with an understanding of the limitations					
PU 6	The engineer and society: Apply reasoning informed by the contextual knowledge					
	to assess societal, health, safety, legal and cultural issues and the					
D0 7	consequent responsibilities relevant to the professional engineering practice					
P0 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					
PU 8	Etnics: Apply ethical principles and commit to professional ethics and					
DO O	responsibilities and norms of the engineering practice					
P0 9	Individual and team work: Function effectively as an individual, and as a member					
DO 10	or leader in diverse learns, and in multidisciplinary settings					
P0 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					
PO 11	Project management and finance: Demonstrate knowledge and understanding of					
1011	the engineering and management principles and apply these to one's own work as					
	a member and leader in a team to manage projects and in					
	multidisciplinary environments					
PO 12	Life long learning: Recognize the need for and have the preparation and ability					
1012	to engage in independent and life-long learning in the broadest context of					
	technological change					
PROGRA	MME 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					

	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									

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DEPARTMENT OF Electronics and Communication

Engineering.

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs.D.Chaithanya

: PC-II, 20FE02
: 2-0-0
: ECE A-II SEM
:2022-23

Credits: 02

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To improve English language proficiency of the students on various aspects like vocabulary, grammar, communication skills, listening skills, Reading & Writing skills.

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

CO1	Produce a coherent paragraph interpreting a figure/graph/chart/table.	L2
CO2	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
CO3	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
CO4	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
CO5	Write well structured essays; Reports & Résumé.	L3

UNIT-I

Fabric of Change-'H.G. Wells and the Uncertainties of Progress–Peter J. Bowler'; Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary: Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting; Degrees of Comparison; Writing: Information Transfer.

UNIT-II

Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far';

Reading: Global Comprehension; Detailed Comprehension; Grammar & Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays using suitable claims and evidences.

UNIT-III

'Homi Jahangir Bhabha'; Grammar & Vocabulary: Words often confused; Common Errors; Writing: Incident & Investigation Reports.

UNIT-IV

'Jagadish Chandra Bose'; Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.

UNIT-V

'**Prafulla Chandra Ray'**; Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

COURSE ARTICULATION MATRIX (C	orrelation between COs, POs & PSOs):
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COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
CO1		1		1		1			3	3		2			
CO2		1		1		1			3	3		2			
CO3		1		1		1			3	3		2			
CO4		1		1		1			3	3		2			
CO5		1		1		1			3	3		2			
1 - Low 2 - M				-Med	ium			3	- High						

TEXTBOOKS:

- T1 Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
- T2 "The Great Indian Scientists" published by Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

- R1 Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2 Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- **R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- **R4** Baradwaj Kumkum, "Professional Communication", I. K. International PublishingHousePvt.Lt., NewDelhi, 2008.
- **R5** Wood, F. T., "Remedial English Grammar", Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	01	15/3/2023		TLM2	
2.	Fabric of Change-'H.G. Wells and the Uncertainties of Progress– Peter J. Bowler'	03	16/3/2023 23/3/2023		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	24/3/2023		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	02	29/3/2023 31/3/2023		TLM2	
5.	Adjectives and adverbs	01	6/4/2023		TLM2	
6.	Degrees of Comparison	01	12/4/2023		TLM2	
7.	Writing: Information Transfer.	01	13/4/2023		TLM2 TLM6	
No.	of classes required to complete	0	No. of clas	ses takei	1:	

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far'	03	19/4/2023 21/4/2023		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	26/4/2023		TLM2	
10.	Active & Passive Voice	02	27/4/2023 28/4/2023		TLM2	
11.	Idioms & Phrases	02	3/5/2023 4/5/2023		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	5/5/2023		TLM2 TLM6	
No. of classes required to complete UNIT-II: 09 No. of classes taken:						

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	'Homi Jahangir Bhabha'	03	17/5/2023 19/5/2023		TLM2 TLM6	
14.	Words often confused	01	24/5/2023		TLM2	
15.	Common Errors	01	25/5/2023		TLM2	
16.	Report Writing – Types & Formats	02	26/5/2023 31/5/2023		TLM2	
17.	Incident and Investigation Reports	01	1/6/2023		TLM2 TLM6	

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Jagadish Chandra Bose	3	2/6/2023 8/6/2023		TLM2 TLM2	
19.	Use of antonyms	1	9/6/2023		TLM2	
20.	Correction of Sentences	2	14/6/2023 15/6/2023		TLM2	
21.	Formal and Informal dialogues	1	16/6/2023		TLM2	
22.	Dialogue Writing.	1	21/6/2023		TLM2 TLM6	
No.	of classes required to complete	No. of clas	ses takei	n:		

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
23.	Prafulla Chandra Ray	03	22/6/2023 28/6/2023		TLM2	
24.	Analogy	01	30/6/2023		TLM2	
25.	Sentence Completion	01	5/7/2023		TLM2	
26.	Resume - Formats	01	6/7/2023		TLM2	
27.	Writing a Résumé	01	7/7/2023		TLM2 TLM6	
No. o	f classes required to complete	e UNIT-V:	07	No. of clas	sses takei	n:

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

PART -C

EVALUATION PROCESS (R17 Regulation):

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

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge : Apply the knowledge of mathematics, science, engineering fundamentals, and an angineering resolution to the colution of complex, angineering problems
	and an engineering specialization to the solution of complex engineering problems.
DO 2	problem analysis. Identify, formulate, review research interature, and analyze complex engineering
PU 2	and engineering sciences
	Design/development of solutions: Design solutions for complex engineering problems and design
PO 3	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
PO 4	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
PO 5	engineering and IT tools including prediction and modelling to complex engineering activities with an
	understanding of the limitations
	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal,
PO 6	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
PO 7	societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable
	development
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the
	Individual and team work: Eulection effectively as an individual, and as a member or leader in diverse
PO 9	teams and in multidisciplinary settings
	Communication : Communicate effectively on complex engineering activities with the engineering
PO 10	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
	Project management and finance: Demonstrate knowledge and understanding of the engineering and
PO 11	management principles and apply these to one's own work, as a member and leader in a team, to
	manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in
PU 12	independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs.D.Chaithanya	Dr. B. Samrajya Lakshmi	Dr. B. Samrajya Lakshmi	Dr. A. Ramireddy
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. G. SrinivasuluCourse Name & Code: DLC Lab-20EC52L-T-P Structure: 0-0-1Program/Sem/Sec: B. Tech. II-Sem., ECE A Sec

Regulation: R20 **Credits:** 1 **A.Y.:** 2022-23

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course gives the ability to design and verify digital logic circuits like; logic gates, combinational and sequential logic circuits using discrete components and Integrated Circuits.

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

CO1	Demonstrate the functionality of Logic gates, Flip-flops, Shift registers and Counters.
	(Understand – L2)
603	Apply the Boolean minimization methods to implement Combinational and Sequential logic
02	circuits using logic gates. (Apply – L3)
CO3	Analyze the behavior of Combinational and Sequential logic circuits. (Analyze – L4)
CO4	Adapt effective Communication, presentation and report writing skills. (Apply – L3)

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	2	3	3	1	2	3	-	2	-	-	-	1	-	3	-
CO2	2	1	1	1	1	3	-	2	-	-	-	1	-	1	-
CO3	2	1	1	-	1	3	-	2	-	-	-	1	-	1	-
CO4	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-
		1	- Low			2	-Medi	ium			3	- High			

TEXTBOOKS:

T1 Morris Mano, "Digital Design", PHI Publishers, 4th Edition

REFERENCE BOOKS:

R1 Ananda Kumar, "Switching Theory and Logic Design", PHI Publishers.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to course, Course Outcomes, Usage of Lab equipments and ICs	3	15.03.2023			
2.	Realization of logic gates using universal logic gates.	3	29.03.2023			
3.	Realization of Adder and Subtractor circuits using basic / universal gates.	3	12.04.2023			

No. d	of classes required to complete : 39			No. of classes	s taken:	
13.	Add-on experiment	3	28.06.2023			
12.	counter.	3	21.06.2023			
11.	Implementation of Universal shift register.	3	14.06.2023			
10.	Implementation of shift register.	3	07.06.2023			
9.	Conversion of SR to D flip-flop and SR to T flip-flop.	3	31.05.2023			
8.	Verification of flip-flops.	3	24.05.2023			
7.	Realization of Boolean Expressions using Multiplexers.	3	17.05.2023			
6.	Implementation of 8×1 Multiplexer and Demultiplexer.	3	03.05.2023			
5.	Realization of Boolean expressions using Decoder.	3	26.04.2023			
4.	Implementation of Binary to Gray and Gray to Binary code converters.	3	19.04.2023			

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work $= \mathbf{A}$	1,2,3,4,5,6,7,8	A=05
Record $=$ B	1,2,3,4,5,6,7,8	B=05
Internal Test = \mathbf{C}	1,2,3,4,5,6,7,8	C = 05
Cumulative Internal Examination : $A + B + C = 15$	1,2,3,4,5,6,7,8	15
Semester End Examinations = D	1,2,3,4,5,6,7,8	D = 35
Total Marks: $A + B + C + D = 50$	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To Attain a solid foundation in Electronics & Communication Engineering
	fundamentals with an attitude to pursue continuing education
PEO 2	To Function professionally in the rapidly changing world with advances in technology
PEO 3	To Contribute to the needs of the society in solving technical problems using
	Electronics & Communication Engineering principles, tools and practices
PEO 4	To Exercise leadership qualities, at levels appropriate to their experience, which
	addresses issues in a responsive, ethical, and innovative manner?

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering
	fundamentals, and an engineering specialization to the solution of complex
	engineering problems
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze
	complex engineering problems reaching substantiated conclusions using first

	principles of mathematics, natural sciences, and engineering sciences
PO 3	Design/development of solutions: Design solutions for complex engineering
	problems and design system components or processes that meet the specified needs
	with appropriate consideration for the public health and safety, and the cultural,
	societal, and environmental considerations
PO 4	Conduct investigations of complex problems: Use research-based knowledge and
	research methods including design of experiments, analysis and interpretation of data,
	and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and
	modern engineering and IT tools including prediction and modelling to complex
	engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to
	assess societal, health, safety, legal and cultural issues and the consequent
D0 7	responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability : Understand the impact of the professional
	engineering solutions in societal and environmental contexts, and demonstrate the
DO 9	Explose: Apply athical principles and commit to professional athics and responsibilities
FUO	and norms of the angineering practice
PO 9	Individual and team work: Function effectively as an individual and as a member or
10,	leader in diverse teams and in multidisciplinary settings
PO 10	Communication : Communicate effectively on complex engineering activities with
1010	the engineering community and with society at large, such as, being able to
	comprehend and write effective reports and design documentation, make effective
	presentations, and give and receive clear instructions
PO 11	Project management and finance: Demonstrate knowledge and understanding of the
	engineering and management principles and apply these to one's own work, as a
	member and leader in a team, to manage projects and in multidisciplinary
	environments
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to
	engage in independent and life-long learning in the broadest context of technological
	change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	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	Dr. G. Srinivasulu	Mr. K V Ashok	Dr. G. Srinivasulu	Dr. Y. Amar Babu	



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT PART-A

Name of Course Instructor : Mr.CH.Mallikharjuna Rao/Mr.T.Anil Raju/Mr.M.Sambasiva Re							
Course Name & Code	: Programming for problem solving using	C Lab (Code:20CS01)					
L-T-P Structure	: 0-0-3	Credits: 1.5					
Program/Sem/Sec	: B.Tech., ECE., II-Sem., Section- A	A.Y : 2022-23					

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to learn the basic elements of C Programming Structures like Data Types, Expressions, Control Statements, and Various I/O Functions and to solve simple mathematical problems using control structures. Design and implementation of various software components, which solve real world problems.

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

C01	Apply control structures of C in solving computational problems. (Apply-L3)
CO2	Implement derived datatypes & use modular programming in problem solving. (Apply- L3)
CO3	Implement user defined datatypes and perform file operations.(Apply-L3)
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values. (Apply– L3)

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 - Low				2 –Medium						3 - F	ligh				

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-I(22761A0401-22761A0433)

S. No.	Topics to be covered (Experiment Name)	No. of Classes Require d	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Demo on lab experiments	3	15.03.2023			
2.	Module 1: Introduction to Raptor Tool.	3	29.03.2023		TLM4	
3.	Module 2: Problem solving using Raptor tool	3	12.04.2023		TLM4	
4.	Module 3: Exercise Programs on Basics of C-Program.	3	19.04.2023		TLM4	
5.	Module 4: Exercise Programs on Control Structures.	3	26.04.2023		TLM4	
6.	Module 5: Exercise Programs on loops & nestings of loops	3	03.05.2023		TLM4	
7.	Module 6: Exercise Programs on Arrays & Strings.	3	17.05.2023		TLM4	
8.	Module 7: Exercise Programs on pointers	3	24.05.2023		TLM4	
9.	Module 8: Exercise Programs on Functions.	3	31.05.2023		TLM4	
10.	Module 9: Exercise Programs on user defined data types.	3	07.06.2023		TLM4	
11.	Module 10: Exercise Programs on Files.	3	14.06.2023		TLM4	
12.	Module 11: Exercise Programs on beyond syllabus	3	21.06.2023		TLM4	
13.	Makeup Lab,	3	28.06.2023		TLM4	
14.	Internal Lab Examination	3	05.07.2023		TLM4	
No. o	of classes required to complete :		No. of classe	es taken:		
COURSE DELIVERY PLAN (LESSON PLAN): BATCH-II(22761A0434-22761A0464)

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly		
1.	Demo on lab experiments	3	18.03.2023		TLM4			
2.	Module 1: Introduction to Raptor Tool.	3	25.03.2023		TLM4			
3.	Module 2: Problem solving using Raptor tool	3	01.04.2023		TLM4			
4.	Module 3: Exercise Programs on Basics of C-Program.	3	15.04.2023		TLM4			
5.	Module 4: Exercise Programs on Control Structures.	3	29.04.2023		TLM4			
6.	Module 5: Exercise Programs on loops & nestings of loops	3	06.05.2023		TLM4			
7.	Module 6: Exercise Programs on Arrays & Strings.	3	20.05.2023		TLM4			
8.	Module 7: Exercise Programs on pointers	3	27.05.2023		TLM4			
9.	Module 8: Exercise Programs on Functions.	3	03.06.2023		TLM4			
10.	Module 9: Exercise Programs on user defined data types.	3	10.06.2023		TLM4			
11.	Module 10: Exercise Programs on Files.	3	17.06.2023		TLM4			
12.	Module 11: Exercise Programs on beyond syllabus	3	24.06.2023		TLM4			
13.	Makeup Lab,	3	01.07.2023		TLM4			
14.	Internal Lab Examination	3	08.07.2023		TLM4			
No. o	No. of classes required to complete : 36 No. of classes taken:							

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work = A	1,2,3,4,5,6,7,8	A=05
Record = \mathbf{B}	1,2,3,4,5,6,7,8	B=05
Internal Test = C	1,2,3,4,5,6,7,8	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8	15
Semester End Examinations = D	1,2,3,4,5,6,7,8	D = 35
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science
	engineering fundamentals, and an engineering specialization to the solution o
	complex engineering problems
PO 2	Problem analysis: Identify, formulate, review research literature, and analyz
	complex engineering problems reaching substantiated conclusions using firs
	principles of mathematics, natural sciences, and engineering sciences
PO 3	Design/development of solutions: Design solutions for complex engineerin
	problems and design system components or processes that meet the specifie
	needs with appropriate consideration for the public health and safety, and th
	cultural, societal, and environmental considerations
PO 4	Conduct investigations of complex problems: Use research-based knowledg
	and research methods including design of experiments, analysis an
	interpretation of data, and synthesis of the information to provide vali
	conclusions
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources
	and modern engineering and IT tools including prediction and modelling t
	complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextua
	knowledge to assess societal, health, safety, legal and cultural issues and th
	consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professiona
	engineering solutions in societal and environmental contexts, and demonstrat
	the knowledge of, and need for sustainable development
PO 8	Ethics: Apply ethical principles and commit to professional ethics and
	responsibilities and norms of the engineering practice
PO 9	Individual and team work: Function effectively as an individual, and as
	member or leader in diverse teams, and in multidisciplinary settings
PO 10	Communication: Communicate effectively on complex engineering activitie
	with the engineering community and with society at large, such as, being able t
	comprehend and write effective reports and design documentation, mak
	effective presentations, and give and receive clear instructions
PO 11	Project management and finance: Demonstrate knowledge and understandin
	of the engineering and management principles and apply these to one's ow
	work, as a member and leader in a team, to manage projects and i
	multidisciplinary environments
PO 12	Life-long learning: Recognize the need for, and have the preparation and abilit
	to engage in independent and life-long learning in the broadest context of

130 I Design and develop modern communication teenhologies for bunding	5 the miter				
disciplinary skills to meet current and future needs of industry					
PSO 2 Design and Analyze Analog and Digital Electronic Circuits or sys	Design and Analyze Analog and Digital Electronic Circuits or systems and				
Implement real time applications in the field of VLSI and Embedded Syst	tems using				
relevant tools					
PSO 3 Apply the Signal processing techniques to synthesize and realize the issu	ues related				
to real time applications					

Course Instructor	Course Coordinator	Module Coordinator	HOD
CH.MallikharjunaRao	CH.MallikharjunaRao	Dr.P.Lachi reddy	Dr. Y. Amar Babu



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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.Jamili Reddy				
Course Name & Code : Engineering Chemistry Lab&20FE53				
L-T-P Structure	:0-0-3			
Program/Sem/Sec	: B.Tech/ II sem/ECE-A			

Credits:1.5 A.Y.: 2022-23

Pre requisites: Nil

Course Educational Objective: This course enables the students to analyze water sample for alkalinity. perform and distinguish different types of volumetric titrations. get hands-on experience with preparation of polymers. use analytical techniques like conductometry, potentiometry and colorimetry.

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

CO1: Assess alkalinity of water based on the procedure given.

CO2: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus.

CO3: Acquire practical knowledge related to preparation of polymers.

CO4: Exhibit skills in performing experiments based on theoretical fundamentals.

POs COs	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3		1		2	2					
CO2	2	1										
CO3	2		1									
CO4	3	2	1									
1 = Slight (Low)			2 =	Mode	rate (M	ledium	l)	3 = Su	bstantia	al (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

COURSE DELIVERY PLAN (LESSON PLAN):

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	14-03-23		TLM1	C04	
2.	Safety measures in chemistry lab.	3	21-03-23		TLM1	CO4	
3.	Introduction to volumetric analysis.	3	28-03-23		TLM1	CO4	
4.	Preparation of Bakelite.	3	04-04-23		TLM4	CO3	
5.	Determination of pH of the given sample solution using pH meter.	3	11-04-23			CO4	
6.	Determination of amount of HCl using standard Na ₂ CO ₃ solution.	3	18-04-23		TLM4	CO2,CO4	
7.	Determination of alkalinity of water sample.	3	25-04-23		TLM4	CO2,CO4	
8.	Estimation of Mg+2/Zn+2/Ca+2 in given solution by using standard EDTA solution.	3	02-05-23		TLM4	C01,C04	
9.	Estimation of Mohr's salt by using potassium permanganate.	3	16-05-23		TLM4	CO2,CO4	
10.	Estimation of Mohr's salt by using potassium dichromate.	3	23-05-23		TLM4	CO2,CO4	
11.	Estimation of amount of HCl conductometrically using standard NaOH solution.	3	30-05-23		TLM4	CO2,CO4	
12.	Estimation of amount of HCl conductometrically using NH4OH solution.	3	06-06-23		TLM4	CO2,CO4	
13.	Preparation of nylon fibres.	3	13-06-23		TLM4	C03, C04	
14.	Estimation of Copper(II) ion using	3	20-06-23		TLM4	C02, CO4	

	standard hypo solution.					
15.	Additional lab for practice.	3	27-06-23	TLM4	C02, CO4	
16.	Internal lab exam	3	04-07-23			
	Total					

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

Part - C

EVALUATION PROCESS:

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

(a) Continuous Internal Evaluation (CIE):

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

Param	leter	Marks
	Observation	05 Marks
Day – to – Day Work	Record	05 Marks
Internal Test		05 Marks
Total		15 Marks

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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.K.Jamili Reddy	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. K. SRIDEVI

Course Name & Coue	. FC-II, ZUFEUZ
L-T-P Structure	: 2-0-0
Program/Sem/Sec	: ECE-B-II SEM
A.Y.	: 2022-23

Credits: 02

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To improve English language proficiency of the students on various aspects like vocabulary, grammar, communication skills, listening skills, Reading & Writing skills.

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

CO1	Produce a coherent paragraph interpreting a figure/graph/chart/table.	L2
CO2	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
CO3	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
CO4	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
CO5	Write well-structured essays; Reports & Résumé.	L3

UNIT-I

Fabric of Change - 'H.G. Wells and the Uncertainties of Progress–Peter J. Bowler'; Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary: Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting; Degrees of Comparison; Writing: Information Transfer.

UNIT-II

Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far';

Reading: Global Comprehension; Detailed Comprehension; Grammar & Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays using suitable claims and evidences.

UNIT-III

'Homi Jahangir Bhabha'- Grammar & Vocabulary: Words often confused; Common Errors; Writing: Incident & Investigation Reports.

UNIT-IV

'Jagadish Chandra Bose' - Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.

UNIT-V

'**Prafulla Chandra Ray'** - Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
CO1		1		1		1			3	3		2			
CO2		1		1		1			3	3		2			
CO3		1		1		1			3	3		2			
CO4		1		1		1			3	3		2			
CO5		1		1		1			3	3		2			
	•	1	- Low			2	-Medi	ium		•	3	- High	•	•	

TEXTBOOKS:

- T1 Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
- T2 "The Great Indian Scientists" published by Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

- R1 Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2 Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- **R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- **R4** Baradwaj Kumkum, "Professional Communication", I. K. International PublishingHousePvt.Lt., NewDelhi, 2008.
- **R5** Wood, F. T., "Remedial English Grammar", Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	01	16-03-2023		TLM2	
	Fabric of Change-'H.G. Wells and		17-03-2023			
2.	the Uncertainties of Progress-	02	18-03-2023		TLM2	
	Peter J. Bowler'					
2	Reading: Studying the use of	01	22 02 2022		ті мэ	
э.	Graphic elements in texts;	01	23-03-2023			
4	Quantifying Expressions;	01	24 02 2022		ті мэ	
4.	Comparing and Contrasting	01	24-03-2023			
5.	Adjectives and adverbs	01	25-03-2023		TLM2	
6.	Degrees of Comparison	01	31-03-2023		TLM2	
_			01-04-2023		TLM2	
7.	writing: information Transfer.	02	06-04-2023		TLM6	
No. of classes required to complete UNIT-I: 09				No. of clas	ses takeı	1:

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far';	02	13-04-2023 15-04-2023		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	20-04-2023		TLM2	
10.	Active & Passive Voice	01	21-04-2023		TLM2	
11.	Idioms & Phrases	02	27-04-2023 28-04-2023		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	02	29-04-2023 04-05-2023		TLM2 TLM6	
No.	No. of classes required to complete UNIT-II: 08				sses takei	n:

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	'Homi Jahangir Bhabha'	02	05-05-2023 06-05-2023		TLM2 TLM6	
14.	Words often confused	01	18-05-2023		TLM2	
15.	Common Errors	01	19-05-2023		TLM2	
16.	Report Writing – Types & Formats	01	20-05-2023		TLM2	
17.	Incident and Investigation Reports	02	25-05-2023 26-05-2023		TLM2 TLM6	
	No. of classes required to complete UNIT-III: 07 No. of classes taken:					

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Jagadish Chandra Bose	03	27-05-2023 01-05-2023 02-06-2023		TLM2 TLM2	
19.	Use of antonyms	01	03-06-2023		TLM2	
20.	Correction of Sentences	01	08-06-2023		TLM2	
21.	Formal and Informal dialogues	01	09-06-2023		TLM2	
22.	Dialogue Writing.	02	10-06-2023 15-06-2023		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 08				No. of clas	ses takei	n:

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
23.	Prafulla Chandra Ray	03	16-06-2023 17-06-2023 22-06-2023		TLM2	
24.	Analogy	01	23-06-2023		TLM2	
25.	Sentence Completion	01	24-06-2023		TLM2	
26.	Resume - Formats	02	30-06-2023		TLM2	
27.	Writing a Résumé	03	01-07-2023 06-07-2023 07-07-2023 08-07-2023		TLM2 TLM6	
No. o	f classes required to complete	No. of clas	sses takei	n:		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and
101	an engineering specialization to the solution of complex engineering problems.
	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering
PO 2	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
PO 3	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
PO 4	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
PO 5	engineering and IT tools including prediction and modelling to complex engineering activities with an
	understanding of the limitations
20.0	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal,
PO 6	nealth, safety, legal and cultural issues and the consequent responsibilities relevant to the professional
DO 7	Environment and sustainability : Understand the impact of the professional engineering solutions in
PO 7	development
	Ethics: Apply othical principles and commit to professional othics and reconnscibilities and perms of the
PO 8	engineering practice
	Individual and team work: Eurotion effectively as an individual, and as a member or leader in diverse
PO 9	teams and in multidisciplinary settings
	Communication: Communicate effectively on complex engineering activities with the engineering
PO 10	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
	Project management and finance : Demonstrate knowledge and understanding of the engineering and
PO 11	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.
DO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in
PO 12	independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	K. Sridevi	Dr. B. Samrajya Lakshmi	Dr. B. Samrajya Lakshmi	Dr. A. Ramireddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM/SEM/SEC	: I B. Tech., II-Sem., ECE
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: Linear algebra & Transformation Techniques & 20FE04
L-T-P STRUCTURE	: 3-1-0
COURSE CREDITS	:3
COURSE INSTRUCTOR	: Dr. A.Rami Reddy
COURSE COORDINATOR	: Dr. K. Jhansi Rani
PRE-REQUISITES	: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the students learn Matrix algebra and introduced with transformation techniques such as Laplace transformation and Z – Transformations.

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

CO1	Investigate the consistency of the system of equations and solve them. (Apply L3)
COL	Determine the Eigen vectors and inverse, powers of a matrix by using Cayley - Hamilton
02	theorem. (Apply L3)
CO3	Use the concepts of Laplace transforms to various forms of functions. (Understand L2)
CO4	Solve Ordinary differential equations by using Laplace Transformations. (Apply L3)
CO5	Apply Z- Transformations to solve difference equations. (Apply L3)

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

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

TEXTBOOKS:

- **T1** Dr. B.S. Grewal, "Higher Engineering Mathematics", 42ndEdition, Khanna Publishers, New Delhi, 2012.
- **T2** Dr. B. V. Ramana, "Higher Engineering Mathematics", 1stEdition, TMH, New Delhi, 2010.

REFERENCE BOOKS:

- **R1** M. D. Greenberg, "Advanced Engineering Mathematics", 2nd Edition, TMH Publications, New Delhi, 2011.
- **R2** Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, John Wiley & sons, New Delhi, 2011.
- **R3** W.E. Boyce and R. C. Diprima, "Elementary Differential Equations", 7th Edition, John Wiley & sons, New Delhi,2011.

<u>PART-B</u> COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	13/03/23		TLM1	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
2.	Introduction to UNIT I	1	14/03/23		TLM1	
3.	Matrices and rank of a matrix	1	16/03/23		TLM1	
4.	Echelon form of a matrix	1	17/03/23		TLM1	
5.	Normal form of a matrix	1	20/03/23		TLM1	
6.	Normal form of a matrix	1	21/03/23		TLM1	
7.	PAQ form	1	23/03/23		TLM1	
8.	Solution of Non-homogeneous linear system of equations	1	24/03/23		TLM1	
9.	Solution of Non-homogeneous Linear system of equations	1	27/03/23		TLM1	
10.	Solution of Homogeneous Linear system of equations	1	28/03/23		TLM1	
11.	Tutorial 1	1	31/03/23		TLM3	
12.	Solution of Homogeneous Linear system of equations	1	03/04/23		TLM1	
No.	No. of classes required to complete UNIT-I: 11 No. of classes taken:					

UNIT-I: Linear System of Equations

UNIT-II: Eigen values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly	
13.	Introduction to UNIT II	1	04/04/23		TLM1		
14.	Eigen values of a matrix	1	06/04/23		TLM1		
15.	Eigen values and Eigen vectors of a matrix.	1	10/04/23		TLM1		
16.	Eigen values and Eigen vectors of a matrix.	1	11/04/23		TLM1		
17.	Eigen values and Eigen vectors of a matrix.	1	13/04/23		TLM1		
18.	Properties	1	17/04/23		TLM1		
19.	Properties		18/04/23				
20.	Cayley – Hamilton Theorem.	1	20/04/23		TLM1		
21.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	21/04/23		TLM1		
22.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	24/04/23		TLM1		
23.	Tutorial 2	1	25/04/23		TLM3		
No.	No. of classes required to complete UNIT-II: 11 No. of classes taken:						

UNIT-III: Laplace Transforms

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.	Introduction to Unit-III	1	27/04/23			
25.	Standard forms of Laplace Transforms.	1	28/04/23		TLM1	
26.	Standard forms of Laplace Transforms.	1	01/05/23		TLM1	
27.	Linear Property, Shifting Theorem.	1	02/05/23		TLM1	
28.	Change of scale property, Multiplication by t.	1	04/05/23		TLM1	

29.	Multiplication by t.	1	05/05/23	TLM1					
	II MID EXAMINATIONS (08-05-2023 TO 13-05-2023)								
30.	Division by t	1	15/05/23	TLM1					
31.	Laplace transforms of derivatives.	1	16/05/23	TLM 1					
32.	Laplace transforms of Integrals.	1	18/05/23	TLM1					
33.	Tutorial 3	1	19/05/23	TLM3					
34.	Unit step function and Dirac's delta function.	1	22/05/23	TLM1					
35.	Application of Laplace Transforms.	1	23/05/23	TLM1					
	No. of classes required to complete	UNIT-III:	11	No. of classes taken:					

UNIT-IV: Inverse Laplace Transforms

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 UNIT IV.	1	25/05/23		TLM1	
37.	Linear property.	1	26/05/23		TLM1	
38.	First Shifting properties.	1	29/05/23		TLM1	
39.	Inverse transforms properties	1	30/05/23		TLM1	
40.	Problems	1	01/06/23		TLM1	
41.	Inverse Laplace transform by using partial fractions.	1	02/06/23		TLM1	
42.	Inverse Laplace transform by using partial fractions.	1	05/06/23		TLM1	
43.	Inverse Laplace Transform by using Convolution theorem.	1	06/06/23		TLM1	
44.	Inverse Laplace Transform by using Convolution theorem.	1	08/06/23		TLM1	
45.	Solving of Ordinary differential equation by Laplace transform method.	1	09/06/23		TLM1	
46.	Solving of Ordinary differential equation by Laplace transform method.	1	12/06/23		TLM1	
47.	Tutorial 4	1	13/06/23		TLM3	
No.	of classes required to complete UNIT-IV:	12		No. of classe	s taken:	

UNIT-V: Z- Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly		
48.	Introduction to UNIT V.	1	15/06/23		TLM1			
49.	Standard forms of Z- Transform.	1	16/06/23		TLM1			
50.	Damping rule	1	19/06/23		TLM1			
51.	Shifting Rule	1	20/06/23		TLM1			
52.	Initial and final value theorems.	1	22/06/23		TLM1			
53.	Other properties	1	23/06/23		TLM1			
54.	Inverse Z – Transforms by using partial fractions.	1	26/06/23		TLM1			
55.	Inverse Z – Transform by using convolution theorem.	1	27/06/23		TLM1			
56.	Solving of Difference equations by using Z – Transforms.	1	30/06/23		TLM1			
57.	Solving of Difference equations by using Z – Transforms.	1	03/07/23		TLM1			
58.	Revision	1	04/07/23		TLM1			
59.	Tutorial 5	1	06/07/23		TLM3			
No. of	No. of classes required to complete UNIT-V: 12 No. of classes taken:							

Contents beyond the Syllabus

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

59.	Solving Simultaneous equations using Laplace Transforms	1	07/07/23		TLM2	
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II MID EXAMINATIONS (10-07-2023 TO 15-07-2023)

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & 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))	<mark>M=30</mark>
Cumulative Internal Examination (CIE): M	<mark>30</mark>
Semester End Examination (SEE)	<mark>70</mark>
Total Marks = $CIE + SEE$	100

PROGRAMME OUTCOMES (POs):

PART-D

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and
	an engineering specialization to the solution of complex engineering problems.
	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering
PO 2	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
PO 3	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
PO 4	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
PO 5	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,
PO 6	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
PO 7	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
PUð	engineering practice.
	Individual and team work: Function effectively as an individual, and as a member or leader in diverse
PO 9	teams, and in multidisciplinary settings.
	Communication : Communicate effectively on complex engineering activities with the engineering
PO 10	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.
	Project management and finance: Demonstrate knowledge and understanding of the engineering and
PO 11	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.
DO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in
PO 12	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. A. Rami Reddy	Dr. K. Jhansi Rani	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Signature				

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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.Vijaya Dasaradha							
Course Name & Code	: Engineering Chemistry & 20FE06						
L-T-P Structure	: 3-0-0	Credits :0	3				
Program/Sem/Sec	: B.Tech/II-sem/ECE-B	A.Y. :	2022-23				

Pre-requisites: Nil

Course Educational Objectives: It enables the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to strengthen the basic concepts of electrochemistry, corrosion, nanotechnology, polymers, liquid crystals and analytical techniques.

COURSE OUTCOMES (COs): After completion of the course, students will be able to

CO1	Apply Nernst Equation for calculating electrode cell potentials and compare batteries
	for different applications (L3)
CO 2	Apply principles of corrosion for design and effective maintenance of various equipment.
02	(L3)
CO2	Analyze the suitability of advanced materials like nano-materials in electronics and
003	medicine (L4)
C04	Identify the importance of liquid crystals, polymers in advanced technologies (L2)
C05	Apply the principles of analytical techniques in chemical analysis (L3)
	•

COURSE ARTICULATION MATRIX (Correlation between COs, POs):

POs COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3	2	1	-	2	2	-	-	-	-	2
CO2	3	2	2	1	-	2	1	-	-	-	-	2
CO3	3	2	2	1	-	1	1	-	-	-	-	2
CO4	3	2	2	1	-	1	1	-	-	-	-	2
CO5	3	2	1	1	-	1	1	-	-	-	-	2
	2 =	Moder	ate (Me	edium)	3	= Subs	stantial	(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 TEXT BOOKS:

- **T1** Shikha Agarwal, "A Text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015
- **T2** Jain, Jain, "A textbook of Engineering Chemistry", Dhanpat Rai Publishing Company, New 1 16th Edition, 2015.

BOS APPROVED REFERENCE BOOKS:

- **R1** Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, Delhi, 3rd Edition, 2003.
- **R2** S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S. Chand Publications, New Delhi, 12th Edition, 2010
- **R3** Prasanta Rath, B. Rama Devi, Ch. Venkata Ramana Reddy, Subhendu Chakroborty, "Engineering Chemistry", Cengage Learning India, 1st Edition, 2019.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: ELECTRO CHEMISTRY & BATTERIES

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 Course and COs	1	13-03-2023		TLM1	
2	Prerequisites for Unit-I	1	15-03-2023		TLM1	
3	Applications of Electro- chemical Series	1	16-03-2023		TLM1	
4	Calculation of EMF of Cell	1	18-03-2023		TLM1	
5	Practice exercises on applications of Electro chemical series	1	20-03-2023		TLM1	
6	Glass Electrode	1	23-03-2023		TLM1	
7	Calomel Electrode	1	25-03-2023		TLM1	
8	Applications of Nernst Equation	1	27-03-2023		TLM3	
9	Lead-acid Battery	1	29-03-2023		TLM1	
10	Lithium-ion Battery, Mg- Cu Reserve Battery	1	01-04-2023		TLM1	
11	$H_2 - O_2$ Fuel cell	1	03-04-2023		TLM1	
12	Revision of Unit 1, Assignment & Quiz	1	06-04-2023		TLM1	
No. of	classes required to comple	No. of classes	taken:			

UNIT-II: SCIENCE OF CORROSION

		No. of	Tentative	Actual	Teaching	HOD
S.No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
		Required	Completion	Completion	Methods	Weekly
1	Definition, Examples, Dry	1	00 04 2022		TT M 1	
1	corrosion	1	08-04-2023			
2	Corrosion by other gases and	1	10-04-2023		TI M1	
Z	liquid metal corrosion	I				
	Contd Dry corrosion, pilling		12-04-2023			
3	bed worth rule, Conditions	1			TLM1	
	for wet corrosion					
	Mechanism- oxygen		13-04-2023			
4	absorption, hydrogen	1			TI M1	
4	evolution, types of wet	1			1 1111 1	
	corrosion					
5	Galvanic Corrosion, passivity	1	15-04-2023		TI M1	
5	and Galvanic series	1			1 1111	
6	Concentration Cell Corrosion	1	17-04-2023		TLM1	
7	Nature of metal, Nature of	1	19-04-2023		TLM1	
	environment					
8	Cathodic Protection	1	20-04-2023		TLM1	
9	Electroplating, metal	1	24-04-2023		TLM1	
	cladding.					
10	Revision of Unit II,	1	26-04-2023		TLM1	
	Assignment & Quiz					
No. of	f classes required to complete	No. of classes	s taken:			

UNIT-III: CHEMISTRY OF ENGINEERING MATERIALS

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Introduction, types of nano-materials, ,	1	27-04-2023		TLM1	Weenly
2	Gas-Phase Synthesis of nanomaterials	1	29-04-2023		TLM1	
3	Applications of nano materials	1	01-05-2023		TLM2	
4	Materials in Electronic devices.	1	03-05-2023		TLM1	
5	Contd Materials in Electronic devices	1	04-05-2023		TLM1	
6	Characteristics of Molecular motors and machines	1	06-05-2023		TLM2	
7	Characteristics of Molecular motors and machines	1	15-05-2023		TLM2	
8	Rotaxanes as artificial molecular machines	1	17-05-2023		TLM1	
9	Catenanes as artificial molecular machines	1	18-05-2023		TLM2	

Motarb	10	Automated light powered molecular motars	1	20-05-2023		TLM2	
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No. of classes required to complete UNIT-III: 10

No. of classes taken:

UNIT-IV: LIQUID CRYSTALS & POLYMERS

S.No	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	HOD Sign
		Required	Completion	Completion	Methods	Weekly
1	Classification of liquid crystals	1	22-05-2023		TLM1	
2	Mechanism of working liquid crystals & their applications	1	24-05-2023		TLM1	
3	Introduction and types of polymerizations,	1	25-05-2023		TLM1	
4	Preparation, properties and engineering applications of P.M.M.A, Teflon	1	27-05-2023 & 29-05-2023		TLM2	
5	Preparation properties and engineering applications of Polycarbonate, Structure of raw rubber and vulcanized rubber	1	31-05-2023 & 01-06-2023		TLM1	
6	Preparation properties and engineering applications of Polyurethane, Buna-S	1	03-06-2023 & 05-06-2023		TLM1	
7	Conducting polymers	1	07-06-2023		TLM1	
8	Biodegradable polymers	1	08-06-2023		TLM1	
9	Revision of Unit IV, Assignment & Quiz	1	10-06-2023		TLM1	

No. of classes required to complete UNIT-IV:12

No. of classes taken:

UNIT-V: ANALYTICAL TECHNIQUES

		No. of	Tentative	Actual	Teaching	HOD
S.No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
		Required	Completion	Completion	Methods	Weekly
1	Types of analysis	1	12-06-2023		TLM1	
	Principle of conductometric		14-06-2023			
2	titrations, Strong acid vs	1			TLM1	
	strong base titrations					
	Strong acid vs weak base		15-06-2023			
3	titrations, Strong base vs	1			TLM1	
	weak acid titrations					
4	Weak acid vs weak base	1	17-06-2023		TI M 1	
4	titrations	1				
-	Principle of potentiometry	1	19-06-2023		TI M1	
5	Acid-base titration	1				
6	Redox titration	1	21-06-2023		TLM1	

7	Colorimetry, Principle and determination of iron by using thiocynate as a reagent	1	22-06-2023 & 24-06-2023	TLM1	
8	Revision of Unit V	1	26-06-2023 & 28-06-2023	TLM1	
9	Assignment & Quiz	1	01-07-2023	TLM1	

No. of classes required to complete UNIT-V: 11

No. of classes taken:

	CONTEN	ГS BE	YOND SYLLA	BUS		
1	Batteries used in mobile phones of popular companies	1	03-07-2023		TLM1	
2	Polymers in industrial applications	1	05,06-07- 2023		TLM1	
3	Applications of electroplating with ref to PCBs	1	08-07-2023		TLM1	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & 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))	<mark>M=30</mark>
Cumulative Internal Examination (CIE): M	<mark>30</mark>
Semester End Examination (SEE)	<mark>70</mark>
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering
	fundamentals, and an engineering specialization to the solution of complex engineering
PO 2	problems. Problem analysis: Identify formulate review research literature and analyze complex
102	engineering problems reaching substantiated conclusions using first principles of
	mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems
	and design system components or processes that meet the specified needs with
	appropriate consideration for the public health and safety, and the cultural, societal, and
DO 1	environmental considerations.
PO 4	Conduct investigations of complex problems : Use research-based knowledge and
	and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create select and apply appropriate techniques resources and
100	modern engineering and IT tools including prediction and modelling to complex
	engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to
	assess societal, health, safety, legal and cultural issues and the consequent responsibilities
	relevant to the professional engineering practice
PO 7	Environment and sustainability : Understand the impact of the professional engineering
	solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and
	norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or
	leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication : Communicate effectively on complex engineering activities with the
	engineering community and with society at large, such as, being able to
	comprehend and write effective reports and design documentation, make effective
PO 11	Project management and finance : Demonstrate knowledge and understanding of the
1011	engineering and management principles and apply these to one's own work, as a member
	and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage
	in independent and life-long learning in the broadest context of technological change.

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

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Electronics & Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.P. Venkat Rao

Course Name & Code: Programming for problem solving using CL-T-P Structure:3-0-0Program/Sem/Sec: B.Tech/II/BA.Y.: 2022-2023

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, User defined structures, basics of files and its I/O operations.

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

C01	Familiar with syntax and semantics of the basic programming language constructs.
CO2	Constructs derived data types like arrays in solving a problem.
CO3	Decompose a problem into modules and reconstruct it using various ways of user defined functions
CO4	Define user-defined data types like structures and unions and its applications to solve problems
CO5	Discuss various file I/O operations and its application.

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	-	•	-	-	•	-	•	-	2	-	-
CO5	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		1	- Low			2	-Med	ium			3	- High			

TEXTBOOKS:

T1 1. ReemaThareja, Programming in C, OxfordUniversityPress,2ndEdition,2015.

REFERENCE BOOKS:

R1	1. Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers,
	7th Edition, 2013.
R2	2. E Balagurusamy, Computer Programming, McGraw Hill Education, 8th Edition.
R3	3. C: The Complete Reference, McGraw Hall Education, 4th Edition
R4	4. PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011.
R5	5. Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2005.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

	UNIT-I:	Introduction	to Problem	solving through	n C-Programmir	ng, C-Programmi	ng, Control statements
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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, Problem Specification	1	13/3/23	-		
2.	Algorithm / pseudo code	1	14/3/23			
3.	flowchart, examples	1	15/3/23			
4.	Structure of C program, identifiers, basic data types and sizes	1	18/3/23			
5.	Constants, variables, Input-output statements	1	20/3/23			
	A sample c program, operators,		21/3/23			
6.	expressions, type conversions,	1				
	conditional expressions					
7.	precedence of operators and order of evaluation.	1	25/3/23			
0	if, if else, else if ladder and switch	1	27/3/23			
о.	statements	1				
0	while, do-while and for statements,	1	28/3/23			
9.	break, continue, goto and labels.	1				
10.	Problem solving using loops	1	29/3/23			
11.	C programs practice	1	01/4/23			
12.	NEO lab assignment	1	03/4/23			
No.	of classes required to complete	UNIT-I: 1	2	No. of clas	sses take	1:

UNIT-II: Arrays, Character Arrays, Applications of Arrays

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	concept, declaration, definition,	1	04/4/23			
14.	accessing elements, storing elements	1	10/4/23			
15.	two dimensional and multi- dimensional arrays	1	11/4/23			
16.	Declaration, initialization, reading, writing strings	1	12/4/23			
17.	string handling functions,	1	15/4/23			
18.	Pre-processor Directives, and macros.	1	17/4/23			
19.	Pre-processor Directives, and macros.	1	18/4/23			
20.	Example programs	1	19/4/23			
21.	Linear search	1	22/4/23			
22.	Binary search	1	24/4/23			
23.	Bubble Sort	1	25/4/23			
24.	NEO lab Assignment	1	26/4/23			
No.	of classes required to complete	UNIT-II: 1	12	No. of clas	ses takei	1:

UNIT-III: Pointers, Functions, Storage classes

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.	concepts, declaring and initialization of pointer variables	1	29/4/23			
26.	pointer expressions, pointer arithmetic	1	01/5/23			
27.	pointers and arrays, pointers and character arrays	1	01/5/23			
28.	pointers to pointers.	1	02/5/23			
29.	basics, category of functions, parameter passing techniques	1	03/5/23			
30.	recursive functions, comparison with Iteration.	1	06/5/23			
31.	Functions with arrays, Standard library functions	1	15/5/23			
32.	dynamic memory management functions, command line arguments.	1	16/5/23			
33.	Storage classes - auto, register	1	17/5/23			
34.	Storage classes -static and extern,	1	20/5/23			
35.	C programs for practice	1	22/5/23			
36.	NEO lab Assignment	1	23/5/23			
	No. of classes required to complete UNIT-III: 12 No. of classes taken:					

UNIT-IV: Derived 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
37.	Derived types- structures	1	24/5/23			
38.	declaration, definition, and initialization of structures	1	27/5/23			
39.	accessing structures	1	29/5/23			
40.	nested structures	1	30/5/23			
41.	arrays of structures	1	31/5/23			
42.	structures and functions,	1	03/6/23			
43.	pointers to structures	1	05/6/23			
44.	self-referential structures	1	06/6/23			
45.	unions, typedef	1	07/6/23			
46.	Example Programs	1	10/6/23			
47.	NEO lab Assignment	1	12/6/23			
No. of classes required to complete UNIT-IV: 11 No. of classes taker				n:		

UNIT-V: Files

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
48.	Files – concept of a file	1	13/6/23			
49.	Concepts of files,text files	1	14/6/23			
50.	binary files,	1	19/6/23			
51.	streams,	1	20/6/23			
52.	standard I/O	1	21/6/23			
53.	Formatted I/O	1	24/6/23			
54.	file I/O operations	1	26/6/23			
55.	Example programms	1	27/6/23			
56.	error handling	1	28/6/23			

No. of classes required to complete UNIT-V: 14			14	No. of clas	ses takei	n:
61.	Revision or beyond syllabus	1	08/07/23			
60.	NEO lab Assignment	1	05/07/23			
59.	C programs for practice	1	04/07/23			
58.	Revision	1	03/07/23			
57.	Example programms	1	01/07/23			

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

	societal, health, safety, legal and cultural issues and the consequent responsibilities relevant
	to the professional engineering practice
	Environment and sustainability: Understand the impact of the professional engineering
PO 7	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
PUO	norms of the engineering practice.
	Individual and team work: Function effectively as an individual, and as a member or leader in
PU 9	diverse teams, and in multidisciplinary settings.
	Communication: Communicate effectively on complex engineering activities with the
DO 10	engineering community and with society at large, such as, being able to comprehend and
PU 10	write effective reports and design documentation, make effective presentations, and give
	and receive clear instructions.
	Project management and finance: Demonstrate knowledge and understanding of the
PO 11	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.
DO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in
PO 12	independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. P. Venkat Rao	Dr. P. Venkat rao	Dr.P.LachiReddy	Dr.Y.Amarbabu
Signature				

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor:Mr G.Venkata RaoCourse Name & Code: DLC-20EC02L-T-P Structure: 3-0-0Program/Sem/Sec: B. Tech. II-Sem., ECE B Sec

Regulation: R20 **Credits:** 03 **A.Y.:** 2022-23

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the basic concepts of number systems and Boolean algebra, logic gates and realization of Boolean expressions using logic gates, realization of combinational and sequential circuits and concepts of Finite State Machines and ASM Charts.

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

CO1	Summarize the key differences between number systems and their usage in Digital
	electronics circuits. (Understand – L2)
CO2	Identify the minimization techniques of Boolean expressions to implement digital
	circuits using basic logic gates and logic circuits. (Apply – L3)
CO3	Apply the minimization and realization methods for design of Combinational and
	Sequential logic circuits. (Apply – L3)
CO4	Analyze the Combinational, Sequential, Finite state machines and Algorithmic State
	Machines for implementation of digital logic circuits. (Analyze – L4)

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
CO1	2	3	1	-	-	-	-	-	-	-	-	1	-	2	-
CO2	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
CO3	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
CO4	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
		1	- Low			2	-Med	ium			3	- High			

TEXTBOOKS:

T1 Morris Mano, "Digital Design", PHI Publishers, 4th Edition

T2 Ananda Kumar, "Switching Theory and Logic Design", PHI Publishers.

REFERENCE BOOKS:

R1 Charles H. Roth, "Fundamentals of Logic Design", Cengage learning Publishers

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Number Systems

S		No. of	Tentative	Actual	Teaching	HOD
No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
110.		Required	Completion	Completion	Methods	Weekly
	Introduction to course,					
1.	Course Outcomes,	1	13/03/23			
	Introduction to UNIT-I					
2.	Number Systems	1	16/03/23			
2	Decimal to binary, Octal,	1	17/03/23			
э.	Hexadecimal conversion	1				
	Binary, Octal,		18/03/23			
4.	Hexadecimal to Decimal	1				
	and internal conversion;					
	1's & 2's complement of		20/03/23			
5.	binary numbers, Binary	1				
	arithmetic					
6	Signed Binary numbers	1	23/03/23			
0.		1				
7.	Binary codes –BCD,	1	24/03/23			
	Excess-3 code, Gray code	-				
	Error detecting and	1	25/03/23			
8.	correcting codes –					
	Hamming code					
9.	Assignment-I	1	27/03/23			
No.	of classes required to com	plete UNIT.	-I:09	No. of classes	s taken:	

UNIT-II: Boolean algebra and Logic gates

S.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	HOD Sign
No.	1	Required	Completion	Completion	Methods	Weekly
10.	Introduction to Boolean algebra, Boolean postulates, De-Morgan's Theorem	1	31/03/23			
11.	Principle of Duality Minimization of Boolean expressions	1	01/04/23			
12.	Sum of Products (SOP), Product of Sums (POS), minterm & maxterm	2	03/04/23 06/04/23			
13.	Simplification of Boolean functions using Karnaugh map (K-map)	2	08/04/23 10/04/23			
14.	Simplification Boolean functions using K-map with don't care conditions	1	13/04/23			
15.	Minimization of Boolean expressions using Quine- Mc Cluskey Tabular Method	1	15/04/23			
16.	Logic Gates	1	17/04/23			

17.	Realization of Boolean functions using logic gates	1	20/04/23			
18.	Tutorial &Assignment-II	1	21/04/23			
No. of classes required to complete UNIT-II:11 No. of classes taken:						

UNIT-III: Combinational Logic Circuits

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Complet ion	Teaching Learning Methods	HOD Sign Weekly
19.	Introduction to Combinational Circuits	1	24/04/23			
20.	Adders: Half & Full Adder Parallel adder - Carry look ahead adder	2	27/04/23 28/04/23			
21.	Subtractors: Half & Full Subtractor, BCD adder, Magnitude Comparator	2	29/04/23 01/05/23			
22.	Decoders & Encoders	1	04/05/23			
23.	Multiplexers, De-MUX & Parity generator	2	05/05/23 06/05/23			
24.	code converters- binary to gray, gray to binary & BCD to Excess-3 codes	2	15/05/23 18/05/23			
25.	Tutorial & Assignment-III	1	19/05/23			
No.	of classes required to comple	ete UNIT-I	II: 11	No. of c	lasses taken	1:

UNIT-IV: Sequential Logic Circuits

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Introduction to Sequential Logic Circuits.	1	20/05/23			
27.	SR and JK Latch	1	22/05/23			
28.	Flip flops-SR, JK,T,D– Characteristic and excitation tables	2	25/05/23 26/05/23			
29.	Realization of one flip flop using other flip flops	2	27/05/23 29/05/23			
30.	Shift Registers, Universal Shift Register	1	01/06/23			
31.	Asynchronous counters	1	02/06/23 03/06/23			
32.	Synchronous counters	2	05/06/23 08/06/23			
33.	Assignment-IV	1	09/06/23			
No.	of classes required to comp	lete UNIT-I	V: 11	No. of classes	s taken:	

UNIT-V: Finite state machines & Algorithmic State Machines

c		No. of	Tentative	Actual	Teaching	HOD
D. No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
140.		Required	Completion	Completion	Methods	Weekly
34.	Introduction to FSM,	1	10/06/23			

	Mealy and Moore					
	machines					
	Difference between		12/06/23			
35.	Mealy and Moore machines	1				
	Conversion between		15/06/23			
36.	Mealy and Moore	2	16/06/23			
	machines					
37.	Features of ASM chart	1	17/06/23			
20	System design using	2	19/06/23			
38.	data control subsystems	L	22/06/23			
20	Control implementations	r	23/06/23			
39.		2	24/06/23			
40.	Mealy, Moore examples	1	26/06/23			
41.	Tutorial and Assignment	1	30/06/23			
No. o	of classes required to com	plete UNIT	-V:11	No. of classes	s taken:	
G		No. of	Tentative	Actual	Teaching	HOD
D. No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
140.		Required	Completion	Completion	Methods	Weekly
	Revision &		01/07/23			
42.	Implementation of real	1	То			
	time examples		08/07/23			

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks				
Assignment-I (Units-I, II & 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)					
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))	<mark>M=30</mark>				
Cumulative Internal Examination (CIE): M	<mark>30</mark>				
Semester End Examination (SEE)	<mark>70</mark>				
Total Marks = CIE + SEE	100				

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	То	Attain	a	solid	foundation	in	Electronics	&	Communicatio	n Engin	neering
	fund	lamenta	ls w	ith an a	attitude to pu	ırsue	continuing e	educa	tion		
PEO 2	To	Function	n pro	ofessio	nally in the r	apid	ly changing v	vorld	with advances	in techno	logy
PEO 3	То	Contrib	ute	to the	e needs of	the	society in	solv	ing technical p	oroblems	using

	Electronics & Communication Engineering principles, tools and practices
PEO 4	To Exercise leadership qualities, at levels appropriate to their experience, which
	addresses issues in a responsive, ethical, and innovative manner?
PROGRA	MME OUTCOMES (POs):
PO 1	Engineering knowledge . Apply the knowledge of mathematics science engineering
101	fundamentals and an engineering specialization to the solution of complex
	engineering problems
PO 2	Problem analysis: Identify formulate review research literature and analyze
102	complex angineering problems reaching substantisted conclusions using first
	complex engineering problems reaching substantiated conclusions using mist
DO 3	Design (development), of relations. Design relations for seven large and includes
PU 3	Design/development of solutions: Design solutions for complex engineering
	problems and design system components or processes that meet the specified needs
	with appropriate consideration for the public health and safety, and the cultural,
	societal, and environmental considerations
PO 4	Conduct investigations of complex problems: Use research-based knowledge and
	research methods including design of experiments, analysis and interpretation of data,
	and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and
	modern engineering and IT tools including prediction and modelling to complex
	engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to
	assess societal, health, safety, legal and cultural issues and the consequent
	responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional
	engineering solutions in societal and environmental contexts, and demonstrate the
	knowledge of, and need for sustainable development
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities
	and norms of the engineering practice
PO 9	Individual and team work: Function effectively as an individual, and as a member or
	leader in diverse teams, and in multidisciplinary settings
PO 10	Communication : Communicate effectively on complex engineering activities with
	the engineering community and with society at large, such as, being able to
	comprehend and write effective reports and design documentation, make effective
	presentations, and give and receive clear instructions
PO 11	Project management and finance : Demonstrate knowledge and understanding of the
	engineering and management principles and apply these to one's own work, as a
	member and leader in a team, to manage projects and in multidisciplinary
	environments
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to
	engage in independent and life-long learning in the broadest context of technological
	change
PROGRA	MME SPECIFIC OUTCOMES (PSOs):
PSO 1	Design and develop modern communication technologies for building the int
	disciplinary skills to meet current and future needs of industry
PSO 2	Design and Analyze Analog and Digital Electronic Circuits or systems and Impleme
	real time applications in the field of VLSI and Embedded Systems using relevant tool
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related
	real time applications

	11			
Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. G. Venkata Rao	Mr. G. Venkata Rao	Dr. G. Srinivasulu	Dr. Y. Amar Babu

Signature

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor:Dr P.Rakesh KumarCourse Name & Code: CONSTITUTION OF INDIA -20MC01Regulation: R20L-T-P Structure: 2-0-0Credits: 00Program/Sem/Sec: B. Tech. II-Sem., ECE B-SecA.Y.: 2022-23

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution.
- To understand the structure of Executive, Legislature and Judiciary.
- To understand Philosophy of fundamental rights and duties.
- To understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commission of India.
- To understand the Central and State relation, financial and administrative.

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

CO1	Understand history and philosophy of constitution with reference to					
	Preamble, Fundamental Rights and Duties					
CO2	Understand the concept of Unitary and Federal Government along with					
	the role of President, Prime Minister and Judicial System.					
CO3	Understand the structure of the state government, Secretariat, Governor					
	and Chief Minister and their functions					
CO4	learn local administration viz. Panchayat, Block, Municipality and					
	Corporation					
CO5	learn about Election Commission and the process and about SC, ST, OBC					
	and women					

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	1	•	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	1	•	-	-	-	-	-	-
		1	- Low			2	-Medi	ium			3	- High			

TEXT BOOKS:

- **T1** Dr.B.R. Ambedkar, The Constitution of India, General Press First edition 2020., New Delhi
- T2 Dr.B. R. Ambedkar, The Constitution of India, Government of India

REFERENCE BOOKS:

- **R1** Durga Das Basu, Introduction to the Constitution of India, Prentice Hall of India Pvt.Ltd., New Delhi.
- **R2** Subash Kashyap, Indian Constitution, National Book Trust.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Introduction to Indian Constitution

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 Course	1	17-03-2023		TLM2	
2.	Introduction to Indian Constitution	1	18-03-2023		TLM2	
3.	Sources and Constitutional History, Features	1	24-03-2023		TLM2	
4.	Citizenship, Preamble	1	25-03-2023		TLM2	
5.	Fundamental Rights and Duties	1	31-03-2023		TLM2	
6.	Directive Principles of State Policy.	1	01-04-2023		TLM2	
No. of	f classes required to complete UNI	IT-I:6		No. of class	ses taken:	

UNIT-II: Union Government and its Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Union Government and its		08-04-2023		TLM2	
1.	Administration Structure of the	1				
	Indian Union.					
2.	President: Role, Power and	1	15-04-2023		TLM2	
	Position.	1				
2	Prime Minister (PM) and Council	1	21-04-2023		TLM2	
5.	of Ministers	1				
4.	Cabinet and Central Secretariat	1	28-04-2023		TLM2	
5.	Lok Sabha, Rajya Sabha	1	29-04-2023		TLM2	
6.	The Supreme Court and High	1	29-04-2023		TLM2	
	Court: Powers and Functions.	1				
No. of	f classes required to complete UN	IT-II:6		No. of clas	ses taken:	

UNIT-III: State Government and its Administration

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	State Government and its	1	05-05-2023		TLM2	
1.	Administration	1				
2.	Governor – Role and Position	1	06-05-2023		TLM2	
3.	Chief Minister (CM)	1	19-05-2023		TLM2	
4.	Council of Ministers.	1	20-05-2023		TLM2	
5.	State Secretariat: Organization	1	26-05-2023		TLM2	
6.	Structure and Functions	1	27-05-2023		TLM2	
No. o	f classes required to complete UN	IT-III:05		No. of class	ses taken:	

UNIT-IV : A Local Administration

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.	A Local Administration Role and Importance	1	02-06-2023		TLM2	
2.	Municipalities – Mayor and Role of Elected Representative	1	03-06-2023		TLM2	
3.	Functions of Panchayati Raj Institution	1	09-06-2023		TLM2	

4.	Zilla Panchayat, Elected Officials,	1	10-06-2023	TLM2			
	and their roles						
5	Village level – Role of Elected	1	16-06-2023	TLM2			
5.	officials.						
6.	Role of Appointed officials.	1	17-06-2023	TLM2			
No. of	No. of classes required to complete UNIT-IV:5 No. of classes taken:						

UNIT-V : Election Commission

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.	Election Commission – Role of Chief Election Commissioner	1	23-06-2023		TLM2	
2.	Role of Election Commissionerate	1	24-06-2023		TLM2	
3.	State Election Commission: Functions	1	30-06-2023		TLM2	
4.	Commissions for the welfare of SC/ST/OBC	1	07-07-2023		TLM2	
5.	Commissions for the welfare of Women.	1	08-07-2023		TLM2	
No. of classes required to complete UNIT-V:5 No. of classes taken:						

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

PART-C

EVALUATION PROCESS (R20 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))	<mark>M=30</mark>
Cumulative Internal Examination (CIE): M	<mark>30</mark>
Semester End Examination (SEE)	<mark>70</mark>
Total Marks = CIE + SEE	100

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To Attain a solid foundation in Electronics & Communication Engineering fundamentals
	with an attitude to pursue continuing education
PEO 2	To Function professionally in the rapidly changing world with advances in technology
PEO 3	To Contribute to the needs of the society in solving technical problems using Electronics
	& Communication Engineering principles, tools and practices
PEO 4	To Exercise leadership qualities, at levels appropriate to their experience, which addresses
	issues in a responsive, ethical, and innovative manner?
PROGRAMME OUTCOMES (POs):

DO 1	
PUI	Engineering knowledge: Apply the knowledge of mathematics, science, engineering
	fundamentals, and an engineering specialization to the solution of complex engineering
	problems
PO 2	Problem analysis : Identify, formulate, review research literature, and analyze complex
	engineering problems reaching substantiated conclusions using first principles of
	mathematics, natural sciences, and engineering sciences
PO 3	Design/development of solutions : Design solutions for complex engineering problems
	and design system components or processes that meet the specified needs with
	appropriate consideration for the public health and safety, and the cultural, societal, and
	environmental considerations
PO 4	Conduct investigations of complex problems : Use research-based knowledge
	and research methods including design of experiments analysis and interpretation of
	data and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create select and apply appropriate techniques, resources
105	and modern angineering and IT tools including prediction and modelling to
	and modern engineering and 11 tools including prediction and moderning to
DO 6	The engineering activities with an understanding of the initiations
PUO	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
P0 7	Environment and sustainability : Understand the impact of the
	professional engineering solutions in societal and environmental contexts, and
	demonstrate the knowledge of, and need for sustainable development
PO 8	Ethics : Apply ethical principles and commit to professional ethics and
	responsibilities and norms of the engineering practice
PO 9	Individual and team work: Function effectively as an individual, and as a member
	or leader in diverse teams, and in multidisciplinary settings
PO 10	Communication : Communicate effectively on complex engineering activities with the
	engineering community and with society at large, such as, being able to comprehend
	and write effective reports and design documentation, make effective presentations, and
	give and receive clear instructions
PO 11	Project management and finance: Demonstrate knowledge and understanding of
	the engineering and management principles and apply these to one's own work, as
	a member and leader in a team, to manage projects and in
	multidisciplinary environments
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability
	to engage in independent and life-long learning in the broadest context of
	technological change
PROGRA	MME SPECIFIC OUTCOMES (PSOs):
P20 I	Design and develop modern communication technologies for building the inter
	disciplinary skills to meet current and tuture needs of industry

	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											

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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructo	r:	Mr.S.Vijaya Dasaradha	
Course Name & Code	:	Engineering Chemistry Lab & 20FE53	
L-T-P Structure	:	0-0-3	Credits: 1.5
Program/Sem/Sec	:	B.Tech/II-Sem/ECE-B	A.Y. : 2022-23

Pre-requisites: Nil

Course Educational Objectives: This course enables the students to analyze water samples and perform different types of volumetric titrations. It provides them with an overview of preparation of polymers and analytical techniques.

Course Outcomes: At the end of the course, the student shall be able to

- **CO1:** Assess alkalinity of water based on the procedure given. (L2)
- **CO2:** Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus. (L2)
- **CO3:** Acquire practical knowledge related to preparation of polymers. (L2)
- **CO4:** Exhibit skills in performing experiments based on theoretical fundamentals. (L2)

COURSE ARTICULATION MATRIX (Correlation between COs, POs):

POs COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3		1		2	2					
CO2	2	1										
CO3	2		1									
CO4	3	2	1									
1 = Slight (Low)			2 =	2 = Moderate (Medium)				3 = Substantial (High)				

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

REFERENCE: BOS Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

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	16-03-2023		TLM1	CO4	
2.	Introduction to volumetric analysis.	3	23-03-2023		TLM1	CO4	
3.	Determination of pH of the given sample solution/soil using pH meter.	3	06-04-2023		TLM4	CO3,CO4	
4.	Determination of amount of Na ₂ CO ₃ using standard HCl solution.	3	13-04-2023		TLM4	CO2,CO4	
5.	Determination of alkalinity of water sample.	3	20-04-2023		TLM4	C03,C04	
6.	Determination of Mg ⁺² using standard EDTA solution.	3	27-04-2023		TLM4	C02,C04	
7.	Estimation of Mohr's salt using potassium permanganate.	3	04-05-2023		TLM4	CO2,CO4	
8.	Estimation of Mohr's salt using potassium dichromate.	3	18-05-2023		TLM4	CO2,CO4	
9.	Preparation of Bakelite	3	25-05-2023		TLM4	C01,C04	
10.	Preparation of nylon fibres.	3	01-06-2023		TLM4	CO2,CO4	
11.	Estimation of amount of HCl conductometrically using standard NaOH solution.	3	08-06-2023		TLM4	CO2,CO4	
12.	Estimation of amount of HCl conductometrically using NH4OH solution	3	15-06-2023		TLM4	CO2,CO4	
13.	Revision	3	22-06-2023		TLM4	C02,C04	
14.	Lab Internal Exam(Batch-I)	3	06-07-2023		TLM4	C02,C04	
15.	Lab Internal Exam(Batch-II)	3	06-07-2023		TLM4	C02,C04	
	Total						

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

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:

Parame	eter	Marks
Day – to – Day	Observation	05 Marks
Work	Record	05 Marks
Internal	Test	05 Marks
Tota	1	15 Marks

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.

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				



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Electronics & Communication Engineering

COURSE HANDOUT PART-A

Name of Course Instructor	: Dr. P. Venkat Rao					
Course Name & Code	: Programming for problem solving using C Lab (Code:20CS51					
L-T-P Structure	: 0-0-3	Credits	s: 1.5			
Program/Sem/Sec	: B.Tech., ECE., II-Sem., Section- B	A.Y	: 2022-23			

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to learn the basic elements of C Programming Structures like Data Types, Expressions, Control Statements, and Various I/O Functions and to solve simple mathematical problems using control structures. Design and implementation of various software components, which solve real world problems.

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

CO1	Apply control structures of C in solving computational problems. (Apply-L3)
CO2	Implement derived datatypes & use modular programming in problem solving. (Apply– L3)
CO3	Implement user defined datatypes and perform file operations. (Apply-L3)
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical
	values.(Apply–L3)

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	I	-	-	-	-	-	2	2	2	-	-	-	-	-
1 - Low					2 –Medium				3 - High						

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-I(22761A0467-22761A0499)

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Demo on lab experiment/programs	3	13-03-2023		TLM2	-
2.	Module 1: Introduction to Raptor Tool.	3	20-03-2023		TLM4	
3.	Module 2: Problem solving using Raptor Tool	3	27-03-2023		TLM4	
4.	Module 3: Exercise Programs on Basics of C-Program.	3	03-04-2023		TLM4	
5.	Module 4: Exercise Programs on Control Structures.	3	10-04-2023		TLM4	
6.	Module 5: Exercise Programs on Loops & nesting of Loops.	3	17-04-2023		TLM4	
7.	Module 6: Exercise Programs on Arrays & Strings.	3	24-04-2023		TLM4	
8.	Module 7: Exercise Programs on Pointers.	3	01-05-2023		TLM4	
9.	Module 8: Exercise Programs on Functions.	3	15-05-2023		TLM4	
10.	Module 9: Exercise Programs on user defined data types.	3	22-05-2023		TLM4	
11.	Module 10: Exercise Programs on Files.	3	29-05-2023		TLM4	
12.	Module 11: Exercise Programs on Files.	3	05-06-2023		TLM4	
13.	Practice Lab,	3	12-06-2023		TLM4	
14.	Practice NEO Lab,	3	19-06-2023		TLM4	
15.	Practice NEO Lab,	3	26-06-2023		TLM4	
16.	Internal Lab Examination	3	03-07-2023		TLM4	
No. o	of classes required to complete : 36			No. of classe	es taken:	

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-II(22761A04A0-22761A04D2)

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Demo on lab experiment/programs	3	14-03-2023		TLM2	
2.	Module 1: Introduction to Raptor Tool.	3	21-03-2023		TLM4	
3.	Module 2: Problem solving using Raptor Tool	3	28-03-2023		TLM4	
4.	Module 3: Exercise Programs on Basics of C-Program.	3	04-04-2023		TLM4	
5.	Module 4: Exercise Programs on Control Structures.	3	11-04-2023		TLM4	
6.	Module 5: Exercise Programs on Loops & nesting of Loops.	3	18-04-2023		TLM4	

7.	Module 6: Exercise Programs on Arrays & Strings.	3	25-04-2023	TLM4	
8.	Module 7: Exercise Programs on Pointers.	3	02-05-2023	TLM4	
9.	Module 8: Exercise Programs on Functions.	3	16-05-2023	TLM4	
10.	Module 9: Exercise Programs on user defined data types.	3	23-05-2023	TLM4	
11.	Module 10: Exercise Programs on Files.	3	30-05-2023	TLM4	
12.	Module 11: Exercise Programs on Files.	3	06-06-2023	TLM4	
13.	Practice Lab,	3	13-06-2023	TLM4	
14.	Practice NEO Lab,	3	20-06-2023	TLM4	
15.	Practice NEO Lab,	3	27-06-2023	TLM4	
16.	Internal Lab Examination	3	04-07-2023	TLM4	
No. o	of classes required to complete :	No. of classes taken:			

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work = A	1,2,3,4,5,6,7,8	A=05
Record = B	1,2,3,4,5,6,7,8	B=05
Internal Test = C	1,2,3,4,5,6,7,8	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8	15
Semester End Examinations = D	1,2,3,4,5,6,7,8	D = 35
Total Marks: $A + B + C + D = 50$	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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 ECE

COURSE HANDOUT

PART-A

Name of Course Instructor:Mr.G.Venkata RaoCourse Name & Code:DLC Lab-20EC52L-T-P Structure:0-0-1

Program/Sem/Sec

: DLC Lab-20EC52 : 0-0-1 : B. Tech. II-Sem., ECE B Sec **Regulation**: R20 **Credits:** 1 **A.Y.:** 2022-23

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course gives the ability to design and verify digital logic circuits like; logic gates, combinational and sequential logic circuits using discrete components and Integrated Circuits.

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

CO1	Demonstrate the functionality of Logic gates, Flip-flops, Shift registers and Counters.
CO2	Apply the Boolean minimization methods to implement Combinational and Sequential logic
	circuits using logic gates. (Apply – L3)
CO3	Analyze the behavior of Combinational and Sequential logic circuits. (Analyze – L4)
CO4	Adapt effective Communication, presentation and report writing skills. (Apply – L3)

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
CO1	2	3	3	1	2	3	-	2	-	-	-	1	-	3	-
CO2	2	1	1	1	1	3	-	2	-	-	-	1	-	1	-
CO3	2	1	1	-	1	3	-	2	-	-	-	1	-	1	-
CO4	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-
1 - Low					2 –Medium			3 - High							

TEXTBOOKS:

T1 Morris Mano, "Digital Design", PHI Publishers, 4th Edition

REFERENCE BOOKS:

R1 Ananda Kumar, "Switching Theory and Logic Design", PHI Publishers.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Ist Batch (22761A04A0 to 22761A04D2)

S.	Topics to be covered (Experiment Name)	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	HOD Sign
NO.		Required	Completion	Completion	Methods	Weekly
1.	Introduction to course, Course				TLM1	
	Outcomes, Usage of Lab	3	13/03/23			
	equipments and ICs					
2.	Realization of logic gates using	2	20/03/23		TLM4	
	universal logic gates.	5				
3.	Realization of Adder and		27/03/23		TLM4	
	Subtractor circuits using basic /	3				
	universal gates.					

4.	Implementation of Binary to Gray	3	03/04/23	TLM4	
	converters.	5			
5.	Realization of Boolean expressions using Decoder.	3	10/04/23	TLM4	
6.	Implementation of 8×1 Multiplexer and Demultiplexer.	3	17/04/23	TLM4	
7.	Realization of Boolean Expressions using Multiplexers.	3	24/04/23	TLM4	
8.	Verification of flip-flops.	3	01/05/23	TLM4	
9.	Conversion of SR to D flip-flop and SR to T flip-flop.	3	15/05/23	TLM4	
10.	Implementation of shift register.	3	22/05/23	TLM4	
11.	Implementation of Universal shift register.	3	29/05/23	TLM4	
12.	Implementation of Up/Down counter.	3	05/06/23	TLM4	
13.	Implementation of Synchronous /Asynchronous counter.	3	12/06/23	TLM4	
14.	Internal Lab Exam	3	26/06/23		
No. d	of classes required to complete :	No. of classes taken:			

COURSE DELIVERY PLAN (LESSON PLAN): IInd Batch (22761A0467 to 21761A0499)

^	Touiss to be serviced	No. of	Tentative	Actual	Teaching	HOD			
5. No	(Superiment Norme)	Classes	Date of	Date of	Learning	Sign			
INO.	(Experiment Name)	Required	Completion	Completion	Methods	Weekly			
1.	Introduction to course, Course				TLM1				
	Outcomes, Usage of Lab	3	14/03/23						
	equipments and ICs								
2.	Realization of logic gates using	2	21/03/23		TLM4				
	universal logic gates.	5							
3.	Realization of Adder and		28/03/23		TLM4				
	Subtractor circuits using basic /	3							
	universal gates.								
4.	Implementation of Binary to Gray		04/04/23		TLM4				
	and Gray to Binary code	3							
	converters.								
5.	Realization of Boolean expressions	3	11/04/23		TLM4				
	using Decoder.								
6.	Implementation of 8×1	3	18/04/23		TLM4				
	Multiplexer and Demultiplexer.	<u> </u>							
7.	Realization of Boolean Expressions	3	25/04/23		TLM4				
	using Multiplexers.	-							
8.	Verification of flip-flops.	3	02/05/23		TLM4				
9.	Conversion of SR to D flip-flop and	3	16/05/23		TLM4				
	SR to T flip-flop.								
10.	Implementation of shift register.	3	23/05/23		TLM4				
11.	Implementation of Universal shift	з	30/05/23		TLM4				
	register.	5							
12.	Implementation of Up/Down	з	06/06/23		TLM4				
	counter.	5							
13.	Implementation of Synchronous	2	13/06/23		TLM4				
	/Asynchronous counter.	5	15/00/25						
14.	14. Internal Lab Exam 3 27/06/23								
No. of classes required to complete : No. of classes taken:									

Teaching Learning Methods							
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)				
TLM2	РРТ	TLM5	ICT (NPTEL/Swayam Prabha/MOOCS)				
TLM3	Tutorial	TLM6	Group Discussion/Project				
	D.4						

<u>PART-C</u>

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work $= \mathbf{A}$	1,2,3,4,5,6,7,8	A=05
Record $=$ B	1,2,3,4,5,6,7,8	B=05
Internal Test = \mathbf{C}	1,2,3,4,5,6,7,8	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8	15
Semester End Examinations = D	1,2,3,4,5,6,7,8	D = 35
Total Marks: $A + B + C + D = 50$	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To Attain a solid foundation in Electronics & Communication Engineering
	fundamentals with an attitude to pursue continuing education
PEO 2	To Function professionally in the rapidly changing world with advances in technology
PEO 3	To Contribute to the needs of the society in solving technical problems using
	Electronics & Communication Engineering principles, tools and practices
PEO 4	To Exercise leadership qualities, at levels appropriate to their experience, which
	addresses issues in a responsive, ethical, and innovative manner?

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering
	fundamentals, and an engineering specialization to the solution of complex
	engineering problems
PO 2	Problem analysis : Identify, formulate, review research literature, and analyze
	complex engineering problems reaching substantiated conclusions using first
	principles of mathematics, natural sciences, and engineering sciences
PO 3	Design/development of solutions : Design solutions for complex engineering
	problems and design system components or processes that meet the specified needs
	with appropriate consideration for the public health and safety, and the cultural,
	societal, and environmental considerations
PO 4	Conduct investigations of complex problems: Use research-based knowledge and
	research methods including design of experiments, analysis and interpretation of data,
	and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and
	modern engineering and IT tools including prediction and modelling to complex
	engineering activities with an understanding of the limitations
P0 6	The engineer and society: Apply reasoning informed by the contextual knowledge to
	assess societal, health, safety, legal and cultural issues and the consequent
	responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability : Understand the impact of the professional
	engineering solutions in societal and environmental contexts, and demonstrate the
	knowledge of, and need for sustainable development
1	

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.G.Venkata Rao	Mr. K.V.Ashok	Dr. G. Srinivasulu	Dr. Y. Amar Babu

Signature

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF MECHANICAL ENGINEERING COURSEHANDOUT

PROGRAM : B. Tech. II-Sem., ECE–B Section

ACADEMICYEAR : 2022-23

COURSE NAME & CODE : Engineering Workshop, 20ME51

PSTRUCTURE :0-0-3

COURSECREDITS :1.5

COURSE INSTRUCTOR :K Lakshmi Prasad/ S Srinivasa Reddy/ P Mounika

COURSE COORDINATOR : Seelam Srinivasa Reddy

PRE-REQUISITE : Knowledge in dimensions and units, Usage of geometrical instruments and analytical ability

COURSEOBJECTIVE: The objective of this course is to get familiarized with various trades used in Engineering Workshop and learn the safety pre-cautions to be followed in the workshops, while working with the different tools.

COURSE OUTCOMES (CO)

CO1	Develop different prototypes in the carpentry trade such as Cross lap joint, Dovetail joint.
CO2	Fabricate various basic proto types in the trade of fitting such as Straight fit, V-fit.
CO3	Demonstrate various operations related to plumbing, tin smithy and black smithy such as Rectangular tray and open Cylinder.
CO4	Perform various basic House Wiring techniques.

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

CO s	РО 1	PO 2	PO 3	РО 4	РО 5	РО 6	РО 7	PO 8	РО 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3		2	3		3			3			2		3	2
CO2	3		2	3		3			3			2		3	2
CO3	3		2	3		3			3			2		3	2
CO4	3		2	3		3			3			2		3	2

Note: Enter Correlation Levels1or2or3. If there is no correlation, put'-'1-Slight(Low),2-Moderate(Medium),3-Substantial(High).

REFERENCE:

R1 Lab Manual

COURSE DELIVERY PLAN (LESSONPLAN): Section-C

S.N o.	Experiment to be conducted	No. of Classe s Requir ed	Tentative Date of Completion	Actual Dateof Completio n	Teaching Learning Methods	Referenc e	HOD Sign Weekl y
1	Demonstration	3	17.03.2023		TLM8	R1	
2	Demonstration	3	24.03.2023		TLM8	R1	
3	Experiment-1	3	31.03.2023		TLM8	R1	
4	Experiment-2	3	21.04.2023		TLM8	R1	
5	Experiment-3	3	28.04.2023		TLM8	R1	
6	Experiment-4	3	05.05.2023		TLM8	R1	
7	Experiment-5	3	19.05.2023		TLM8	R1	
8	Experiment-6	3	26.05.2023				
	MID-1 E	XAM 08	3.05.2023 TO 13	.05.2023			
9.	Experiment-7	3	02.06.2023		TLM8	R1	
10.	Experiment-8	3	09.06.2023		TLM8	R1	
11.	Demonstration of Forging	3	16.06.2023		TLM8	R1	
12.	Demonstration of Tin Smithy	3	23.06.2023		TLM8	R1	
13.	Repetition	3	30.06.2023		TLM8	R1	
14.	Lab Internal	3	07.07.2023		TLM8	R1	

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

ACADEMIC CALENDAR:

Description	From	То	Weeks
I PhaseofInstructions-1	13.03.2023	06.05.2023	8W
I Mid Examinations	08.05.2023	1305.2023	1W
II Phase of Instructions	15.05.2023	08.07.2023	8W
II Mid Examinations	10.07.2023	15.07.2023	1W
Preparation and Practical	17.07.2023	22.07.2023	1W
Semester End Examinations	24.07.2023	05.08.2023	2W

EVALUATIONPROCESS:

Part-C

Paramete	er	Marks			
Day-to-Day	Observation	A1=05Marks			
Work	Record	A2=05Marks			
Internal Test		B=05Marks			
Cumulative Inte	rnal Examination	A1+A2+B=15 Marks			
Semester End E	xaminations	D=35Marks			
TotalMarks:A1+.	A2+B+C+D	50Marks			

Details of Batches: C-SEC

Batc h	Reg. No. of Students	Number of	Batc h	Reg. No. of Students	Number of
No.		Students	No.		Student s
C1	22761A0467-483	17	C2	22761A04A1-4B6	16
C2	22761A0484-4A0	17	C4	22761A04B7-4D2	16

Batc	Exp.									
h	01	02	03	04	05	06	07	08	09	10
No:										
C1	F1	F2	C1	C2	E1	E2	P1	P2	D1	D2
C2	C1	C2	E1	E2	P1	P2	F1	F2	D1	D2
С3	E1	E2	P1	P2	F1	F2	C1	C2	D1	D2
C4	P1	P2	F1	F2	C1	C2	E1	E2	D1	D2

LISTOF EXPERIMENTS:

Exp. No.	Name of the Experiment	Related CO
1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
2.	Carpentry-2(C2)-Dovetail Joint	CO1
3.	Fitting-1(F1)-T-Joint	CO2
4.	Fitting-2(F2)-V-Joint	CO2
5.	Plumbing-1(P1)-Pipe Threading practice	CO3
6.	Plumbing-2(P2)-Pipe Layout	CO3
7.	HouseWiring-1(E1)–Series and Parallel connection	CO4
8.	HouseWiring-2(E2)–Fluorescent Lamp and Calling Bell Circuit	CO4
9.	Black Smithy(D1)	CO3
10.	Tin Smithy(D2)	CO3

Cycl e	Exp No	Name of the Experiment	Related CO
	1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
	2.	Carpentry-2(C2)-Dovetail Joint	CO1
	3.	Fitting-1(F1)-T- J oint	CO2
ц.	4.	Fitting-2(F2)-V-Joint	CO2
cle	5.	Plumbing-1(P1)-Pipe Threading practice	CO3
CĂ	6.	Plumbing-2(P2)-Pipe Layout	CO3
	7.	HouseWiring-1(E1)–Series and Parallel Connection	CO4
	8.	HouseWiring-2(E2)–Fluorescent Lamp and Calling bell Circuit	CO4
rcle-2	9.	Black Smithy(D1)	CO3
ن	10.	Tin Smithy(D2)	CO3

PROGRAMMEEDUCATIONALOBJECTIVES:

PEO1: To build a professional career and pursue higher studies with

sound knowledge in Mathematics, Science and Mechanical Engineering.

PEO2: To inculcate strong ethical values and leadership qualities for

graduates to become successful in multidisciplinary activities.

PEO3: To develop inquisitiveness towards good communication and lifelong learning.

PROGRAM 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 modelling 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

- 1. **PSO1:** To apply the principles of thermal sciences to design and develop various thermal systems.
- 2. **PSO2:** To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
- 3. **PSO3:** To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Course Instructors	Course Coordinator	Module Coordinator	HO D
K Lakshmi Prasad/ S Srinivasa Reddy/ P Mounika	S. Srinivasa Reddy	Dr. M B S Sreekar Reddy	Dr. S. Pichi Reddy

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)



DEPARTMENT OF ELOCTRONICS & COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	:	Mr. B. Sreenivasa Reddy	
Course Name & Code	:	PC-II, 20FE02	
L-T-P Structure	:	2-0-0	Credits: 02
Program/Sem/Sec	:	ECE –C- II SEM	
A.Y.	:	2022-23	

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To improve English language proficiency of the students on various aspects like vocabulary, grammar, communication skills, listening skills, Reading & Writing skills.

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

CO1	Produce a coherent paragraph interpreting a figure/graph/chart/table.	L2
CO2	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
CO3	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
CO4	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
CO5	Write well structured essays; Reports & Résumé.	L3

UNIT-I

Fabric of Change-'H.G. Wells and the Uncertainties of Progress–Peter J. Bowler'; Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary: Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting; Degrees of Comparison; Writing: Information Transfer.

UNIT-II

Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian - Sui Sin Far';

Reading: Global Comprehension; Detailed Comprehension; Grammar & Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays using suitable claims and evidences.

UNIT-III

'Homi Jahangir Bhabha'; Grammar & Vocabulary: Words often confused; Common Errors; Writing: Incident & Investigation Reports.

UNIT-IV

'Jagadish Chandra Bose'; Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.



UNIT-V

'**Prafulla Chandra Ray'**; Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01		1		1		1			3	3		2			
CO2		1		1		1			3	3		2			
CO3		1		1		1			3	3		2			
CO4		1		1		1			3	3		2			
CO5		1		1		1			3	3		2			
1 - Low					2	-Med	ium			3	- High				

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

TEXTBOOKS:

- T1 Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
- T2 "The Great Indian Scientists" published by Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

- R1 Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2 Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- **R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- **R4** Baradwaj Kumkum, "Professional Communication", I. K. International PublishingHousePvt.Lt., NewDelhi, 2008.
- **R5** Wood, F. T., "Remedial English Grammar", Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly		
1.	Introduction to syllabus	01	14-03-2023		TLM2			
2.	Fabric of Change-'H.G. Wells and the Uncertainties of Progress– Peter J. Bowler'	03	15-03-2023 18-03-2023 21-03-2023		TLM2			
3.	Reading: Studying the use of Graphic elements in texts;	01	25-03-2023		TLM2			
4.	Quantifying Expressions; Comparing and Contrasting	01	28-03-2023		TLM2			
5.	Adjectives and adverbs	01	29-03-2023		TLM2			
6.	Degrees of Comparison	01	01-04-2023		TLM2			
7.	Writing: Information Transfer.	01	03-04-2023		TLM2 TLM6			
No.	No. of classes required to complete UNIT-I: 09 No. of classes taken:							

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far';	03	04-04-2023 08-04-2023 11-04-2023		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	12-04-2023		TLM2	
10.	Active & Passive Voice	02	15-04-2023 18-04-2023		TLM2	
11.	Idioms & Phrases	02	19-04-2023 25-04-2023		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	26-04-2023		TLM2 TLM6	
No.	of classes required to complete	UNIT-II: ()9	No. of clas	ses take	n:

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	'Homi Jahangir Bhabha'	03	29-04-2023 02-05-2023 03-05-2023		TLM2 TLM6	
14.	Words often confused	01	06-05-2023		TLM2	

15.	Common Errors	02	16-05-2023 17-05-2023		TLM2	
16.	Report Writing – Types & Formats	02	20-05-2023 23-05-2023		TLM2	
17.	Incident and Investigation Reports	01	24-05-2023		TLM2 TLM6	
	No. of classes required to comp	No. of clas	sses take	n:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Jagadish Chandra Bose	03	27-05-2023 30-05-2023 31-05-2023		TLM2 TLM2	

19.	Use of antonyms	02	03-06-2023 06-06-2023	TLM2	
20.	Correction of Sentences	01	07-06-2023	TLM2	
21.	Formal and Informal dialogues	01	10-06-2023	TLM2	
22.	Dialogue Writing.	02	13-06-2023 14-06-2023	TLM2 TLM6	
No.	of classes required to complete	No. of classes take	n:		

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
23.	Prafulla Chandra Ray	02	17-06-2023	compretion	TLM2	weeny
24.	Analogy	03	20-06-2023 21-06-2023 24-06-2023 27-06-2023		TLM2	
25.	Sentence Completion	01	28-06-2023		TLM2	
26.	Resume - Formats	02	01-07-2023 04-07-2023		TLM2	
27.	Writing a Résumé	02	05-07-2023 08-07-2023		TLM2 TLM6	
No. o	f classes required to complet	10	No. of clas	sses takei	1:	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.PO 2Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.PO 3Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.PO 4Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.PO 5Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable developmentPO 6Environment and sustainability: Understand the impact of the professional engineering produces and environmental contexts, and demonstrate the knowledge of, and need for sustainable developmentPO 90Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.PO 10Communication: Communicate effectively on complex engineering activities with the engineering and environmentas: Demonstrate knowledge and understanding of the engineering and environmentas.		
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	PU 12	independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	B. Sreenivasa Reddy			Dr. A. Ramireddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM/SEM/SEC	: I B. Tech., II-Sem., ECE C
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: Linear algebra & Transformation Techniques & 20FE04
L-T-P STRUCTURE	: 3-1-0
COURSE CREDITS	:3
COURSE INSTRUCTOR	: Dr. K.R. Kavitha
COURSE COORDINATOR	: Dr. K. Jhansi Rani
PRE-REQUISITES	: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the students learn Matrix algebra and introduced with transformation techniques such as Laplace transformation and Z – Transformations.

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

CO1	Investigate the consistency of the system of equations and solve them. (Apply L3)
CO2	Determine the Eigen vectors and inverse, powers of a matrix by using Cayley – Hamilton theorem.
001	(Apply L3)
CO3	Use the concepts of Laplace transforms to various forms of functions. (Understand L2)
CO4	Solve Ordinary differential equations by using Laplace Transformations. (Apply L3)
CO5	Apply Z- Transformations to solve difference equations. (Apply L3)

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

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

TEXTBOOKS:

- **T1** Dr. B.S. Grewal, "Higher Engineering Mathematics", 42ndEdition, Khanna Publishers, New Delhi, 2012.
- **T2** Dr. B. V. Ramana, "Higher Engineering Mathematics", 1stEdition, TMH, New Delhi, 2010.

REFERENCE BOOKS:

- **R1** M. D. Greenberg, "Advanced Engineering Mathematics", 2nd Edition, TMH Publications, New Delhi, 2011.
- **R2** Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, John Wiley & sons, New Delhi, 2011.
- **R3** W.E. Boyce and R. C. Diprima, "Elementary Differential Equations", 7th Edition, John Wiley & sons, New Delhi,2011.

<u>PART-B</u> COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	14/03/23		TLM1	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
2.	Introduction to UNIT I	1	15/03/23		TLM1	
3.	Matrices and rank of a matrix	1	16/03/23		TLM1	
4.	Echelon form of a matrix	1	18/03/23		TLM1	
5.	Normal form of a matrix	1	21/03/23		TLM1	
6.	Normal form of a matrix	1	23/03/23		TLM1	
7.	PAQ form	1	25/03/23		TLM1	
8.	Solution of Non-homogeneous linear system of equations	1	28/03/23		TLM1	
9.	Solution of Non-homogeneous Linear system of equations	1	29/03/23		TLM1	
10.	Solution of Homogeneous Linear system of equations	1	01/04/23		TLM1	
11.	Tutorial 1	1	04/04/23		TLM3	
12.	Solution of Homogeneous Linear system of equations	1	06/04/23		TLM1	
No.	No. of classes required to complete UNIT-I: 11 No. of classes taken:					

UNIT-I: Linear System of Equations

UNIT-II: Eigen values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Introduction to UNIT II	1	11/04/23		TLM1	
14.	Eigen values of a matrix	1	12/04/23		TLM1	
15.	Eigen values and Eigen vectors of a matrix.	1	13/04/23		TLM1	
16.	Eigen values and Eigen vectors of a matrix.	1	15/04/23		TLM1	
17.	Properties	1	18/04/23		TLM1	
18.	Properties		19/04/23			
19.	Cayley – Hamilton Theorem.	1	20/04/23		TLM1	
20.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	25/04/23		TLM1	
21.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	26/04/23		TLM1	
22.	Tutorial 2	1	29/04/23		TLM3	
No.	No. of classes required to complete UNIT-II: 10 No. of classes taken:					

UNIT-III: Laplace Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Introduction to Unit-III	1	27/04/23		TLM1	
24.	Standard forms of Laplace Transforms.	1	02/05/23		TLM1	
25.	Linear Property, Shifting Theorem.	1	03/05/23		TLM1	
26.	Change of scale property, Multiplication by t.	1	04/05/23		TLM1	
27.	Multiplication by t.	1	06/05/23		TLM1	
II MID EXAMINATIONS (08-05-2023 TO 13-05-2023)						

28.	Division by t	1	16/05/23	TLM1	
29.	Laplace transforms of derivatives.	1	17/05/23	TLM 1	
30.	Laplace transforms of Integrals.	1	18/05/23	TLM1	
31.	Tutorial 3	1	20/05/23	TLM3	
32.	Unit step function and Dirac's delta function.	1	23/05/23	TLM1	
33.	Application of Laplace Transforms.	1	24/05/23	TLM1	
	No. of classes required to complete	No. of classes taken:			

UNIT-IV: Inverse Laplace Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
34.	Introduction to UNIT IV.	1	25/05/23		TLM1	
35.	Linear property.	1	27/05/23		TLM1	
36.	First Shifting properties.	1	30/05/23		TLM1	
37.	Inverse transforms properties	1	31/05/23		TLM1	
38.	Problems	1	01/06/23		TLM1	
39.	Inverse Laplace transform by using partial fractions.	1	03/06/23		TLM1	
40.	Inverse Laplace transform by using partial fractions.	1	06/06/23		TLM1	
41.	Inverse Laplace Transform by using Convolution theorem.	1	07/06/23		TLM1	
42.	Inverse Laplace Transform by using Convolution theorem.	1	08/06/23		TLM1	
43.	Solving of Ordinary differential equation by Laplace transform method.	1	13/06/23		TLM1	
44.	Solving of Ordinary differential equation by Laplace transform method.	1	14/06/23		TLM1	
45.	Tutorial 4	1	17/06/23		TLM3	
No. of classes required to complete UNIT-IV: 12 No. of classes taken:						

UNIT-V: Z- Transforms

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 UNIT V.	1	15/06/23		TLM1	
47.	Standard forms of Z- Transform.	1	20/06/23		TLM1	
48.	Damping rule	1	21/06/23		TLM1	
49.	Shifting Rule	1	22/06/23		TLM1	
50.	Initial and final value theorems.	1	24/06/23		TLM1	
51.	Other properties	1	27/06/23		TLM1	
52.	Inverse Z – Transforms by using partial fractions.	1	28/06/23		TLM1	
53.	Inverse Z – Transform by using convolution theorem.	1	29/06/23		TLM1	
54.	Solving of Difference equations by using Z – Transforms.	1	01/07/23		TLM1	
55.	Solving of Difference equations by using Z – Transforms.	1	04/07/23		TLM1	
56.	Tutorial 5	1	06/07/23		TLM3	
No. of classes required to complete UNIT-V: 11 No. of classes taken:						

Contents 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.	Solving Simultaneous equations using Laplace Transforms	1	05/07/23		TLM2	

II MID EXAMINATIONS (10-07-2023 TO 15-07-2023)

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

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks				
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5				
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))					
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))					
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))	<mark>M=30</mark>				
Cumulative Internal Examination (CIE): M	<mark>30</mark>				
Semester End Examination (SEE)	<mark>70</mark>				
Total Marks = $CIE + SEE$	100				

PART-D

PROGRAMME OUTCOMES (POs):

DO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and							
rui	an engineering specialization to the solution of complex engineering problems.							
	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering							
PO 2	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							
PO 3	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							
PO 4	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							
PO 5	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,							
PO 6	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							
PO 7	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							
PU o	engineering practice.							
DO 0	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							
PO 10	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.							
	Project management and finance: Demonstrate knowledge and understanding of the engineering and							
PO 11	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.							
DO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent							
FU 12	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. K.R. Kavitha	Dr. K. Jhansi Rani	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Signature				

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor:Mr G.Venkata RaoCourse Name & Code: DLC-20EC02L-T-P Structure: 3-0-0Program/Sem/Sec: B. Tech. II-Sem., ECE C Sec

Regulation: R20 **Credits:** 03 **A.Y.:** 2022-23

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the basic concepts of number systems and Boolean algebra, logic gates and realization of Boolean expressions using logic gates, realization of combinational and sequential circuits and concepts of Finite State Machines and ASM Charts.

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

CO1	Summarize the key differences between number systems and their usage in Digital
	electronics circuits. (Understand – L2)
CO2	Identify the minimization techniques of Boolean expressions to implement digital
	circuits using basic logic gates and logic circuits. (Apply – L3)
CO3	Apply the minimization and realization methods for design of Combinational and
	Sequential logic circuits. (Apply – L3)
CO4	Analyze the Combinational, Sequential, Finite state machines and Algorithmic State
	Machines for implementation of digital logic circuits. (Analyze – L4)

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	2	3	1	-	-	-	-	-	-	-	-	1	-	2	-
CO2	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
CO3	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
CO4	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-
1 - Low						2 –Medium			3 - High						

TEXTBOOKS:

T1 Morris Mano, "Digital Design", PHI Publishers, 4th Edition

T2 Ananda Kumar, "Switching Theory and Logic Design", PHI Publishers.

REFERENCE BOOKS:

R1 Charles H. Roth, "Fundamentals of Logic Design", Cengage learning Publishers

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Number Systems

S		No. of	Tentative	Actual	Teaching	HOD
D. No	Topics to be covered	Classes	Date of	Date of	Learning	Sign
110.		Required	Completion	Completion	Methods	Weekly
	Introduction to course,					
1.	Course Outcomes,	1	13/03/23			
	Introduction to UNIT-I					
2.	Number Systems	1	14/03/23			
2	Decimal to binary, Octal,	1	15/03/23			
3.	Hexadecimal conversion	1				
	Binary, Octal,		16/03/23			
4.	Hexadecimal to Decimal	1				
	and internal conversion;					
	1's & 2's complement of		20/03/23			
5.	binary numbers, Binary	1				
	arithmetic					
6	Signed Binary numbers	1	21/03/23			
0.	Signed Dinary numbers	1				
7	Binary codes –BCD,	1	23/03/23			
7.	Excess-3 code, Gray code	1				
	Error detecting and	1	27/03/23			
8.	correcting codes –					
	Hamming code					
9.	Assignment-I	1	28/03/23			
No.	of classes required to com	plete UNIT-	-I:09	No. of classes	s taken:	

UNIT-II: Boolean algebra and Logic gates

S.	Toning to be servered	No. of	Tentative Data of	Actual	Teaching	HOD
No.	Topics to be covered	Required	Completion	Completion	Methods	Sign Weekly
10.	Introduction to Boolean algebra, Boolean postulates, De-Morgan's Theorem	1	29/03/23			
11.	Principle of Duality Minimization of Boolean expressions	1	03/04/23			
12.	Sum of Products (SOP), Product of Sums (POS), minterm & maxterm	2	04/04/23 06/04/23			
13.	Simplification of Boolean functions using Karnaugh map (K-map)	2	10/04/23 11/04/23			
14.	Simplification Boolean functions using K-map with don't care conditions	1	12/04/23			
15.	Minimization of Boolean expressions using Quine- Mc Cluskey Tabular Method	1	13/04/23			
16.	Logic Gates	1	17/04/23			

17.	Realization of Boolean functions using logic gates	1	18/04/23				
18.	Tutorial &Assignment-II	1	19/04/23				
No. of classes required to complete UNIT-II:11 No. of classes taken:							

UNIT-III: Combinational Logic Circuits

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Complet ion	Teaching Learning Methods	HOD Sign Weekly
19.	Introduction to Combinational Circuits	1	20/04/23			
20.	Adders: Half & Full Adder Parallel adder - Carry look ahead adder	2	24/04/23 25/04/23			
21.	Subtractors: Half & Full Subtractor, BCD adder, Magnitude Comparator	2	26/04/23 27/05/23			
22.	Decoders & Encoders	1	01/05/23			
23.	Multiplexers, De-MUX & Parity generator	2	02/05/23 03/05/23			
24.	code converters- binary to gray, gray to binary & BCD to Excess-3 codes	2	04/05/23 15/05/23			
25.	Tutorial & Assignment-III	1	16/05/23			
No.	of classes required to comple	ete UNIT-I	II: 11	No. of c	classes taken	:

UNIT-IV: Sequential Logic Circuits

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly		
26.	Introduction to Sequential Logic Circuits.	1	17/05/23					
27.	SR and JK Latch	1	18/05/23					
28.	Flip flops-SR, JK,T,D– Characteristic and excitation tables	2	22/05/23 23/05/23					
29.	Realization of one flip flop using other flip flops	2	24/05/23 25/05/23					
30.	Shift Registers, Universal Shift Register	1	29/05/23					
31.	Asynchronous counters	1	30/05/23					
32.	Synchronous counters	2	31/05/23 01/06/23					
33.	Assignment-IV	1	05/06/23					
No. e	of classes required to comp	No. of classes required to complete UNIT-IV: 11						

UNIT-V: Finite state machines & Algorithmic State Machines

S. No.	Topics to be covered	No. ofTentativeClassesDate of		Actual Date of	Teaching Learning	HOD Sign
		Required	Completion	Completion	Methods	Weekly
34.	Introduction to FSM,	1	06/06/23			

	Mealy and Moore						
	machines						
	Difference between		07/06/23				
35.	Mealy and Moore	1					
	machines						
	Conversion between		08/06/23				
36.	Mealy and Moore	2	12/06/23				
	machines						
37.	Features of ASM chart	1	13/06/23				
20	System design using	n	14/06/23				
58.	data control subsystems	2	15/06/23				
20	Control implementations	2	19/06/23				
39.		2	20/06/23				
40.	Mealy, Moore examples	1	21/06/23				
41.	Tutorial and Assignment	1	22/06/23				
No. o	of classes required to com	plete UNIT-	-V:11	No. of classes taken:			
G		No. of	Tentative	Actual	Teaching	HOD	
D. No	Topics to be covered	Classes	Date of	Date of	Learning	Sign	
140.		Required	Completion	Completion	Methods	Weekly	
	Revision &		26/06/23				
42.	Implementation of real	1	То				
	time examples		06/07/23				

Teaching Learning Methods								
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)					
TLM2	LM2 PPT		ICT (NPTEL/Swayam Prabha/MOOCS)					
TLM3	Tutorial	TLM6	Group Discussion/Project					
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PART-C

EVALUATION PROCESS (R20 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))					
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))					
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)					
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))	<mark>M=30</mark>				
Cumulative Internal Examination (CIE): M	<mark>30</mark>				
Semester End Examination (SEE)	<mark>70</mark>				
Total Marks = CIE + SEE	100				

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	То	Attain	a	solid	foundation	in	Electronics	&	Communication	n Engineering
	fune	damenta	ls w	vith an	attitude to pu	irsue	continuing e	duca	tion	
PEO 2	To	To Function professionally in the rapidly changing world with advances in technology								
PEO 3	То	Contrib	ute	to the	e needs of	the	society in	solv	ing technical p	roblems using

	Electronics & Communication Engineering principles, tools and practices
PEO 4	To Exercise leadership qualities, at levels appropriate to their experience, which
	addresses issues in a responsive, ethical, and innovative manner?
PROGRA	MME OUTCOMES (POs):
PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering
	fundamentals, and an engineering specialization to the solution of complex
	engineering problems
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze
	complex engineering problems reaching substantiated conclusions using first
	principles of mathematics, natural sciences, and engineering sciences
PO 3	Design/development of solutions: Design solutions for complex engineering
	problems and design system components or processes that meet the specified needs
	with appropriate consideration for the public health and safety, and the cultural,
	societal, and environmental considerations
PO 4	Conduct investigations of complex problems: Use research-based knowledge and
	research methods including design of experiments, analysis and interpretation of data,
	and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and
	modern engineering and IT tools including prediction and modelling to complex
	engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to
	assess societal, health, safety, legal and cultural issues and the consequent
	responsibilities relevant to the professional engineering practice
P0 7	Environment and sustainability: Understand the impact of the professional
	engineering solutions in societal and environmental contexts, and demonstrate the
	knowledge of, and need for sustainable development
PO 8	Etnics: Apply ethical principles and commit to professional ethics and responsibilities
	and norms of the engineering practice
P0 9	Individual and team work: Function effectively as an individual, and as a member or
DO 10	Communication: Communicate officially on complex engineering estivities with
FU 10	the angineering community and with society of large such as being able to
	comprehend and write effective reports and design documentation make effective
	presentations and give and receive clear instructions
PO 11	Project management and finance: Demonstrate knowledge and understanding of the
1011	engineering and management principles and apply these to one's own work as a
	member and leader in a team to manage projects and in multidisciplinary
	environments
PO 12	Life-long learning : Recognize the need for, and have the preparation and ability to
-	engage in independent and life-long learning in the broadest context of technological
	change
PROGRA	MME SPECIFIC OUTCOMES (PSOs):
	Design and develop modern communication technologies for building to its
P20 I	Design and develop modern communication technologies for building the inf
0000	Design and Analyze Analog and Disitel Electronic Circuits as anti-
r30 2	Design and Analyze Analog and Digital Electronic Circuits or systems and Impleme real time applications in the field of VLSI and Embedded Systems using relevant tool
0000	real unite applications in the field of vLSI and Embedded Systems using relevant tool
r30 3	Apply the Signal processing techniques to synthesize and realize the issues related

real time applications

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. G. Venkata Rao	Mr. G. Venkata Rao	Dr. G. Srinivasulu	Dr. Y. Amar Babu

Signature

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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Electronics & Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.T. ANIL RAJU

Course Name & Code: Programming for problem solving using CL-T-P Structure:3-0-0Program/Sem/Sec: B.Tech/II/CA.Y.: 2022-2023

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, User defined structures, basics of files and its I/O operations.

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

C01	Familiar with syntax and semantics of the basic programming language constructs.
CO2	Constructs derived data types like arrays in solving a problem.
CO3	Decompose a problem into modules and reconstruct it using various ways of user defined functions
CO4	Define user-defined data types like structures and unions and its applications to solve problems
CO5	Discuss various file I/O operations and its application.

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	-	•	-	-	•	-	I	•	2	-	•
CO5	3	-	-	-	-	-	-	-	-	-	•	-	2	-	-
1 - Low				2	-Medi	ium			3	- High					

TEXTBOOKS:

T1 1. ReemaThareja, Programming in C, OxfordUniversityPress,2ndEdition,2015.

REFERENCE BOOKS:

R1	1. Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers,
	7th Edition, 2013.
R2	2. E Balagurusamy, Computer Programming, McGraw Hill Education, 8th Edition.
R3	3. C: The Complete Reference, McGraw Hall Education, 4th Edition
R4	4. PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011.
R5	5. Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2005.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

	UNIT-I:	Introduction	to Problem	solving through	n C-Programmir	ng, C-Programmi	ng, Control statements
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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, Problem Specification	1	13/3/23			
2.	Algorithm / pseudo code	1	14/3/23			
3.	flowchart, examples	1	15/3/23			
4.	Structure of C program, identifiers, basic data types and sizes	1	18/3/23			
5.	Constants, variables, Input-output statements	1	20/3/23			
	A sample c program, operators,		21/3/23			
6.	expressions, type conversions,	1				
7.	precedence of operators and order of evaluation.	1	25/3/23			
8.	if, if else, else if ladder and switch statements	1	27/3/23			
9.	while, do-while and for statements, break, continue, goto and labels.	1	28/3/23			
10.	Problem solving using loops	1	29/3/23			
11.	C programs practice	1	01/4/23			
12.	NEO lab assignment	1	03/4/23			
No.	of classes required to complete	UNIT-I: 1	2	No. of clas	sses take	n:

UNIT-II: Arrays, Character Arrays, Applications of Arrays

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	concept, declaration, definition,	1	04/4/23			
14.	accessing elements, storing elements	1	10/4/23			
15.	two dimensional and multi- dimensional arrays	1	11/4/23			
16.	Declaration, initialization, reading, writing strings	1	12/4/23			
17.	string handling functions,	1	15/4/23			
18.	Pre-processor Directives, and macros.	1	17/4/23			
19.	Pre-processor Directives, and macros.	1	18/4/23			
20.	Example programs	1	19/4/23			
21.	Linear search	1	22/4/23			
22.	Binary search	1	24/4/23			
23.	Bubble Sort	1	25/4/23			
24.	NEO lab Assignment	1	26/4/23			
No.	of classes required to complete	12	No. of clas	ses takei	n:	

UNIT-III: Pointers, Functions, Storage classes

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.	concepts, declaring and initialization of pointer variables	1	29/4/23			
26.	pointer expressions, pointer arithmetic	1	01/5/23			
27.	pointers and arrays, pointers and character arrays	1	01/5/23			
28.	pointers to pointers.	1	02/5/23			
29.	basics, category of functions, parameter passing techniques	1	03/5/23			
30.	recursive functions, comparison with Iteration.	1	06/5/23			
31.	Functions with arrays, Standard library functions	1	15/5/23			
32.	dynamic memory management functions, command line arguments.	1	16/5/23			
33.	Storage classes - auto, register	1	17/5/23			
34.	Storage classes -static and extern,	1	20/5/23			
35.	C programs for practice	1	22/5/23			
36.	NEO lab Assignment	1	23/5/23			
	No. of classes required to comp	lete UNIT	-III: 12	No. of clas	sses take	n:

UNIT-IV: Derived 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
37.	Derived types- structures	1	24/5/23			
38.	declaration, definition, and initialization of structures	1	27/5/23			
39.	accessing structures	1	29/5/23			
40.	nested structures	1	30/5/23			
41.	arrays of structures	1	31/5/23			
42.	structures and functions,	1	03/6/23			
43.	pointers to structures	1	05/6/23			
44.	self-referential structures	1	06/6/23			
45.	unions, typedef	1	07/6/23			
46.	Example Programs	1	10/6/23			
47.	NEO lab Assignment	1	12/6/23			
No.	of classes required to complete	11	No. of clas	ses takei	n:	

UNIT-V: Files

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
48.	Files – concept of a file	1	13/6/23			
49.	Concepts of files,text files	1	14/6/23			
50.	binary files,	1	19/6/23			
51.	streams,	1	20/6/23			
52.	standard I/O	1	21/6/23			
53.	Formatted I/O	1	24/6/23			
54.	file I/O operations	1	26/6/23			
55.	Example programms	1	27/6/23			
56.	error handling	1	28/6/23			

No. o	f classes required to complete	14	No. of clas	ses takei	n:	
61.	Revision or beyond syllabus	1	08/07/23			
60.	NEO lab Assignment	1	05/07/23			
59.	C programs for practice	1	04/07/23			
58.	Revision	1	03/07/23			
57.	Example programms	1	01/07/23			

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. T. Anil Raju	Dr. P. Venkat rao	Dr.P.LachiReddy	Dr.Y.Amarbabu
Signature				

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor:Dr P.Rakesh KumarCourse Name & Code: CONSTITUTION OF INDIA -20MC01Regulation: R20L-T-P Structure: 2-0-0Credits: 00Program/Sem/Sec: B. Tech. II-Sem., ECE C-SecA.Y.: 2022-23

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution.
- To understand the structure of Executive, Legislature and Judiciary.
- To understand Philosophy of fundamental rights and duties.
- To understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commission of India.
- To understand the Central and State relation, financial and administrative.

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

CO1	Understand history and philosophy of constitution with reference to						
	Preamble, Fundamental Rights and Duties						
CO2	Understand the concept of Unitary and Federal Government along with						
	the role of President, Prime Minister and Judicial System.						
CO3	Understand the structure of the state government, Secretariat, Governor						
	and Chief Minister and their functions						
CO4	learn local administration viz. Panchayat, Block, Municipality and						
	Corporation						
CO5	learn about Election Commission and the process and about SC, ST, OBC						
	and women						

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	1	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	1	•	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	1	•	-	-	-	-	-	-
		1	- Low			2	-Medi	ium			3	- High			

TEXT BOOKS:

- **T1** Dr.B.R. Ambedkar, The Constitution of India, General Press First edition 2020., New Delhi
- T2 Dr.B. R. Ambedkar, The Constitution of India, Government of India

REFERENCE BOOKS:

- **R1** Durga Das Basu, Introduction to the Constitution of India, Prentice Hall of India Pvt.Ltd., New Delhi.
- **R2** Subash Kashyap, Indian Constitution, National Book Trust.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Introduction to Indian Constitution

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 Course	1	13-03-2023		TLM2	
2.	Introduction to Indian Constitution	1	14-03-2023		TLM2	
3.	Sources and Constitutional History, Features	1	20-03-2023		TLM2	
4.	Citizenship, Preamble	1	21-03-2023		TLM2	
5.	Fundamental Rights and Duties	1	27-03-2023		TLM2	
6.	Directive Principles of State Policy.	1	28-03-2023		TLM2	
No. of	f classes required to complete UNI	IT-I:6		No. of class	ses taken:	

UNIT-II: Union Government and its Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Union Government and its		03-04-2023		TLM2	
1.	Administration Structure of the	1				
	Indian Union.					
2	President: Role, Power and	1	04-04-2023		TLM2	
Ζ.	Position.	1				
2	Prime Minister (PM) and Council	1	10-04-2023		TLM2	
5.	of Ministers	1				
4.	Cabinet and Central Secretariat	1	11-04-2023		TLM2	
5.	Lok Sabha, Rajya Sabha	1	17-04-2023		TLM2	
6	The Supreme Court : Powers and	1	18-04-2023		TLM2	
0.	Functions.	1				
7	High Court: Powers and	1	24-04-2023		TLM2	
7.	Functions.	1				
No. o	f classes required to complete UN	IT-II:6		No. of clas	sses taken:	

UNIT-III: State Government and its Administration

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.	State Government	1	25-04-2023		TLM2	
2.	Administration	1	01-05-2023			
3.	Governor – Role and Position	1	02-05-2023		TLM2	
4.	Chief Minister (CM)	1	15-05-2023		TLM2	
5.	Council of Ministers.	1	16-05-2023		TLM2	
6.	State Secretariat: Organization	1	22-05-2023		TLM2	
7.	Structure and Functions	1	23-05-2023		TLM2	
No. o	f classes required to complete UN		No. of class	ses taken:		

UNIT-IV : A Local Administration

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.	A Local Administration Role and Importance	1	29-05-2023		TLM2	
2.	Municipalities – Mayor and Role of Elected Representative	1	30-05-2023		TLM2	

3.	Functions of Panchayati Raj	1	05-06-2023	TLM2	
4.	Zilla Panchayat, Elected Officials, and their roles	1	06-06-2023	TLM2	
5.	Village level – Role of Elected officials.	1	12-06-2023	TLM2	
6.	Role of Appointed officials.	1	13-06-2023	TLM2	
No. of classes required to complete UNIT-IV:5 No. of classes taken:					

UNIT-V : Election Commission

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.	Election Commission – Role of Chief Election Commissioner	1	19-06-2023		TLM2	
2.	Role of Election Commissionerate	1	20-06-2023		TLM2	
3.	State Election Commission: Functions	1	26-06-2023		TLM2	
4.	Commissions for the welfare of SC/ST/OBC	1	03-07-2023		TLM2	
5.	Commissions for the welfare of Women.	1	04-07-2023		TLM2	
No. of	f classes required to complete UN	IT-V:5		No. of class	sses taken:	

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

PART-C

EVALUATION PROCESS (R20 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))					
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)					
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)					
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))	<mark>M=30</mark>				
Cumulative Internal Examination (CIE): M					
Semester End Examination (SEE)	<mark>70</mark>				
Total Marks = CIE + SEE	100				

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To Attain a solid foundation in Electronics & Communication Engineering fundamentals					
	with an attitude to pursue continuing education					
PEO 2	To Function professionally in the rapidly changing world with advances in technology					
PEO 3	To Contribute to the needs of the society in solving technical problems using Electronics &					
	Communication Engineering principles, tools and practices					

PEO 4 To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner?

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering
	fundamentals, and an engineering specialization to the solution of complex engineering
	problems
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex
	engineering problems reaching substantiated conclusions using first principles of
DO 3	mathematics, natural sciences, and engineering sciences
PU 3	Design/development of solutions: Design solutions for complex engineering problems and design system components on processes that most the specified needs with appropriate
	consideration for the public health and safety and the cultural societal and environmental
	consideration for the public health and safety, and the cultural, societal, and environmental
PO 4	Conduct investigations of complex problems. Use research-based knowledge
	and research methods including design of experiments, analysis and interpretation of
	data, and synthesis of the information to provide valid conclusions
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources,
	and modern engineering and IT tools including prediction and modelling to
	complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge
	to assess societal, health, safety, legal and cultural issues and the
DO 7	consequent responsibilities relevant to the professional engineering practice
PU /	Environment and sustainability : Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and
	need for sustainable development
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and
	norms of the engineering practice
PO 9	Individual and team work: Function effectively as an individual, and as a member
	or leader in diverse teams, and in multidisciplinary settings
PO 10	Communication: Communicate effectively on complex engineering activities with the
	engineering community and with society at large, such as, being able to comprehend and
	write effective reports and design documentation, make effective presentations, and give
DO 11	and receive clear instructions
1011	the engineering and management principles and apply these to one's own work as
	a member and leader in a team, to manage projects and in multidisciplinary environments
PO 12	Life-long learning : Recognize the need for, and have the preparation and ability to engage
	in independent and life-long learning in the broadest context of technological change
PROGR	AMME 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

Course Instructor

Course Coordinator

Module Coordinator

Head of the Department

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)



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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor:Mr.K.Jamili ReddyCourse Name & Code: Engineering Chemistry&20FE06L-T-P Structure:3-0-0Program/Sem/Sec: B.Tech/IIsem-ECE-C

Credits:03 A.Y. : 2022-23

PREREQUISITE: Electrode potential, Cell potential of a cell/EMF of a cell, primary & secondary batteries, isotropy and anisotropy in crystals, qualitative and quantitative analysis.

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to strengthen the basic concepts of electrochemistry, corrosion, nanotechnology, polymers, liquid crystals and analytical techniques

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

C01	Apply Nernst Equation for calculating electrode cell potentials and compare batteries for
	different applications.
CO2	Apply principles of corrosion for design and effective maintenance of various equipment.
CO3	Analyse the suitability of advanced materials like nano materials in electronics and medici
CO4	Identify the importance of liquid crystals, polymers in advanced technologies.
CO5	Apply the principles of analytical techniques in chemical analysis.

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

COs	P01	P0 2	PO3	P04	P05	P06	P07	P08	P09	P010	P011	P012
C01	3	3	2	1		2	2					2
CO2	3	2	2	1		2	1					2
CO 3	3	2	2	1		1	1					2
CO4	3	2	2	1		1	1					2
CO5	3	2	1	1		1	1					2

TEXTBOOKS:

T1 Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.

Jain, Jain, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, **T2** 16th Edition, 2015.

REFERENCE BOOKS:

- **R1** Shikha Agarwal, "A text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
- **R2** S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S. Chand Publications, New Delhi, 12th Edition, 2010.
- **R3** Y. Bharathi Kumari, Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: ELECTRO CHEMISTRY & BATTERIES

		No. of	Tentative	Actual	Teaching	HOD
S.No.	Topics to be covered	Classes	Date of	Date of	Learning	Sign
		Required	Completion	Completion	Methods	Weekly
1.	Introduction to Course and Cos	1	15-03-23		TLM1	
2.	Introduction to Unit-I	1	16-03-23		TLM1	
3.	Applications of Electro chemical Series,	1	17-03-23		TLM1	
4.	Calculation of EMF of Cell,	1	18-03-23		TLM1	
5.	Practice exercises on applications of Electro chemical series,	1	23-03-23		TLM1	
6.	Calomel Electrode, Nernst equation derivation	1	24-03-23		TLM2	
7.	Applications of Nernst Equation.	1	25-03-23		TLM1	
8.	Glass Electrode		29-03-23			
9.	Lead-acid Battery, Lithium-ion Battery	1	31-03-23		TLM2	
10.	H ₂ – O ₂ Fuel cell, Mg-Cu reserve battery.	1	01-04-23		TLM2	
11.	Revision of unit 1	1	05-04-23		TLM1	
12.	Assignment	1	06-04-23		TLM1	
No. of	classes required to complete	e UNIT-I: 12		No. of classes	taken:	

UNIT-II: SCIENCE OF CORROSION

S.No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	HOD Sign		
		Required	Completion	Completion	Methods	Weekly		
1	Definition, Examples, dry	1	08-04-23		TLM1			
1.	corrosion	1	00 01 25		1 11/11			
	corrosion by other gases							
2	and liquid metal	1	12-04-23		TLM1			
2.	corrosion dry corrosion,	-	12 01 20		1 11-1 1			
	pilling bed worth rule.							
	Conditions to occur wet							
3	corrosion. Mechanism-	1	13-04-23		TI M2			
5.	oxygen absorption,	1	15 01 25		1 1112			
	Hydrogen evolution.							
	Types of wet corrosion							
4.	Galvanic corrosion,	1	15-04-23		TLM2			
	Passivity.							
5	Concentration Cell	1	19-04-23		TLM2			
	Corrosion.		17 01 20		1 11.12			
6	ContdConcentration cell	1	20-04-23		TLM2			
	Corrosion	-	20 01 20		1 1111			
	Nature of metal							
7.	factors influencing	1	21-04-23		TLM2			
	rate of corrosion							
	Nature of							
	Environmental							
8.	factors influencing	1	26-04-23					
	rate of corrosion							
9.	Cathodic Protection.	1	27-04-23		TLM2			
10	Electroplating, metal	1	20 04 22		ті мэ			
10.	cladding.	1	20-04-23					
11.	Revision	1	29-05-23		TLM1			
12.	Assignment	1	03-05-23		TLM1			
No. of	No. of classes required to complete UNIT-II: 12 No. of classes taken:							

UNIT-III: CHEMISTRY OF ENGINEERING MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction, types of nano-materials,	1	04-05-23		TLM1	
2.	Gas-Phase Synthesis of nanomaterials,	1	05-05-23		TLM2	
3.	Applications of nanomaterials.	1	06-05-23		TLM1	
4.	Discussion on MID-I marks evaluation	1	17-05-23		TLM2	
5.	Materials in Electronic devices .	1	18-05-23		TLM2	
6.	Contd Materials in Electronic devices.	1	19-05-23		TLM2	

7.	Characteristics of Molecular motors and machines	1	24-05-23		TLM2	
8.	Rotaxanes and Catenanes as artificial molecular machines	1	25-05-23		TLM2	
9.	Contdrotaxanes and Catenanes as artificial molecular machines	1	26-05-23		TLM2	
10.	Automated light powered molecular motor	1	27-05-23		TLM2	
11.	Revision	1	31-05-23		TLM1	
12.	Assignment	1	01-06-23		TLM1	
No. of	classes required to complet	2	No. of classes	taken:		

UNIT-IV: LIQUID CRYSTALS & POLYMERS

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.	Classification of liquid crystals, Thermotropic liquid crystals.	1	02-06-23		TLM2	
2.	Lyotropic liquid crystals.	1	03-06-23		TLM2	
3.	Applications of liquid crystals.	1	07-06-23		TLM2	
4.	Introduction and types of polymrerisations,	1	08-06-23		TLM1	
5.	Plastics	1	09-06-23		TLM1	
6.	Rubbers	1	10-06-23		TLM1	
7.	Conducting polymers.	1	14-06-23		TLM1	
8.	Bio-degradable polymers	1	15-06-23		TLM1	
9.	Revision	1	16-06-23		TLM1	
10.	Assignment	1	17-06-23		TLM1	
No. of	classes required to complete)	No. of classes	taken:		

UNIT-V: ANALYTICAL TECHNIQUES

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.	Types of analysis	1	21-06-23		TLM2	
2.	Principle of conductometric titrations. strong acid vs strong base titration	1	22-06-23		TLM2	
3.	Strong acid vs weak base titrations, Strong base vs weak acid.	1	23-06-23		TLM2	

4.	Weak acid vs weak base titrations.	1	24-06-23		TLM2	
5.	Principle of potentiometry Acid-base titration	1	30-06-23		TLM2	
6.	Oxidation - Reduction titration.	1	01-07-23		TLM2	
7.	Determination of iron by using thiocynate reagent.	1	05-07-23		TLM2	
8.	Revision	1	06-07-23		TLM1	
9.	Assignment	1	07-07-23		TLM1	
No. of cla	sses required to complete	No. of classes	taken:			

Topics beyond the syllabus:

Sl.No	Topics to be	No.of	Tentative	Actual Date	Teaching	HoD Sign
	coverd	Classes	Date of	of	Learning	
		Required	Completion	Completion	Methods	
1.	Batteries used in mobile phones of popular companies. Polymers in industrial applications	1	08-07-23		TLM1	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & 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))	<mark>M=30</mark>
Cumulative Internal Examination (CIE): M	<mark>30</mark>
Semester End Examination (SEE)	<mark>70</mark>
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering						
	fundamentals, and an engineering specialization to the solution of complex engineering problems.						
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex						
	engineering problems reaching substantiated conclusions using first principles of mathematics,						
	natural sciences, and engineering sciences.						
PO 3	Design/development of solutions : Design solutions for complex engineering problems and						
	design system components or processes that meet the specified needs with appropriate						
	consideration for the public health and safety, and the cultural, societal, and environmental						
DO 4	considerations.						
PU 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of superimental analysis and interpretation of data, and supplementation of the						
	information to provide valid conclusions						
PO 5	Modern tool usage: Create select and apply appropriate techniques resources and modern						
105	engineering and IT tools including prediction and modelling to complex engineering activities with						
	an understanding of the limitations						
P0 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess						
	societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the						
	professional engineering practice						
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions						
	in societal and environmental contexts, and demonstrate the knowledge of, and need for						
	sustainable development.						
PO 8	Ethics : Apply ethical principles and commit to professional ethics and responsibilities and norms of						
DO 0	the engineering practice.						
PO 9	Individual and team work : Function effectively as an individual, and as a member or leader in						
DO 10	diverse teams, and in multidisciplinary settings.						
PO 10	communication : communicate enectively on complex engineering activities with the engineering community and with cociety at large, such as being able to comprehend and write offective.						
	reports and design documentation make effective presentations and give and receive clear						
	instructions						
PO 11	Project management and finance : Demonstrate knowledge and understanding of the engineering						
	and management principles and apply these to one's own work, as a member and leader in a team,						
	to manage projects and in multidisciplinary environments.						
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in						
	independent and life-long learning in the broadest context of technological change.						

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.K.Jamili Reddy	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF MECHANICAL ENGINEERING COURSEHANDOUT

PROGRAM : B. Tech. II-Sem., ECE–C Section

ACADEMICYEAR : 2022-23

COURSE NAME & CODE : Engineering Workshop, 20ME51

PSTRUCTURE :0-0-3

COURSECREDITS :1.5

COURSE INSTRUCTOR :K Lakshmi Prasad/ M. Oliva/ P Mounika

COURSE COORDINATOR : Seelam Srinivasa Reddy

PRE-REQUISITE : Knowledge in dimensions and units, Usage of geometrical instruments and analytical ability

COURSEOBJECTIVE: The objective of this course is to get familiarized with various trades used in Engineering Workshop and learn the safety pre-cautions to be followed in the workshops, while working with the different tools.

COURSE OUTCOMES (CO)

CO1	Develop different prototypes in the carpentry trade such as Cross lap joint, Dovetail joint.
CO2	Fabricate various basic proto types in the trade of fitting such as Straight fit, V-fit.
CO3	Demonstrate various operations related to plumbing, tin smithy and black smithy such as Rectangular tray and open Cylinder.
CO4	Perform various basic House Wiring techniques.

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

CO s	РО 1	PO 2	РО 3	РО 4	РО 5	РО 6	РО 7	PO 8	РО 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3		2	3		3			3			2		3	2
CO2	3		2	3		3			3			2		3	2
CO3	3		2	3		3			3			2		3	2
CO4	3		2	3		3			3			2		3	2

Note: Enter Correlation Levels1or2or3. If there is no correlation, put'-'1-Slight(Low),2-Moderate(Medium),3-Substantial(High).

REFERENCE:

R1 Lab Manual

COURSE DELIVERY PLAN (LESSONPLAN): Section-C

S.N o.	Experiment to be conducted	No. of Classe s Requir ed	Tentative Date of Completion	Actual Date of Completio n	Teaching Learning Methods	Referenc e	HOD Sign Weekl y
1	Demonstration	3	13.03.2023		TLM8	R1	
2	Demonstration	3	20.03.2023		TLM8	R1	
3	Experiment-1	3	27.03.2023		TLM8	R1	
4	Experiment-2	3	03.04.2023		TLM8	R1	
5	Experiment-3	3	10.04.2023		TLM8	R1	
6	Experiment-4	3	17.04.2023		TLM8	R1	
7	Experiment-5	3	24.04.2023		TLM8	R1	
8	Experiment-6	3	01.05.2023				
	MID-1 E						
9.	Experiment-7	3	15.05.2023		TLM8	R1	
10.	Experiment-8	3	22.05.2023		TLM8	R1	
11.	Demonstration of Forging	3	29.05.2023		TLM8	R1	
12.	Demonstration of Tin Smithy	3	05.06.2023		TLM8	R1	
13.	Repetition	3	12.06.2023		TLM8	R1	
14.	Repetition	3	19.06.2023		TLM8	R1	
15.	Lab Internal	3	26.06.2023		TLM6		

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

ACADEMIC CALENDAR:

Description	From	То	Weeks
I PhaseofInstructions-1	13.03.2023	06.05.2023	8W
I Mid Examinations	08.05.2023	1305.2023	1W
II Phase of Instructions	15.05.2023	08.07.2023	8W
II Mid Examinations	10.07.2023	15.07.2023	1W
Preparation and Practical	17.07.2023	22.07.2023	1W
Semester End Examinations	24.07.2023	05.08.2023	2W

EVALUATIONPROCESS:

Part-C

Paramete	r	Marks		
Day-to-Day	Observation	A1=05Marks		
Work	Record	A2=05Marks		
Internal Test		B=05Marks		
Cumulative Inte	rnal Examination	A1+A2+B=15 Marks		
Semester End E	xaminations	D=35Marks		
TotalMarks:A1+	A2+B+C+D	50Marks		

Details of Batches: C-SEC

Batc h	Reg. No. of Students	Number of	Batc h	Reg. No. of Students	Number of
No.		Students	No.		Student s
C1	22761A04D3-4E8	16	C2	22761A04E9-4G4	16
C2	22761A04G5-4I2	16	C4	22761A04I3-4J8	15

Batc	Exp.									
h	01	02	03	04	05	06	07	08	09	10
No:										
C1	F1	F2	C1	C2	E1	E2	P1	P2	D1	D2
C2	C1	C2	E1	E2	P1	P2	F1	F2	D1	D2
C3	E1	E2	P1	P2	F1	F2	C1	C2	D1	D2
C4	P1	P2	F1	F2	C1	C2	E1	E2	D1	D2

LISTOF EXPERIMENTS:

Exp. No.	Name of the Experiment	Related CO
1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
2.	Carpentry-2(C2)-Dovetail Joint	CO1
3.	Fitting-1(F1)-T-Joint	CO2
4.	Fitting-2(F2)-V-Joint	CO2
5.	Plumbing-1(P1)-Pipe Threading practice	CO3
6.	Plumbing-2(P2)-Pipe Layout	CO3
7.	HouseWiring-1(E1)–Series and Parallel connection	CO4
8.	HouseWiring-2(E2)–Fluorescent Lamp and Calling Bell Circuit	CO4
9.	Black Smithy(D1)	CO3
10.	Tin Smithy(D2)	CO3

Cycl e	Ехр No	Name of the Experiment	Related CO
	1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
	2.	Carpentry-2(C2)-Dovetail Joint	CO1
	3.	Fitting-1(F1)-T-Joint	CO2
н.	4.	Fitting-2(F2)-V-Joint	CO2
cle	5. Plumbing-1(P1)-Pipe Threading practice		CO3
CĂ	6.	Plumbing-2(P2)-Pipe Layout	CO3
	7.	HouseWiring-1(E1)–Series and Parallel Connection	CO4
	8.	HouseWiring-2(E2)–Fluorescent Lamp and Calling bell Circuit	CO4
rcle-2	9.	Black Smithy(D1)	CO3
CJ	10.	Tin Smithy(D2)	CO3

PROGRAMMEEDUCATIONALOBJECTIVES:

PEO1: To build a professional career and pursue higher studies with

sound knowledge in Mathematics, Science and Mechanical Engineering.

PEO2: To inculcate strong ethical values and leadership qualities for

graduates to become successful in multidisciplinary activities.

PEO3: To develop inquisitiveness towards good communication and lifelong learning.

PROGRAM 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 modelling 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

- 1. **PSO1:** To apply the principles of thermal sciences to design and develop various thermal systems.
- 2. **PSO2:** To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
- 3. **PSO3:** To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Course Instructors	Course Coordinator	Module Coordinator	HO D
K Lakshmi Prasad/ M. Oliva/ P Mounika	S. Srinivasa Reddy	Dr. M B S Sreekar Reddy	Dr. S. Pichi Reddy



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT PART-A

Name of Course Instructor	Mr. K.V.Ashok/Mr. P. James Vijay/Mr. G. Venkata Rao				
Course Name & Code	: Digital Logic Circuits Lab				
L-T-P Structure	: 0-0-2	Credits: 1			
Program/Sem/Sec	: B.Tech., ECE., II-Sem., Section- C	A.Y : 2022-23			

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course gives the ability to design and verify digital logic circuits like; logic gates, combinational and sequential logic circuits using discrete components

and Integrated Circuits.

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

CO1	Demonstrate	the	functionality	of	Logic	gates,	Flip-flops,	Shift	registers	and
COI	Counters.(Und	lersta	nd – L2)							
CO2	Apply the Boo	olean	minimization m	letho	ds to im	plement	Combinatio	nal and	Sequential	logic
CO2	circuits using l	logic g	ates.(Apply – L	3)						
CO3	Analyze the b	ehavio	r of Combinatio	nal a	nd Sequ	ential lo	gic circuits.(A	Analyze	e – L4)	
CO4	Adapt effectiv	e Com	munication, pre	esent	ation an	d report	writing skills	.(Apply	y – L3)	

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

COs	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
CO1	2	2	1	2	2	-	-	-	-	-	-	2	2	-	-
CO2	2	3	3	3	2	-	-	-	-	-	-	2	2	-	-
CO3	2	3	2	3	3	-	-	-	-	-	-	2	2	-	-
CO4	-	-	-	-	-	-	-	2	2	3	-	1	-	-	-
		1	- Low			2	-Medi	ium			3	- High			

TEXT BOOKS:

- T1 Morris Mano, "Digital Design", PHI Publishers, 4th Edition.
- T2 Ananda Kumar, "Switching Theory and Logic Design", PHI Publishers.

REFERENCE BOOKS:

- $\mathbf{R1}$ ZviKohavi, Switching and Finite Automata Theory, TMH Publishers, 2nd Edition
- **R2** Charles H. Roth, "Fundamentals of Logic Design", Cengage learning Publishers.
- **R3** M. Subramanyam, "Switching Theory and Logic Design", University Science Press Publishers.
- **R4** John M. Yarbrough, "Digital Logic: Applications and Design", Thomson Publications.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-I

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Lab, Lab outcomes, Demo on Lab Experiments.	3	17-03-2023		TLM4	
2.	Realization of logic gates using universal logic gates.	3	24-03-2023		TLM4	
3.	Realization of Adder and Subtractor circuits using basic / universal gates.	3	31-03-2023		TLM4	
4.	Implementation of Binary to Gray and Gray to Binary code converters.	3	21-04-2023		TLM4	
5.	Realization of Boolean expressions using Decoder.	3	28-04-2023		TLM4	
6.	Implementation of 8×1 Multiplexer and Demultiplexer.	3	05-05-2023		TLM4	
7.	Realization of Boolean Expressions using Multiplexers.	3	19-05-2023		TLM4	
8.	Verification of flip-flops.	3	26-05-2023		TLM4	
9.	Conversion of SR to D flip-flop and SR to T flip-flop.	3	02-06-2023		TLM4	
10.	Implementation of shift register.	3	09-06-2023		TLM4	
11.	Implementation of Universal shift register.	3	16-06-2023		TLM4	
12.	Implementation of Up/Down counter.	3	23-06-2023		TLM4	
13.	Implementation of Synchronous /Asynchronous counter.	3	30-06-2023		TLM4	
14.	Internal Lab Examination	3	30-06-2023			
No. o	of classes required to complete : 42			No. of classe	es taken:	

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-II

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Lab, Lab outcomes, Demo on Lab Experiments.	3	16-03-2023		TLM4	
2.	Realization of logic gates using universal logic gates.	3	23-03-2023		TLM4	
3.	Realization of Adder and Subtractor circuits using basic / universal gates.	3	06-04-2023		TLM4	
4.	Implementation of Binary to Gray and Gray to Binary code converters.	3	13-04-2023		TLM4	
5.	Realization of Boolean expressions using Decoder.	3	20-04-2023		TLM4	
6.	Implementation of 8×1 Multiplexer and Demultiplexer.	3	27-04-2023		TLM4	
7.	Realization of Boolean Expressions using Multiplexers.	3	04-05-2023		TLM4	
8.	Verification of flip-flops.	3	18-05-2023		TLM4	
9.	Conversion of SR to D flip-flop and SR to T flip-flop.	3	25-05-2023		TLM4	
10.	Implementation of shift register.	3	01-06-2023		TLM4	
11.	Implementation of Universal shift register.	3	08-06-2023		TLM4	
12.	Implementation of Up/Down counter.	3	15-06-2023		TLM4	
13.	Implementation of Synchronous /Asynchronous counter.	3	22-06-2023		TLM4	
14.	Internal Lab Examination	3	06-07-2023			
No.	of classes required to complete : 42			No. of classe	es taken:	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work = A	1,2,3,4,5,6,7,8	A=05
Record $= \mathbf{B}$	1,2,3,4,5,6,7,8	B=05
Internal Test = C	1,2,3,4,5,6,7,8	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8	15
Semester End Examinations = D	1,2,3,4,5,6,7,8	D = 35
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science,
	engineering fundamentals, and an engineering specialization to the solution of
	complex engineering problems
PO 2	Problem analysis : Identify, formulate, review research literature, and analyze
	complex engineering problems reaching substantiated conclusions using first
	principles of mathematics, natural sciences, and engineering sciences
PO 3	Design/development of solutions : Design solutions for complex engineering
	problems and design system components or processes that meet the specified
	needs with appropriate consideration for the public health and safety, and the
	cultural, societal, and environmental considerations
PO 4	Conduct investigations of complex problems : Use research-based knowledge
	and research methods including design of experiments, analysis and
	interpretation of data, and synthesis of the information to provide valid
	conclusions
PU 5	Modern tool usage : Create, select, and apply appropriate techniques, resources, and modern angineering and IT tools including prediction and modelling to
	complex angineering activities with an understanding of the limitations
PO 6	The orgineer and society: Apply reasoning informed by the contextual
100	knowledge to assess societal health safety legal and cultural issues and the
	consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability : Understand the impact of the professional
	engineering solutions in societal and environmental contexts, and demonstrate
	the knowledge of, and need for sustainable development
PO 8	Ethics : Apply ethical principles and commit to professional ethics and
	responsibilities and norms of the engineering practice
PO 9	Individual and team work: Function effectively as an individual, and as a
	member or leader in diverse teams, and in multidisciplinary settings
PO 10	Communication : Communicate effectively on complex engineering activities
	with the engineering community and with society at large, such as, being able to
	comprehend and write effective reports and design documentation, make
	effective presentations, and give and receive clear instructions
PO 11	Project management and finance : Demonstrate knowledge and understanding
	of the engineering and management principles and apply these to one's own
	work, as a member and leader in a team, to manage projects and in
DO 12	Inutual scipinary environments
FU12	to oppage in independent and life-long learning in the breadest context of
	to engage in independent and me-iong rearning in the produest 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				

Course Instructor	Course Coordinator	Module Coordinator	HOD
Mr. K.V. Ashok	Mr. K.V.Ashok	Dr. G. Srinivasulu	Dr. Y. Amar Babu



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.Jamili Reddy					
Course Name & Code : Engineering Chemistry Lab&20FE53					
L-T-P Structure	:0-0-3				
Program/Sem/Sec	: B.Tech/ II sem/ECE-C				

Credits:1.5 A.Y. : 2022-23

Pre requisites: Nil

Course Educational Objective: This course enables the students to analyze water sample for alkalinity. perform and distinguish different types of volumetric titrations. get hands-on experience with preparation of polymers. use analytical techniques like conductometry, potentiometry and colorimetry.

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

CO1: Assess alkalinity of water based on the procedure given.

CO2: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus.

CO3: Acquire practical knowledge related to preparation of polymers.

CO4: Exhibit skills in performing experiments based on theoretical fundamentals.

POs COs	P01	PO2	P03	P04	PO5	P06	P07	P08	P09	P010	P011	P012
C01	3	3		1		2	2					
CO2	2	1										
CO3	2		1									
CO4	3	2	1									
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

COURSE DELIVERY PLAN (LESSON PLAN):

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	17-03-23		TLM1	CO4	
2.	Safety measures in chemistry lab.	3	24-03-23		TLM1	CO4	
3.	Introduction to volumetric analysis.	3	31-03-23		TLM1	CO4	
4.	Preparation of Bakelite. Determination of pH of the given sample solution using pH meter.	3	21-04-23		TLM4	CO3,CO4	
5.	Determination of amount of HCl using standard Na ₂ CO ₃ solution.	3	28-04-23			C02,C04	
6.	Determination of alkalinity of water sample.	3	05-05-23		TLM4	CO2,CO4	
7.	Estimation of Mg+2/Zn+2/Ca+2 in given solution by using standard EDTA solution.	3	19-05-23		TLM4	C01,C04	
8.	Estimation of Mohr's salt by using potassium permanganate.	3	26-05-23		TLM4	CO2,CO4	
9.	Estimation of Mohr's salt by using potassium dichromate.	3	02-06-23		TLM4	CO2,CO4	
10.	Estimation of amount of HCl conductometrically using standard NaOH solution.	3	09-06-23		TLM4	CO2,CO4	
11.	Estimation of amount of HCl conductometrically using NH4OH solution.	3	16-06-23		TLM4	CO2,CO4	
12.	Preparation of nylon fibres.	3	23-06-23		TLM4	CO3, CO4	
13.	Additional lab for practice.	3	30-06-23		TLM4	C02, CO4	

14.	Internal lab exam	3	07-07-23	TLM4	
	Total				

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

Part - C

EVALUATION PROCESS:

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

(a) Continuous Internal Evaluation (CIE):

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

Paran	neter	Marks
	Observation	05 Marks
Day – to – Day Work	Record	05 Marks
Internal Test		05 Marks
Total		15 Marks

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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.K.Jamili Reddy	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT PART-A

Name of Course Instructor	Mr. T.Anil Raju/Dr.P.Venkata Rao/ Mrs. K.Lakshmi				
Course Name & Code	Programming for problem-solving using C Lab (Code:20CS01)				
L-T-P Structure	: 0-0-3	Credit	s: 1.5		
Program/Sem/Sec	: B.Tech., ECE., II-Sem., Section- C	A.Y	: 2022-23		

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to learn the basic elements of C Programming Structures like Data Types, Expressions, Control Statements, and Various I/O Functions and to solve simple mathematical problems using control structures. Design and implementation of various software components, which solve real world problems.

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

CO1	Apply control structures of C in solving computational problems. (Apply-L3)
CO2	Implement derived datatypes & use modular programming in problem solving. (Apply- L3)
CO3	Implement user defined datatypes and perform file operations. (Apply– L3)
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values.(Apply- L3)

COs	P01	P02	PO3	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	PSO3
C01	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 - Low				2	-Medi	um			3	– High					

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-I(22761A04D3-22761A04G4)

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Demo on lab experiments	3	16-03-23			
2.	Module 1: Introduction to Raptor Tool.	3	23-03-23		TLM4	
3.	Module 2: Problem solving using Raptor Tool	3	06-04-23		TLM4	
4.	Module 3: Exercise Programs on Basics of C-Program.	3	13-04-23		TLM4	
5.	Module 4: Exercise Programs on Control Structures.	3	20-04-23		TLM4	
6.	Module 5: Exercise Programs on Loops & nesting of Loops.	3	27-04-23		TLM4	
7.	Module 6: Exercise Programs on Arrays & Strings.	3	04-05-23		TLM4	
8.	Module 7: Exercise Programs on Pointers.	3	18-05-23		TLM4	
9.	Module 8: Exercise Programs on Functions.	3	25-05-23		TLM4	
10.	Module 9: Exercise Programs on user defined data types.	3	01-06-23		TLM4	
11.	Module 10: Exercise Programs on Files.	3	08-06-23		TLM4	
12.	Module 11: Exercise Programs on Files.	3	15-06-23		TLM4	
13.	Makeup Lab,	3	22-06-23		TLM4	
14.	Internal Lab Examination	3	06-07-23		TLM4	
No. o	No. of classes required to complete : 36 No. of classes taken:					

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Demo on lab experiments	3	17-03-23		TLM4	
2.	Module 1: Introduction to Raptor Tool.	3	24-03-23		TLM4	
3.	Module 2: Problem solving using Raptor Tool	3	31-03-23		TLM4	
4.	Module 3: Exercise Programs on Basics of C-Program.	3	21-04-23		TLM4	
5.	Module 4: Exercise Programs on Control Structures.	3	27-04-23		TLM4	
6.	Module 5: Exercise Programs on Loops & nesting of Loops.	3	05-05-23		TLM4	
7.	Module 6: Exercise Programs on Arrays & Strings.	3	19-05-23		TLM4	
8.	Module 7: Exercise Programs on Pointers.	3	26-05-23		TLM4	
9.	Module 8: Exercise Programs on Functions.	3	02-06-23		TLM4	
10.	Module 9: Exercise Programs on user defined data types.	3	09-06-23		TLM4	
11.	Module 10: Exercise Programs on Files.	3	16-06-23		TLM4	
12.	Programs beyond syllabus	3	23-06-23		TLM4	
13.	Makeup Lab	3	30-06-23		TLM4	
14.	Internal Lab Examination	3	20-04-23		TLM4	
No. o	of classes required to complete :	No. of classes	s taken:			

COURSE DELIVERY PLAN (LESSON PLAN): BATCH-II(22761A04G5-22761A04J8)

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work = A	1,2,3,4,5,6,7,8	A=05
Record = B	1,2,3,4,5,6,7,8	B=05
Internal Test = C	1,2,3,4,5,6,7,8	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8	15
Semester End Examinations = D	1,2,3,4,5,6,7,8	D = 35
Total Marks: $A + B + C + D = 50$	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge : Apply the knowledge of mathematics, science,						
	engineering fundamentals, and an engineering specialization to the solution of						
	complex engineering problems						
PO 2	Problem analysis : Identify, formulate, review research literature, and analyze						
	complex engineering problems reaching substantiated conclusions using first						
	principles of mathematics, natural sciences, and engineering sciences						
PO 3	Design/development of solutions : Design solutions for complex engineering						
	problems and design system components or processes that meet the specified						
	needs with appropriate consideration for the public health and safety, and the						
	cultural, societal, and environmental considerations						
PO 4	Conduct investigations of complex problems : Use research-based knowledge						
	and research methods including design of experiments, analysis and						
	interpretation of data, and synthesis of the information to provide valid						
	conclusions						
PO 5	Modern tool usage : Create, select, and apply appropriate techniques, resources,						
	and modern engineering and IT tools including prediction and modelling to						
	complex engineering activities with an understanding of the limitations						
PO 6	The engineer and society: Apply reasoning informed by the contextual						
	knowledge to assess societal, health, safety, legal and cultural issues and the						
DO 7	consequent responsibilities relevant to the professional engineering practice						
PO 7	Environment and sustainability : Understand the impact of the professional						
	engineering solutions in societal and environmental contexts, and demonstrate						
	the knowledge of, and need for sustainable development						
PU 8	Etnics : Apply ethical principles and commit to professional ethics and						
	responsibilities and norms of the engineering practice						
P0 9	Individual and team work: Function effectively as an individual, and as a						
DO 10	member or leader in diverse teams, and in multidisciplinary settings						
PO 10	Communication : Communicate effectively on complex engineering activities						
	with the engineering community and with society at large, such as, being able to						
	comprenend and write effective reports and design documentation, make						
1	renective presentations, and give and receive clear instructions						

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	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						

Signature of the Faculty				
Name of the	Mr. T. Anil Raju	Mr. Ch Mallikharjuna Rao	Dr. P Lachi Reddy	Dr. Y Amar Babu
Faculty	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department