



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.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech., I-Sem., CSM
ACADEMIC YEAR	: 2021-22
COURSE NAME & CODE	: Programming for Problem Solving Using C–20CS01
L-T-P STRUCTURE	: 5-0-0
COURSE CREDITS	3
COURSE INSTRUCTOR	: Mr.S. Govindu
COURSE COORDINATOR	: Dr.M.Srinivasa Rao

COURSE OBJECTIVE: In this course student will learn about the basic elements of C programming like data types, expressions, control statements, various I/O functions and to solve simple mathematical problems using control structures. The derived data types like arrays, strings, various operations on them. Modular programming using functions and Memory management using pointers. User defined structures and various operations on it. The basics of files and its I/O operations.

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

- CO1:** Familiar with syntax and semantics of the basic programming language constructs.
- CO2:** Construct derived data types like arrays in solving 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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	3											3		1
CO2	2	3											3		1
CO3	2	3	2										3		1
CO4	2	3	2										3		1
CO5	2	3	2										3	1	

BOS APPROVED TEXTBOOKS:

1. Reema Thareja, Programming in C, Oxford University Press, 2nd Edition, 2015.

Reference books:

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

COURSE DELIVERY PLAN (LESSON PLAN): CSM**UNIT-I : Introduction to Problem solving through C-Programming, C-Programming Basics**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text book followed	HOD Sign Weekly
1.	Fundamentals of Computers	1	13-12-2021		TLM2	CO1	T1	
2.	Problem Solving through C- Programming (Problem Specification)	1	14-12-2021		TLM4	CO1	T1	
3	Algorithm/pseudo code, Flow charts with Examples	1	15-12-2021		TLM4	CO1	T1	
4	Introduction to c language - Structure of C Program	1	16-12-2021		TLM1	CO1	T1	
5	Identifiers, basic data types, Variables and Constants	1	18-12-2021		TLM1	CO1	T1	
6	Input-Output statements	1	20-12-2021		TLM1	CO1	T1	
7	A Simple C Program	1	21-12-2021		TLM1	CO1	T1	
8	Operators and Expressions	1	22-12-2021		TLM1	CO1	T1	
9	Expression Evaluation	1	23-12-2021		TLM1	CO1	T1	
10	Type Conversions - Examples	1	27-12-2021		TLM1	CO1	T1	
11	Conditional Statements: If, If- Else	1	28-12-2021		TLM1	CO1	T1	
12	Conditional Statements: Else- If Ladder, Nestled If	1	29-12-2021		TLM1	CO1	T1	
13	Conditional Statements: Switch statements, Break, Goto	1	30-12-2021		TLM1	CO1	T1	
14	Loops: While statement	1	03-01-2022		TLM1	CO1	T1	
15	Loops: Do-While statement	1	04-01-2022		TLM1	CO1	T1	

16	Loops: For statement, Continue	1	05-01-2022		TLM1	CO1	T1	
17	Example Programs	1	06-01-2022		TLM3	CO1	T1	
No. of classes required to complete UNIT-I		1 7			No. of classes taken:			

UNIT-II : Array and Strings

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	One-Dimensional Array: Declaration, Initialization, Assignment	1	08-01-2022		TLM2	CO2	T1	
2.	One-Dimensional Array: Accessing Elements	1	10-1-2022		TLM1	CO2	T1	
3.	Two- dimensional arrays, Accessing elements	1	11-01-2022		TLM1	CO2	T1	
4.	Multi-dimensional arrays, applications of arrays.	1	12-01-2022		TLM1	CO2	T1	
5.	Strings: Declaration, Initialization, Accessing	1	17-01-2022		TLM1	CO2	T1	
6.	String Handling Functions	1	18-01-2022		TLM1	CO2	T1	
7.	Linear Search & Binary Search	1	19-01-2022		TLM 1	CO2	T1	
8.	Bubble Sort	1	20-01-2022		TLM 1	CO2	T1	
9.	Pre Processor Dircetives	1	22-01-2022		TLM3	CO2	T1	
No. of classes required to complete UNIT-II		9			No. of classes taken:			

UNIT-III : Functions and Pointers

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Pointers: Declaration and initialization of pointer variables	1	24-01-2022		TLM2	CO3	T1	
2.	Pointer Expressions, Address Arithmetic	1	25-01-2022		TLM1	CO3	T1	
3.	Pointers and Arrays	1	27-01-2022		TLM1	CO3	T1	
4.	Pointer and Strings	1	29-01-2022		TLM1	CO3	T1	
5.	Pointer to Pointer, Pre-Processor Directives and Macros	1	31-01-2022		TLM1	CO3	T1	

6.	Tutorial	1	01-02-2022		TLM3	CO3	T1
7.	Functions: Basics, categories of Functions	1	02-02-2022		TLM2	CO3	T1
8.	Parameter Passing Techniques	1	03-02-2022		TLM1	CO3	T1
9.	Arrays as Parameters, Strings as Parameters and Pointers as Parameters	1	05-02-2022		TLM1	CO3	T1
10.	Recursive Functions - Comparison with Iteration	1	14-02-2022		TLM1	CO3	T1
11.	Storage Classes	1	15-02-2022		TLM1	CO3	T1
12.	Dynamic Memory Management Functions	1	16-02-2022		TLM1	CO3	T1
13.	Command Line Arguments	1	17-02-2022		TLM1	CO3	T1
14.	Programs	1	19-02-2022, 21-02-2022		TLM3	CO3	T1
No. of classes required to complete UNIT- III		14			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Structures	2	22-02-2022, 23-02-2022		TLM2	CO4	T1	
2.	Arrays of Structures	2	24-02-2022, 26-02-2022		TLM1	CO4	T1	
3.	Structures and Functions	2	28-02-2022, 02-03-2022		TLM1	CO4	T1	
4.	Pointers to structures	2	03-03-2022, 05-03-2022		TLM1	CO4	T1	
5.	Self-referential structures	2	07-03-2022, 08-03-2022		TLM1	CO4	T1	
6.	Unions& Typedef	2	09-03-2022, 10-03-2022		TLM1	CO4	T1	
No. of classes required to complete UNIT-IV		12			No. of classes 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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	File Concept, text files, reading & writing	2	12-03-2022, 14-03-2022		TLM2	CO5	T1	

2.	binary files, modes of operation	2	15-03-2022, 16-03-2022		TLM1	CO5	T1
3.	Standard I/O operations	2	17-03-2022, 19-03-2022		TLM1	CO5	T1
4.	Formatted I/O operations	2	21-03-2022, 22-03-2022		TLM1	CO5	T1
5.	File I/O operations	2	23-03-2022, 24-03-2022		TLM1	CO5	T1
6.	Error handling functions	2	26-03-2022, 28-03-2022		TLM2	CO5	T1
No. of classes required to complete UNIT- V		06			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
73.	Enum data type	1	29-03-2022		TLM4		R1	
74.	Types of Recursion	1	30-03-2022		TLM4		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 and Quiz	TLM9	Case Study

ACADEMIC CALENDAR:

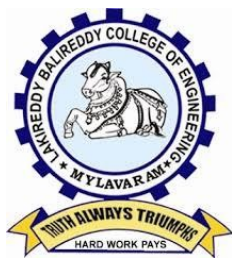
Description	From	To	Weeks
I Phase of Instructions-1	13-12-2021	05-02-2022	8
I Mid Examinations	07-02-2022	12-02-2022	1
II Phase of Instructions	14-02-2022	02-04-2022	7
II Mid Examinations	04-04-2022	09-04-2022	1
Preparation & Practical's	11-04-2022	16-04-2022	1
End Examinations	18-04-2022	30-04-2022	2

EVALUATION PROCESS:

Evaluation Task	Units	Marks
Assignment- 1	1	A1=5
Assignment- 2	2	A2=5

I-Mid Examination	1,2,3,5	B1=18
Objective Questions-1	1,2,3,5	C1=7
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=18
Online Quiz-2	3,4,5	C2=7
Evaluation of Assignment: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=18
Evaluation of Objective Questions Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	1,2,3,4,5	C=7
Cumulative Internal Examination: A+B+C	1,2,3,4,5	30
Semester End Examinations: D	1,2,3,4,5	70
Total Marks: A+B+C+D	1,2,3,4,5	100

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



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech., I-Sem.CSM
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : Programming for Problem Solving Using C LAB – 20CS51
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 1
COURSE INSTRUCTOR : Mr. S. Govindu
COURSE COORDINATOR: Dr. M. Srinivasa Rao
PRE-REQUISITE: NIL

COURSE OBJECTIVE:

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 (CO):

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

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

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	3	1	-	-	-	-	-	1	1		2	3	1	1
CO2	2	3	1	-	-	-	-	-	1	1		2	3	1	1
CO3	2	3	1	-	-	-	-	-	1	1		2	3	1	1
CO4															

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

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1	Introduction to C	3	17-12-2021		
2	Module - I	3	24-12-2021		
3	Module – 2	3	31-12-2021		
4	Module – 3	3	07-01-2022		
5	Module – 4	3	21-01-2022		
6	Module – 5	3	28-01-2022		
7	Module – 6	3	04-02-2022		
8	Module – 7	3	18-02-2022		
9	Module – 7	3	25-02-2022		
10	Module – 8	3	04-03-2022		
11	Module -9	3	11-03-2022		
12	Module 10	3	18-03-2022		
13	<i>LAB INTERNAL EXAM</i>	3	<i>25-03-2022</i>		

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



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr B Sagar

Course Name & Code : PCS LAB, 20FE51

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

Credits: 01

Program/Sem/Sec : AI&ML - I SEM

A.Y. : 2021-22

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To improve the proficiency of students in English with an emphasis on better communication in formal and informal situations; Develop speaking skills required for expressing their knowledge and abilities and to face interviews with confidence.

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

CO1	Introduce one-self and others using appropriate language and details.	L2
CO2	Comprehend short talks and speak clearly on a specific topic using	L2
CO3	Report effectively after participating in informal discussions ethically.	L1
CO4	Interpret data aptly, ethically & make oral presentations without	L3

Syllabus: Professional Communication Lab (PCS) shall have two parts:

- **Computer Assisted Language Learning (CALL) Lab** for 60 students with 60 systems, LAN facility and English language software for self-study by learners.
- **Interactive Communication Skills (ICS) Lab.** with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo – audio & video system and camcorder etc.

Exercise– I

CALL Lab: Understand- Sentence structure.

ICS Lab: Practice -Listening: Identifying the topic, the context and specific information, **Speaking:** Introducing oneself and others.

Exercise–II

CALL Lab: Understand- Framing questions.

ICS Lab: Practice- Listening: Answering a series of questions about main idea and supporting ideas after listening to audio text.

Speaking: Discussing in pairs/small groups on specific topics; Delivering short structured talks using suitable cohesive devices (JAM)

Exercise–III

CALL Lab: Understand- Comprehension practice–Strategies for Effective Communication

ICS Lab: Practice - Listening: Listening for global comprehension and Summarizing

Speaking: Discussing specific topics in pairs/small groups, reporting what is discussed

Exercise–IV

CALL Lab: Understand- Features of Good Conversation–Strategies for Effective Communication.

ICS Lab: Practice -Listening: making predictions while listening to

conversations/transactional dialogues with/without video Speaking: Role – plays – formal & informal – asking for and giving information/directions/instructions/suggestions

Exercise– V

CALL Lab: Understand- Features of Good Presentation, Methodology of Group Discussion

ICS Lab: Practice –Introduction to Group Discussions.

Listening: Answering questions, identifying key terms and understanding concepts.

Speaking: Formal Oral & Poster presentations on topics from academic contexts without the use of PPT.

Lab Manual:

1. Prabhavati .Y & etal, “English All Round–Communication Skills for Undergraduate Learners” , Orient Black Swan, Hyderabad, 2019.

Suggested Software:

1. Digital Mentor: Globarena, Hyderabad,2005
2. Sky Pronunciation Suite: Young India Films, Chennai,2009
3. Mastering English in Vocabulary, Grammar, Spelling, Composition, Dorling Kindersley, USA, 2001
4. Dorling Kindersley Series of Grammar, Punctuation, Composition, USA, 2001
5. Oxford Talking Dictionary, The Learning Company, USA, 2002
6. Learning to Speak English- 4CDs. The Learning Company, USA, 2002
7. Cambridge Advanced Learners English Dictionary (CD).Cambridge University Press, New Delhi, 2008.

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

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	02	13-12-2021		TLM4	
2.	Self Introduction & Introducing others	02	20-12-2021		TLM4	
3.	Self Introduction & Introducing others	02	27-12-2021		TLM4	
4.	JAM- I(Short and Structured Talks)	02	03-01-2022		TLM4	
5.	JAM-II(Short and Structured Talks)	02	10-01-2022		TLM4	
6.	Role Play-I(Formal and Informal)	04	24-01-2022 31-01-2022		TLM4	
7.	Role Play-II (Formal and Informal)	02	14-02-2022		TLM4	
8.	Group Discussion-I (Reporting the discussion)	02	21-02-2022		TLM4, TLM6	
9.	Group Discussion-II	02	28-02-2022		TLM4, TLM6	
10.	Oral & Poster Presentation	02	07-03-2022 14-03-2022		TLM2, TLM4	
11.	Lab Internal Exam	02	21-03-2022			
No. of classes required to complete Syllabus: 24				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
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

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



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

COURSE HANDOUT

PART-A

Name of Course Instructor: MR B SAGAR

Course Name & Code : PC-I, 20FE01

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

Credits: 02

Program/Sem/Sec : AI&ML –I SEM

A.Y. : 2021-22

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	Write sentences and paragraphs using proper grammatical structures and word forms.	L1
CO2	Comprehend the given text by employing suitable strategies for skimming and Scanning and draw inferences	L2
CO3	Write summaries of reading texts using correct tense forms & Appropriate structures.	L1
CO4	Write Formal Letters; Memos & E-Mails	L3
CO5	Edit the sentences/short texts by identifying basic errors of grammar/ vocabulary/syntax	L2

Unit-I

Exploration - 'A Proposal to Girdle the Earth – Nellie Bly'; Reading: Skimming for main idea; Scanning for specific information; Grammar & Vocabulary: Content Words; Function Words; Word Forms: verbs, nouns, adjectives and adverbs; Nouns: Countable and Uncountable, Singular and Plural forms; Wh - Questions; Word Order in Sentences; Writing: Paragraph Analysis; Paragraph Writing; Punctuation and Capital Letters

Unit-II

On Campus- 'The District School as it Was by One Who Went to it – Warren Burton'; Reading: Identifying Sequence of Ideas;

Grammar&Vocabulary: Cohesive Devices:Linkers/signposts/Transition signals, Synonyms, MeaningsofWords/Phrasesin thecontext; Writing: Memo Drafting.

Unit-III

WorkingTogether-'The Future of Work'

Reading: Making basic inferences; Strategies to use text clues for comprehension; Summarizing;Grammar & Vocabulary:Verbs: Tenses; Reporting Verbs for Academic Purpose; Writing: Rephrasing what is read; Avoiding redundancies and repetitions Abstract Writing/Summarizing.

Unit-IV

'A.P.J.AbdulKalam'; Grammar & Vocabulary: Direct & Indirect Speech; articles and their Omission; Writing :E-MailDrafting.

Unit-V

'C.V.Raman'; Grammar&Vocabulary: Subject-verb Agreement; Prepositions; Writing: Formal Letter Writing.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		1		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 -Medium			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	14-12-2021		TLM2	
2.	Proposal to Girdle The Earth by Nellie Bly	02	15-12-2021 18-12-2021		TLM2	
3.	Reading: Skimming for main idea ; Scanning for specific information	01	21-12-2021		TLM2	
4.	Content words and Function words	01	22-12-2021		TLM2	
5.	Word forms – verbs; Adjectives & adverbs	01	28-12-2021		TLM2	
6.	Nouns – countable & uncountable, singular and plural nouns Word order in sentences, "Wh" questions	01	29-12-2021		TLM2	
7.	Writing: Paragraph writing, Paragraph analysis	02	04-01-2022 05-01-2022		TLM2 TLM6	
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.	The District School As It Way by One Who Went to it - Warren Burton	02	08-01-2022 11-01-2022		TLM2	
9.	Identifying sequence of ideas	01	12-01-2022		TLM2	
10.	Cohesive devices: linkers /signposts/transition signals	01	18-01-2022		TLM2	

11.	Synonyms meanings of words / Phrases in the context	01	19-01-2022		TLM2	
12.	Essay Writing - Memo drafting	02	22-01-2021 25-01-2021 29-01-2022		TLM2 TLM6	
No. of classes required to complete UNIT-II: 07				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.		02	01-02-2022		TLM2	
	The Future of Work		02-02-2022		TLM6	
14.	Making basic inferences, Strategies to uses text clues for comprehension	01	05-02-2022		TLM2	
15.	Verbs :tenses, reporting verbs for academic purpose	02	15-02-2022 16-02-2022 19-02-2022		TLM2	
16.	Summarizing rephrasing what is read	01	22-02-2022		TLM2	
17.	avoiding redundancies and repetitions - Abstract Writing	02	23-02-2022 26-02-2022		TLM2 TLM6	
No. of classes required to complete UNIT-III: 08				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	APJ Abdul Kalam	01	01-03-2022		TLM2 TLM2	
19.	APJ Abdul Kalam	01	02-03-2022 05-03-2022		TLM2	
20.	Direct-Indirect speech	01	08-03-2022		TLM2	
21.	Articles and their omission	01	09-03-2022		TLM2	
22.	E-mail drafting	02	12-03-2022 15-03-2022		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 06				No. of classes taken:		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	C.V.Raman	01	16-03-2022		TLM2	
24.	C.V.Raman	01	19-03-2022		TLM2	
25.	Subject – Verb agreement	01	22-03-2022		TLM2	
26.	Prepositions	01	23-03-2022		TLM2	
27.	Formal Letter Writing	01	26-03-2022		TLM2 TLM6	
No. of classes required to complete UNIT-V: 05				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM : B.Tech., I-Sem., AI & ML
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : APPLIED PHYSICS & 20FE07
L-T-P STRUCTURE : 4-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : N. T. SARMA
PRE-REQUISITE : Basic Knowledge of Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of optics, quantum mechanics, free electron theory of metals, semiconductors, dielectrics, and their applications.

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

CO 1	Define the nature of Interference and Diffraction.
CO 2	Apply the Lasers and Optical Fibers in different fields.
CO 3	Estimate the electrical conductivity of metals.
CO 4	Analyze the properties of Semiconducting materials.
CO5	Classify the different types of Magnetic and Dielectric materials.

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

APPLIED PHYSICS												
COURSE DESIGNED BY	FRESHMAN ENGINEERING DEPARTMENT											
	Programme Outcomes											
Course Outcomes												
PO's →	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	3	3	1	1	1	1	1	-	-	-	-	1
CO2.	3	3	2	1	1	1	1	-	-	-	-	1
CO3.	3	3	1	1	1	1	1	-	-	-	-	1
CO4.	3	3	1	1	1	1	1	-	-	-	-	1
CO5.	3	3	1	1	1	1	1	-	-	-	-	1
1 = slight (Low) 2 = Moderate (Medium) 3 = Substantial (High)												

BOS APPROVED TEXT BOOKS:

- T1** : V. Rajendran, “*Engineering Physics*”, TMH, New Delhi, 6th Edition, 2014.
T2 : M.N. Avadhanulu, P.G. Kshirsagar, “*Engineering Physics*”, S. Chand & Co., 2nd Edition, 2014.

BOS APPROVED REFERENCE BOOKS:

- R1** : M.N. Avadhanulu, TVS Arun Murthy, “*Applied Physics*”, S. Chand & Co., 2nd Edition, 2007.
R2 : P.K. Palani Samy, “*Applied Physics*”, Sci. Publ. Chennai, 4th Edition, 2016.
R3 : P. Sreenivasa Rao, K Muralidhar, “*Applied Physics*”, Him. Publi. Mumbai, 1st Edition, 2016.
R4 : Hitendra K Mallik , AK Singh “ *Engineering Physics*”, TMH, New Delhi, 1st Edition, 2009.

WEB REFERENCES AND E-TEXT BOOKS

1. <http://www.freebookcentre.net/Physics/Solid-State-Physics-Books.html>
2. <http://physicsdatabase.com/free-physics-books/>
3. <http://www.e-booksdirectory.com>
4. <http://www.thphys.physics.ox.ac.uk>

TEACHING LEARNING METHODS			
TLM-1	Chalk and Talk	TLM-4	Demonstration (Lab/Field Visit)
TLM-2	PPT/AV illustrations	TLM-5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM-3	Tutorial/Quiz/Assignment	TLM-6	Group Discussion/Project

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: INTERFERENCE & DIFFRACTION**

Course Outcome :- CO 1; Text Book :- T1, R2

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction to the Subject, Course Outcomes	1			TLM-2		
2.	Superposition of waves, Coherence, Conditions for Interference	1			TLM-3		
3.	Interference from thin films	1			TLM-1		
4.	Newton’s rings	1			TLM-4		

5.	Michelson's interferometer	1			TLM-2		
6.	Introduction – Diffraction, Types	1			TLM-3		
7.	Single slit diffraction	1			TLM-1		
8.	Diffraction – Circular aperture, Diffraction grating	1			TLM-4		
9.	Resolving power of Grating	1			TLM-4		
10.	Problems & Assignment/Quiz	1			TLM-3		
No. of classes required to complete UNIT-I: 10				No. of classes taken:			

UNIT-II: LASERS & OPTICAL FIBERS

Course Outcome :- CO 2; Text Book :- T1, R2

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Principle of laser, Absorption, Spontaneous and Stimulated emission	1			TLM-2		
2.	Einstein Coefficients	1			TLM-1		
3.	Nd-YAG Laser, He-Ne gas Laser	1			TLM-2		
4.	Applications of LASERS	1			TLM-5		
5.	Optical Fiber principle, Structure of optical fiber	1			TLM-2		
6.	Numerical aperture and Acceptance angle	1			TLM-1		
7.	Types of optical fibers	1			TLM-1		
8.	Applications and Advantages of Optical Fibers	1			TLM-5		
9.	Problems & Assignment/Quiz	1			TLM-3		
No. of classes required to complete UNIT-II: 09				No. of classes taken:			

UNIT-III: PRICIPLES OF QUANTUM MECHANICS & FREE ELECTRON THEORY

Course Outcome :- CO 3; Text Book :- T1, R2

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction quantum mechanics, De Broglie hypothesis	1			TLM-5		
2.	Davisson and Germer Experiment, Physical significance of wave function	1			TLM-2		
3.	Schrodinger time dependent & independent wave equations	1			TLM-1		
4.	Particle in a box	1			TLM-1		
5.	Problems & Assignment/Quiz	1			TLM-3		
6.	Classical free electron theory- postulates, Success & Failures	1			TLM-2		
7.	Expression for electrical conductivity and drift velocity	1			TLM-1		
8.	Fermi-Dirac distribution function- Temperature dependence	1			TLM-2		
9.	Classification of Solids on the basis of Band theory	1			TLM-6		
10.	Problems & Assignment/Quiz	1			TLM-3		
No. of classes required to complete UNIT-III: 10				No. of classes taken:			

UNIT-IV : SEMICONDUCTOR PHYSICS

Course Outcome :- CO 4; Text Book :- T2, R1

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
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1.	Introduction - Classification of semiconductors	1			TLM-6		
2.	Conductivity of Intrinsic and Extrinsic semiconductors	1			TLM-1		
3.	Drift and Diffusion Current, Einstein relation	1			TLM-2		
4.	Hall Effect and Hall Coefficient	1			TLM-5		
5.	Direct band gap and indirect band gap semiconductors	1			TLM-2		
6.	Solar Cell, Applications	1			TLM-4		
7.	Problems & Assignment/Quiz	1			TLM-3		
No. of classes required to complete UNIT-IV: 07				No. of classes taken:			

UNIT-V : MAGNETIC & DIELECTRIC MATERIALS

Course Outcome :- CO 5; Text Book :- T2, R1

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction, Magnetic parameters	1			TLM-3		
2.	Classification of magnetic materials – Dia, para & Ferro	1			TLM-6		
4.	Hysteresis loop, soft and hard magnetic materials	1			TLM-2		
5.	Applications of magnetic materials	1			TLM-2		
6.	Basic Definitions, Electronic polarization	1			TLM-1		
7.	Ionic & Orientation polarization	1			TLM-1		
9.	Local field, Clausius Mosotti equation	1			TLM-1		
10.	Applications of dielectric materials	1			TLM2		
11.	Problems & Assignment/Quiz	1			TLM-3		
No. of classes required to complete UNIT-V: 11				No. of classes taken:			

Revision Classes

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Revision of Unit-1	1			TLM-2		
2.	Revision of Unit-2	1			TLM-2		
3.	Revision of Unit-3	1			TLM-2		
4.	Revision of Unit-4	1			TLM-2		
5.	Revision of Unit-5	1			TLM-2		
6.	Revision	1			TLM-2		
No. of classes required for Revision: 06				No. of classes taken:			

PART-C

EVALUATION PROCESS (R-20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & III (A))	A-1 = 5
I-Mid Examination (Units-I, II & III (A))	M-1 = 15
I-Quiz Examination (Units-I, II & III (A))	Q-1 = 10
Assignment-III (Units-III (B), IV & V)	A-2 = 5
II-Mid Examination (Units-III (B), IV & V)	M-2 = 15
II-Quiz Examination (Units-III (B), IV & V)	Q-2 = 10
Assignment Marks = Best of A1 & A2	A = 5
Mid Marks = 80% of Max (M-1, M-2) + 20% of Min (M-1, M-2)	M = 15
Quiz Marks = 80% of Max (Q-1, Q-2) + 20% of Min (Q-1, Q-2)	Q = 10
Cumulative Internal Examination (CIE) : A+M+Q	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

Course Instructor

Course Coordinator

Module Coordinator

HOD

N. T. SARMA

DR. S. YUSUB

DR. S. YUSUB

DR. A. RAMI REDDY



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	: B.Tech., I-Sem., AI & ML
ACADEMIC YEAR	: 2021-22
COURSE NAME & CODE	: APPLIED PHYSICS LAB & 20FE54
L-T-P STRUCTURE	: 0 – 0 – 3
COURSE CREDITS	: 1.5
COURSE INSTRUCTOR	: N. T. SARMA / Dr. P.V.N.Kishore
COURSE COORDINATOR	: Dr. S. YUSUB

Pre-requisites : Nil

Course Educational Objective: This course enables the students to acquire theoretical ideas, analytical techniques, and graphical analysis, by completing a host of experiments with the procedures and observational skills for appropriate use of simple and complex apparatus.

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

- CO 1:** Analyse the wave characteristics of light.
- CO 2:** Estimate the magnetic field using Stewart’s and Gee’s apparatus.
- CO 3:** Verify the characteristics of semiconductor diodes.
- CO 4:** Determine the acceptance angle and numerical aperture of optical fibre.
- CO 5:** Improve report writing skills and individual teamwork with ethical values.

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

Applied Physics Lab												
COURSE DESIGNED BY	FRESHMAN ENGINEERING DEPARTMENT											
Course Outcomes	Programme Outcomes											
PO's →	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	3	3	1	1								1
CO2.	3	3	1	1								1
CO3.	3	3	1	1								1
CO4.	3	3	1	1								1
CO5.								2	2	2		

BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

Part-B**COURSE DELIVERY PLAN (LESSON PLAN): CSE – B**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	Introduction & Demonstration	3			TLM4	CO1, CO2, CO3, CO4	T1	
2.	Experiment 1	3			TLM4	CO1, CO2, CO3, CO4	T1	
3.	Experiment 2	3			TLM4	CO1, CO2, CO3, CO4	T1	
4.	Experiment 3	3			TLM4	CO1, CO2, CO3, CO4	T1	
5.	Experiment 4	3			TLM4	CO1, CO2, CO3, CO4	T1	
6.	Experiment 5	3			TLM4	CO1, CO2, CO3, CO4	T1	
7.	Demonstration	3			TLM4	CO1, CO2, CO3, CO4	T1	
8.	Experiment 6	3			TLM4	CO1, CO2, CO3, CO4	T1	
9.	Experiment 7	3			TLM4	CO1, CO2, CO3, CO4	T1	
10.	Experiment 8	3			TLM4	CO1, CO2, CO3, CO4	T1	
11.	Experiment 9	3			TLM4	CO1, CO2, CO3, CO4	T1	
12.	Experiment 10	3			TLM4	CO1, CO2, CO3, CO4	T1	
13.	Internal Exam	3			TLM4	CO1, CO2, CO3, CO4	T1	
14.	Internal Exam	3			TLM4	CO1, CO2, CO3, CO4	T1	
No. of classes required to complete lab					No. of classes taken:			

EVALUATION PROCESS:

Evaluation Task	Expt. no's	Marks
Day to Day work = A	1,2,3,4,5,6,7,8,9,10	A = 05
Internal test = B	1,2,3,4,5,6,7,8,9,10	B = 05
Evaluation of viva voce = C	1,2,3,4,5,6,7,8,9,10	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8,9,10	15
Semester End Examinations = D	1,2,3,4,5,6,7,8,9,10	D = 35
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8,9,10	50

PROGRAM OUTCOMES: 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.

Course Instructor

Course Coordinator

Module Coordinator

H.O.D

N. T. SARMA

Dr. S. YUSUB

Dr. S. YUSUB

Dr. A. RAMIREDDY



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

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. K. BHANU LAKSHMI

Course Name & Code : Differential Equations&20FE03

L-T-P Structure : 3-2 -0

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

Credits:4

A.Y.: 2021 - 22

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this course is to introduce the first order and higher order differential equations, functions of several variables. The students will also learn solving of first order partial differential equations.

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

CO1	Apply first order and first degree differential equations to find orthogonal trajectories.
CO2	Distinguish between the structure and methodology of solving higher order differential equations with constant coefficients.
CO3	Apply various Numerical methods to solve initial value problem.
CO4	Generate the infinite series for continuous functions and investigate the functional dependence.
CO5	Solve partial differential equations using Lagrange's method.

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 -Medium						3 - High					

TEXTBOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 42nd Edition, Khanna Publishers, New Delhi, 2012.

T2 Dr. B. V. Ramana, "Higher Engineering Mathematics", 1st Edition, 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.

R4 S. S. Sastry, “ Introductory Methods of Numerical Analysis” 5th Edition, PHI Learning Private Limited, New Delhi, 2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Ordinary Differential Equations of first order and first degree

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	13/12/2021		TLM1	
2.	Introduction to UNIT I	1	14/12/2021		TLM1	
3.	Formation of Differential Equations	1	15/12/2021		TLM1	
4.	Exact DE	1	16/12/2021		TLM1	
5.	Non-exact DE Type I	1	17/12/2021		TLM1	
6.	Non-exact DE Type II	1	20/12/2021		TLM1	
7.	Non-exact DE Type III	1	21/12/2021		TLM1	
8.	TUTORIAL 1	1	22/12/2021		TLM3	
9.	Non-exact DE Type IV	1	23/12/2021		TLM1	
10.	Orthogonal Trajectories (Cartesian)	1	24/12/2021		TLM1	
11.	Orthogonal Trajectories (polar)	1	27/12/2021		TLM1	
12.	Orthogonal Trajectories (polar)	1	28/12/2021		TLM1	
13.	Problems	1	30/12/2021		TLM1	
14.	TUTORIAL 2	1	29/12/2021		TLM3	
No. of classes required to complete UNIT-I: 14				No. of classes taken:		

UNIT-II: Linear Differential Equations of Higher Order

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Introduction to UNIT II	1	31/12/2021		TLM2	
16.	Solving a homogeneous DE	1	03/01/2022		TLM1	
17.	Finding Particular Integral, P.I for e^{ax+b}	1	04/01/2022		TLM1	
18.	P.I for Cos bx, or sin bx	1	05/01/2022		TLM1	
19.	P.I for Cos bx, or sin bx		06/01/2022			
20.	P.I for polynomial function	1	07/01/2022		TLM1	
21.	P.I for $e^{ax+b} v(x)$	1	10/01/2022		TLM1	
22.	P.I for $e^{ax+b} v(x)$	1	11/01/2022		TLM1	
23.	P.I for $x^k v(x)$	1	12/01/2022		TLM1	
24.	P.I for $x^k v(x)$		18/01/2022		TLM1	
25.	TUTORIAL 3	1	19/01/2022		TLM3	
26.	Method of Variation of parameters	1	20/01/2022		TLM1	
27.	Method of Variation of parameters	1	21/01/2022		TLM1	

28.	TUTORIAL 4	1	24/01/2022		TLM3	
No. of classes required to complete UNIT-II: 14				No. of classes taken:		

UNIT-III: Numerical Solution of Ordinary Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29.	Introduction to Unit-III	1	25/01/2022		TLM1	
30.	Solution by Taylor's series	1	27/01/2022		TLM1	
31.	Solution by Taylor's series	1	28/01/2022		TLM1	
32.	Picard's Method	1	31/01/2022		TLM1	
33.	Picard's Method	1	01/02/2022		TLM1	
34.	TUTORIAL 5	1	02/02/2022		TLM3	
35.	Euler's Method	1	03/02/2022		TLM1	
36.	REVISION	1	04/02/2022		TLM1	
37.	Modified Euler's Method	1	14/02/2022		TLM 1	
38.	Modified Euler's Method	1	15/02/2022		TLM1	
39.	Runge- Kutta Method	1	16/02/2022		TLM1	
40.	Runge- Kutta Method	1	17/02/2022		TLM1	
41.	Problems	1	18/02/2022		TLM1	
42.	TUTORIAL 6	1	23/02/2022		TLM3	
No. of classes required to complete UNIT-III: 14				No. of classes taken:		

UNIT-IV: Functions of Several variables

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
43.	Introduction to UNIT IV	1	21/02/2022		TLM1	
44.	Generalized Mean Value Theorem, Taylor's series	1	22/02/2022		TLM1	
45.	Maclaurin's series	1	24/02/2022		TLM1	
46.	Maclaurin's series	1	25/02/2022		TLM1	
47.	Functions of several variables	1	28/02/2022		TLM1	
48.	TUTORIAL 7	1	02/03/2022		TLM3	
49.	Jacobians (polar, cylindrical, spherical coordinates)	1	03/03/2022		TLM1	
50.	Jacobians (polar, cylindrical, spherical coordinates)	1	04/03/2022		TLM1	
51.	Functional dependence	1	07/03/2022		TLM1	
52.	Maxima and Minima of functions of two variables	1	08/03/2022		TLM1	
53.	Maxima and Minima of functions of two variables	1	10/03/2022		TLM1	
54.	Maxima and Minima of functions of two variables	1	11/03/2022		TLM1	
55.	TUTORIAL 8	1	09/03/2022		TLM3	
No. of classes required to complete UNIT-IV:13				No. of classes taken:		

UNIT-V: Partial Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Introduction to UNIT V	1	14/03/2022		TLM1	
57.	Formation of PDE by elimination of arbitrary constants	1	15/03/2022		TLM1	

58.	Formation of PDE by elimination of arbitrary constants	1	16/03/2022		TLM1
59.	Formation of PDE by elimination of arbitrary functions	1	17/03/2022		TLM1
60.	Formation of PDE by elimination of arbitrary functions	1	18/03/2022		TLM1
61.	Formation of PDE	1	21/03/2022		TLM1
62.	TUTORIAL 9	1	23/03/2022		TLM3
63.	Solving of PDE	1	22/03/2022		TLM1
64.	Lagrange's Method	1	24/03/2022		TLM1
65.	Lagrange's Method	1	25/03/2022		TLM1
66.	Lagrange's Method	1	28/03/2022		TLM1
67.	TUTORIAL 10	1	30/03/2022		TLM1
68.	Problems	1	29/03/2022		
69.	Revision	1	31/03/2022		
70.	Revision	1	01/04/2022		
No. of classes required to complete UNIT-V: 15				No. of classes taken:	

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

PART-C

EVALUATION PROCESS (R17 Regulation):

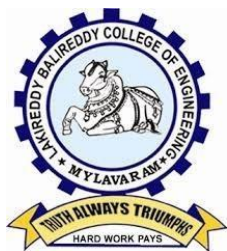
Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV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

PART-D

PROGRAMME OUTCOMES (POs):

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

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



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	: B.Tech, I-Sem
ACADEMIC YEAR	: 2021-22
COURSE NAME & CODE	: Digital Logic Design – 20CS02
L-T-P STRUCTURE	: 3-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: J.NAGESWARA RAO
COURSE COORDINATOR	: J.NAGESWARA RAO

PRE-REQUISITE: Basic Mathematics

COURSE OBJECTIVE:

The objective of the course is to learn the basic building blocks of the logic circuits of the computer system

COURSE OUTCOMES: At the end of this course, the student will be able to:

CO1	Explain the digital number systems, Boolean algebra theorems, properties, and canonical forms for digital logic circuit design. (Understand-L2)
CO2	Apply Boolean algebra concepts and K-Maps for minimization of Boolean expressions. (Apply -L3)
CO3	Construct the combinational circuits using Adders, Sub tractors, Decoders, Multiplexers and Magnitude Comparators. (Apply-L3)
CO4	Demonstrate the sequential circuits using Flip-flops, Shift registers, and Counters & Memory unit. (Understand-L2)
CO5	Construct programmable logic devices (PROM, PAL, and PLA). (Apply-L3)

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

		PROGRAM OUTCOMES												PROGRAM SPECIFIC OUTCOMES		
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
COURSE OUTCOMES	CO1	3	3	1	-	-	-	-	-	-	-	-	1	2	-	1
	CO2	3	3	3	1	-	-	-	-	-	-	-	-	2	-	-
	CO3	3	3	3	1	-	-	-	-	-	-	-	-	2	-	-
	CO4	3	3	3	1	-	-	-	-	-	-	-	-	2	-	-
	CO5	2	3	3	1	-	-	-	-	-	-	-	-	2	-	1

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

BOS APPROVED TEXT BOOKS:

T1 Morris mano, Michael D Ciletti ,”Digital Design” , 4/e,, PEA

BOS APPROVED REFERENCE BOOKS:

R1 Leach, Malvino, saha,”Digital Logic design”, TMH.

R2 R.P.jain,”Modern Digital Electronics”, TMH.

R3 A.Anand Kumar,”Switching Theory and logic Design”, Prentice-hall Of India pvt..

R4 A.P Godse,G.A Godse,”Digital Logic Design”, T-Publishers,

PART– B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – 1: NUMBER SYSTEMS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Discussion of Cos and Pos	1	13-12-2021		TLM1	CO1	T1	
2.	Introduction to Digital Systems	1	15-12-2021		TLM1	CO1	T1	
3.	Number Systems	1	17-12-2021		TLM1	CO1	T1	
4.	Number base Conversion,Decimal,Octal and HexadecimalNumbers	1	18-12-2021		TLM1	CO1	T1, R3	
5.	Complements(1’s)	1	20-12-2021		TLM1	CO1	T1, R3	
6.	Complements(2’s)	1	22-12-2021		TLM1	CO1	T1, R3	
7.	Signed and unsigned binary number subtraction	1	24-12-2021		TLM1	CO1	T1, R3	
8.	Binary coded decimal	1	25-12-2021		TLM1	CO1	T1	
9.	Digital Logic Gates	1	27-12-2021		TLM1	CO1	T1	
10.	Error Detection and Correction	1	29-12-2021		TLM1	CO1	T1	
11.	TUTORIAL – 1	1	31-12-2021		TLM3	CO1	---	
12.	Assignment / Quiz – 1	1	01-01-2022		TLM6	CO1	---	
No. of classes required to complete UNIT-I:		13	No. of classes taken:					

UNIT – 2: BOOLEAN ALGEBRA

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
13.	Simplification Of Boolean Expressions	1	03-01-2022		TLM1	CO2	T1	
14.	Introduction to Karnaugh Maps	1	05-01-2022		TLM1	CO2	T1	
15.	One Variable, Two variable, Three Variable maps	1	05-01-2022		TLM1	CO2	T1	
16.	Four Variable Map	1	07-01-2022		TLM1	CO2	T1	
17.	Problems on K-Maps	1	8-01-2022		TLM1	CO2	T1, R3	
18.	Five Variable K-Map and Examples	1	10-01-2022		TLM1	CO2	T1, R3	
19.	Minimal Expressions for incomplete Boolean functions	1	12-01-2022		TLM1	CO2	T1, R3	
20.	Minimal Expressions for incomplete Boolean functions	1	19-01-2022		TLM1	CO2	T1, R3	
21.	Quine-McCluskey Method	1	21-01-2022		TLM1	CO2	T1, R2	
22.	Prime implicants and Essential Prime Implicants	1	22-01-2022		TLM1	CO2	T1	
23.	TUTORIAL – 2	1	24-01-2022		TLM3	CO2	---	
24.	Assignment / Quiz – 2	1	24-01-2022		TLM6	CO2	---	

UNIT – 3: ARITHMETIC CIRCUITS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Introduction to Combinational Logic, Design Procedure, Analysis Procedure	1	28-01-2022		TLM1	CO3	T1, R3	
26.	Adders, Subtractors	1	28-01-2022		TLM1	CO3	T1, R3	
27.	Code Conversion	1	29-01-2022		TLM1	CO3	T1	
28.	Multilevel NAND circuits, Multilevel NOR circuits	1	31-01-2022		TLM1	CO3	T1, R3	
29.	Introduction to Combinational Logic with MSI And LSI	1	02-02-2022		TLM1	CO3	T1, R3	
30.	Binary Parallel Adder, Decimal Adder	1	04-02-2022		TLM1	CO3	T1	
31.	Magnitude Comparator	1	4-02-2022		TLM1	CO3	T1	
32.	Decoders	1	14-02-2022		TLM1	CO3	T1	
33.	Multiplexers	1	14-02-2022		TLM1	CO3	T1	
34.	TUTORIAL –3	1	16-02-2022		TLM3	CO3	---	
35.	Assignment / Quiz – 3	1	18-02-2022		TLM6	CO3	---	
No. of classes required to complete UNIT-III:		11	No. of classes taken:					

UNIT – 4: SEQUENTIAL LOGIC CIRCUITS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
36.	Introduction to Sequential Logic, Flip Flops	1	19-02-2022		TLM1	CO4	T1	
37.	Triggering of Flip-Flops,	1	21-02-2022		TLM1	CO4	T1	
38.	Analysis of Clocked Sequential Circuits	1	23-02-2022		TLM1	CO4	T1	
39.	State Reduction and Assignment	1	25-02-2022		TLM1	CO4	T1	
40.	Flip-Flop Excitation tables	1	26-02-2022		TLM1	CO4	T1	
41.	Design of Counters, Introduction to Registers, Shift registers	1	28-02-2022		TLM1	CO4	T1	
42.	Ripple Counters	1	02-03-2022		TLM1	CO4	T1	
43.	Synchronous Counters	1	03-03-2022		TLM1	CO4	T1	
44.	TUTORIAL – 4	1	07-03-2022		TLM3	CO4	---	
45.	Assignment / Quiz– 4	1	10-03-2022		TLM6	CO4	---	
No. of classes required to complete UNIT-IV		11	No. of classes taken:					

UNIT – 5: MEMORY UNIT

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
46.	Read – Only Memory (ROM)	1	11-03-2022		TLM1	CO5	T1,R3	
47.	Problems On ROM	1	12-03-2022		TLM1	CO5	T1,R3	
48.	Programmable Read Only memory	1	14-03-2022		TLM1	CO5	T1,R3	

49.	Problems on PROM	1	16-03-2022		TLM1	CO5	T1,R3	
50.	Programmable Logic Device (PLD),Problems on PLD	1	18-03-2022		TLM1	CO5	T1,R3	
51.	Programmable Logic Array	1	19-03-2022		TLM1	CO5	T1,R3	
52.	Programmable Array Logic (PAL).	1	21-03-2022		TLM1	CO5	T1,R3	
53.	Problems on PLA and PAL	1	23-03-2022		TLM1	CO5	T1,R3	
54.	Programmable Logic Array Examples	1	25-03-2022		TLM1	CO5	T1,R3	
55.	TUTORIAL – 5	1	26-03-2022		TLM3	CO5	T1,R3	
56.	Assignment / Quiz – 5	1	28-03-2022		TLM6	CO5	T1,R3	
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	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
57.	PROM related problems	1	30-04-2022		TLM1	CO5		
58.	How magnitude comparators are different from Decoders	1	01-04-2022		TLM1	CO3		

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

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

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

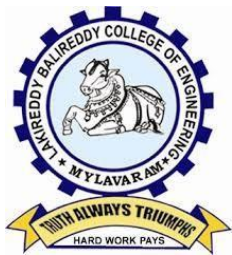
PART-D

PROGRAMME OUTCOMES (POs):

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

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	J.NAGESWARA RAO	J.NAGESWARA RAO	CH.V.N.R	DR.D.VEERAI AH
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : T. VINEETHA
Course Name & Code : IT WORKSHOP LAB (20IT51)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech., CSM, I-Sem., Section – A A.Y: 2021 - 2022

PRE-REQUISITE: NIL

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

COURSE OUTCOMES (COs)

At the end of the course, the student will be able to:

CO1	Identify the basic hardware components, keyboard shortcuts, assembling and disassembling of the system (PC).
CO2	Demonstrate Operating System installation, apply various commands of linux operating system, networking.
CO3	Create web pages using HTML, documents using applications like LaTeX, Google forms and use application software packages: MS-Word, MS-Excel, MS-Power Point to create documents and presentation.
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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

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

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

1- Slight (Low),

2 – Moderate (Medium),

3 - Substantial (High).

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Programs to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Identifying the peripheral components of a computer. Understanding the Block diagram of the CPU	3	23/12/2021		TLM2/ TLM4	
2.	Disassembling and assembling the PC back to working condition	3	30/12/2022		TLM2/ TLM4	
3.	1. Installation of MS WINDOWS and LINUX on personal computer. 2. Linux Operating System commands	6	06/01/2022 20/01/2022		TLM2/ TLM4	
4.	Working on Networking Commands	3	27/01/2022		TLM2/ TLM4	
5.	Working on Internet Services	3	03/02/2022		TLM2/ TLM4	
6.	Introduction to HTML and its tags. Preparing a simple website/homepage.	6	17/02/2022 24/02/2022		TLM2/ TLM4	
7.	Demonstration and Practice of Text Editors	3	03/02/2022		TLM2/ TLM4	
8.	Demonstration and practice of Microsoft Word, Power Point, Microsoft Excel	3	10/03/2022		TLM2/ TLM4	
9.	Demonstration and practice of LaTeX	3	17/03/2022		TLM2/ TLM4	
10.	Creating online documents using Google docs. Creating and sharing online quiz exam with marks/Grads Creating and sharing Bio-data form.	3	24/03/2022		TLM2/ TLM4	
11.	Lab Internal Exam	3	31/03/2022			

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

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.
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PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Course Instructor	Course Coordinator	Module Coordinator	HOD
T. VINEETHA	B S R KRISHNA	Dr. Y. V Bhaskar Reddy	DR. D.VEERAI AH