



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. R. Padma Venkat

Course Name & Code : Communicative English (T) & 23FE01

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

Credits: 02

Program/Sem/Sec : B. Tech, I Sem, AI & DS - B

A.Y. : 2023-24

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

COURSE ARTICULATION MATRIX (Correlation between COs & POs)

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

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.	Human Values: Gift of Magi	02	19-09-23 21-09-23		TLM1 TLM 6	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	22-09-23		TLM2 TLM5	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	26-09-23		TLM1 TLM6 TLM5	
4.	Parts of speech	02	29-09-23 05-10-23		TLM2 TLM6	
5.	Basic Sentence Structures, Forming questions	01	06-10-23		TLM2 TLM6	
6.	Synonyms, Antonyms	01	09-10-23		TLM2 TLM5	
7.	Affixes, Root Words	01	10-10-23		TLM2 TLM5	
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.	Nature: The Brook by Alfred Tennyson	02	12-10-23 13-10-23		TLM1 TLM 6	
9.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	17-10-23		TLM2 TLM5	
10.	Structure of Paragraph – Paragraph Writing	01	19-10-23		TLM1 TLM6 TLM5	
11.	Cohesive Devices- linkers	01	20-10-23		TLM2 TLM6	
12.	Use of Articles and zero article, Prepositions	02	24-10-23 26-10-23		TLM2 TLM6	
13.	Homophones, Homographs, Homonyms	01	27-10-23		TLM2 TLM5	
No. of classes required to complete UNIT-II: 08				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
14.	Biography: Elon Musk	02	31-10-23 02-11-23		TLM1 TLM 6	
15.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	03-11-23		TLM2 TLM5	
16.	Summarizing, Note-making, Paraphrasing	02	07-11-23 09-11-23		TLM1 TLM6 TLM5	
17.	Verbs- Tenses, Subject-verb agreement	03	10-11-23 21-11-23 23-11-23		TLM2 TLM6	

18.	Compound words, Collocations	01	24-11-23		TLM2 TLM5	
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
19.	Inspiration: The Toys of Peace- by Saki	02	28-11-23 30-11-23		TLM1 TLM 6	
20.	Study of graphic elements in text to display complicated data	02	01-12-23 05-12-23		TLM2 TLM5	
21.	Letter Writing : Official Letters, Resumes	02	07-12-23 08-12-23		TLM1 TLM6 TLM5	
22.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	03	12-12-23 14-12-23 15-12-23		TLM2 TLM6	
23.	Words often confused, Jargons	02	19-12-23 20-12-23		TLM2 TLM5	
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
24.	Motivation: The Power of Interpersonal Communication	02	22-12-23 26-12-23		TLM1 TLM 6	
25.	Reading Comprehension	02	28-12-23 29-12-23		TLM2 TLM5	
26.	Structured Essays on specific topics	02	02-1-24 04-1-24		TLM1 TLM6 TLM5	
27.	Editing Texts – Correcting Common errors	02	05-1-24 09-1-24		TLM2 TLM6	
28.	Technical Jargon	02	11-1-24 12-1-24		TLM2 TLM5	
No. of classes required to complete UNIT-V: 10				No. of classes taken:		

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

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)

TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PROGRAMME OUTCOMES (POs):

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

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



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

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

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

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

Program/Sem/Sec : B.Tech./I sem/AI&DS-B

Credits:03

A.Y. : 2023-24

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions.
- To strengthen the basic concepts of bonding models, advanced engineering materials, electrochemistry, batteries and polymers.
- To introduce instrumental methods and their applications.

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

C01	Understand the fundamentals of quantum mechanics and molecular orbital energy diagrams for molecules. (Understand)
C02	Summarize the suitability of advanced materials like semiconductors, superconductors, super capacitors and nano materials, in advanced fields. (Understand)
C03	Apply Nernst equation in calculating cell potentials and understand conductometric, potentiometric titrations, electrochemical sensors and compare batteries for different applications. (Understand)
C04	Outline the importance of polymers and conducting polymers in advanced technologies. (Understand)
C05	Understand the fundamentals of UV-Visible, IR spectroscopic techniques and basic principles of chromatographic techniques. (Understand)

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

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01	3	-	-	-	-	-	-	-	-	-	-	1
C02	3	2	2	2	-	2	2	-	-	-	-	2
C03	3	3	2	2	-	2	2	-	-	-	-	2
C04	3	2	2	2	-	2	2	-	-	-	-	2
C05	3	2	1	1	-	-	-	-	-	-	-	1
1 = Slight (Low) 2 = Moderate (Medium) 3 = Substantial (High)												

Textbooks:

1. Jain and Jain, Engineering Chemistry, 16/e, DhanpatRai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference: Books:

1. Skoog and West, Principles of Instrumental Analysis, 6/e, Thomson, 2007.
2. J.D. Lee, Concise Inorganic Chemistry, 5th Edition, Wiley Publications, Feb.2008
3. Textbook of Polymer Science, Fred W. Billmeyer Jr, 3rd Edition

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

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Fundamentals Of Quantum Mechanics	1	19-09-2023		TLM1	
2.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	19-09-2023		TLM1	
3.	Particle In one dimensional box	1	22-09-2023		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear Diatomic Molecules-Energy level diagrams (H_2 to Ne_2)	2	23-09-2023 & 26-09-2023		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO)	2	26-09-2023 & 29-09-2023		TLM1	
6.	Energy level diagrams-Summary	1	30-09-2023		TLM1	
7.	π -molecular orbitals of butadiene	1	03-10-2023		TLM1	
8.	π -molecular orbitals of benzene	1	03-10-2023		TLM1	
9.	Calculation of Bond order	1	06-10-2023		TLM1	
10.	Revision and assignment	1	07-10-2023		TLM1	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: MODERN ENGINEERING MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Semiconductors - Introduction	1	10-10-2023		TLM1	
2.	Semiconductors - Basic concept & applications	1	10-10-2023		TLM1	
3.	Super conductors - Introduction	1	13-10-2023		TLM1	
4.	Super conductors - Basic concept & applications	1	14-10-2023		TLM1	
5.	Supercapacitors - Introduction	1	17-10-2023		TLM1	
6.	Supercapacitors - Basic concept- classification & applications	1	17-10-2023		TLM1	
7.	Nano materials - Introduction	1	27-10-2023		TLM2	
8.	Nano materials - classification	1	28-10-2023		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	31-10-2023		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	2	31-10-2023 & 03-11-2023		TLM2	
11.	Revision and assignment	1	04-11-2023		TLM1	
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

UNIT-III: ELECTROCHEMISTRY AND APPLICATIONS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Electrochemical cell, Nernst equation	1	07-11-2023		TLM1	
2.	Cell potential calculations and numerical problems	2	07-11-2023 & 10-11-2023		TLM1	
3.	Potentiometry- potentiometric titrations (redox titrations)	1	11-11-2023		TLM1	
4.	Concept of conductivity, conductivity cell, conductometric titrations (acid-base titrations)	1	21-11-2023		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors	1	21-11-2023		TLM1	

	with examples				
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries- working of the batteries including cell reactions	2	24-11-2023 & 25-11-2023		TLM1
7.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells	1	28-11-2023		TLM1
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	28-11-2023		TLM1
9.	Revision and assignment	1	01-12-2023		TLM1
No. of classes required to complete UNIT-III: 11				No. of classes taken:	

UNIT-IV: POLYMER CHEMISTRY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to polymers, functionality of monomers	1	02-12-2023		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	05-12-2023		TLM1	
3.	Mechanisms of polymer formation	1	05-12-2023		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	08-12-2023		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	09-12-2023 & 12-12-2023		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	15-12-2023		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	16-12-2023		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	19-12-2023		TLM1	
9.	Revision and assignment	1	19-12-2023		TLM1	
No. of classes required to complete UNIT-IV: 10				No. of classes taken:		

UNIT-V: INSTRUMENTAL METHODS AND APPLICATIONS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Electromagnetic spectrum	1	22-12-2023		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	23-12-2023		TLM1	
3.	UV-Visible Spectroscopy	1	26-12-2023		TLM1	
4.	electronic transition, Instrumentation	1	26-12-2023		TLM1	
5.	IR spectroscopies, fundamental modes	1	29-12-2023		TLM1	
6.	selection rules, Instrumentation	1	30-12-2023		TLM1	
7.	Chromatography-Basic Principle	1	02-01-2024		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	02-01-2024 & 05-01-2024		TLM1	
9.	Revision and assignment	1	06-01-2024		TLM1	
No. of classes required to complete UNIT-V: 10				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	09,09,12,13-01-2024		TLM1	

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

PART-C**EVALUATION PROCESS (R20 Regulation):**

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	: I B. Tech., I-Sem., AI&DS B
ACADEMIC YEAR	: 2023-24
COURSE NAME & CODE	: Linear Algebra & Calculus
L-T-P STRUCTURE	: 3-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Dr. K.R. Kavitha
COURSE COORDINATOR	: Dr. A. Rami Reddy
PRE-REQUISITES	: Basics of Matrices, Differentiation, Integration

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

COURSE OUTCOMES (COs)

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

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

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

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

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

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

BOS APPROVED TEXT BOOKS:

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

BOS APPROVED REFERENCE BOOKS:

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN):

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

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	22-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	23-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	26-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	27-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	29-09-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	30-09-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	03-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	04-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	06-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	07-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	09-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	10-10-2023		TLM1	CO1	T1,T2	
17.	TUTORIAL 1	1	11-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14				No. of classes taken:		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to Unit II	1	13-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	14-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	17-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	18-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	25-10-2023		TLM1	CO2	T1,T2	

24.	Diagonalization of a matrix	1	27-10-2023		TLM1	CO2	T1,T2	
25.	Quadratic Forms	1	28-10-2023		TLM1	CO2	T1,T2	
26.	Nature of Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	
27.	Reduction of Quadratic form to Canonical form	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Orthogonal Transformation	1	01-11-2023		TLM1	CO2	T1,T2	
29.	Orthogonal Transformation	1	03-11-2023		TLM1	CO2	T1,T2	
30.	TUTORIAL 2	1	04-11-2023		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

I MID EXAMINATIONS (13-11-2023 TO 18-11-2023)

UNIT-III: Calculus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
31.	Introduction to Unit III	1	06-11-2023		TLM1	CO3	T1,T2	
32.	Mean Value theorem	1	07-11-2023		TLM1	CO3	T1,T2	
33.	Rolle's theorem	1	08-11-2023		TLM1	CO3	T1,T2	
34.	Lagrange's mean value theorem	1	10-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	22-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem with remainders	1	24-11-2023		TLM1	CO3	T1,T2	
39.	Taylor's theorem	1	25-11-2023		TLM1	CO3	T1,T2	
40.	Maclaurin's theorem	1	27-11-2023		TLM1	CO3	T1,T2	
41.	Problems and applications	1	28-11-2023		TLM1	CO3	T1,T2	
42.	TUTORIAL 3	1	02-12-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		12			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
43.	Introduction to Unit IV	1	29-11-2023		TLM1	CO4	T1,T2	
44.	Functions of several variables	1	01-12-2023		TLM1	CO4	T1,T2	
45.	Continuity and Differentiability	1	04-12-2023		TLM1	CO4	T1,T2	
46.	Partial Derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
47.	Total derivatives, Chain rule, Directional Derivative	1	06-12-2023		TLM1	CO4	T1,T2	

48.	Taylor's Series expansion	1	08-12-2023		TLM1	CO4	T1,T2	
49.	Maclaurin's series expansion	1	11-12-2023		TLM1	CO4	T1,T2	
50.	Jacobian	1	12-12-2023		TLM1	CO4	T1,T2	
51.	Functional Dependence	1	13-12-2023		TLM1	CO4	T1,T2	
52.	Maxima and Minima	1	15-12-2023		TLM1	CO4	T1,T2	
53.	Maxima and Minima	1	16-12-2023		TLM1	CO4	T1,T2	
54.	Lagrange Multiplier Method	1	18-12-2023		TLM1	CO4	T1,T2	
55.	Lagrange Multiplier Method	1	19-12-2023		TLM1	CO4	T1,T2	
56.	TUTORIAL 4	1	23-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Introduction to Unit-V	1	20-12-2023		TLM1	CO5	T1,T2	
58.	Double Integrals - Cartesian coordinates	1	22-12-2023		TLM1	CO5	T1,T2	
59.	Double Integrals - Cartesian coordinates	1	26-12-2023		TLM1	CO5	T1,T2	
60.	Double Integrals- Polar co ordinates	1	27-12-2023		TLM1	CO5	T1,T2	
61.	Triple Integrals - Cartesian coordinates	1	29-12-2023		TLM1	CO5	T1,T2	
62.	Triple Integrals - Spherical coordinates	1	30-12-2023		TLM1	CO5	T1,T2	
63.	Change of order of Integration	1	02-01-2024		TLM1	CO5	T1,T2	
64.	Change of order of Integration	1	03-01-2024		TLM1	CO5	T1,T2	
65.	Change of variables	1	05-01-2024		TLM1	CO5	T1,T2	
66.	Finding area by double Integral	1	06-01-2024		TLM1	CO5	T1,T2	
67.	Finding Volume by double and triple Integral	1	08-01-2024		TLM1	CO5	T1,T2	
68.	Revision	1	09-01-2024		TLM1	CO5	T1,T2	
69.	TUTORIAL 5	1	10-01-2024		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
70.	Other applications of double integral	1	12-01-2024		TLM2	CO5	T1,T2	
No. of classes		1			No. of classes taken:			

II MID EXAMINATIONS (15-01-2024 TO 20-01-2024)

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

PART-C EVALUATION PROCESS (R23 Regulation):

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

PART-D PROGRAMME OUTCOMES (POs):

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

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



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

COURSE HANDOUT

PART-A

Name of Course Instructor: KAMALA PRIYA BYSANI

Course Name & Code : BASIC CIVIL AND MECHANICAL ENGINEERING&23CM01

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

Credits: 3

Program/Sem/Sec : B.Tech/I/B-AI&DS

A.Y.: 2023-24

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- Get familiarized with the scope and importance of Mechanical Engineering in different sectors and industries.
- Explain different engineering materials and different manufacturing processes.
- Provide an overview of different thermal and mechanical transmission systems and introduce basics of robotics and its applications.

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

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

TEXTBOOKS:

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

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

REFERENCE BOOKS:

1. G. Shanmugam and M.S.Palanisamy, Basic Civil and the Mechanical Engineering, Tata McGraw Hill publications (India) Pvt. Ltd
2. Thermal Engineering by Mahesh M Rathore Tata McGraw Hill publications (India) Pvt. Ltd.
3. 3D printing & Additive Manufacturing Technology- L. Jyothish Kumar, Pulak M Pandey, Springer publications
4. Appuu Kuttan KK, Robotics, I.K. International Publishing House Pvt. Ltd. Volume-I

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO MECHANICAL ENGINEERING &ENGINEERING MATERIALS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Role of Mechanical Engineering in Industries and Society	2	19/09/2023 20/09/2023		TLM1	
2.	Technologies in different sectors such as Energy	1	21/09/2023		TLM1	
3.	Technologies in different sectors such as Manufacturing, Automotive	2	22/09/2023 23/09/2023		TLM2	
4.	Technologies in different sectors such as Aerospace, and Marine	2	26/09/2023 27/09/2023		TLM2	
5.	Metals-Ferrous and Non-ferrous	1	29/09/2023		TLM1	
6.	Ceramics	1	30/09/2023		TLM2	
7.	Composites	1	03/10/2023		TLM1	
8.	Smart materials	1	04/10/2023		TLM2	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: MANUFACTURING PROCESS&THERMAL ENGINEERING

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Manufacturing processes: Principles of Casting, Forming	2	05/10/2023 06/10/2023		TLM1	
10.	joining processes, Machining	1	07/10/2023		TLM2	
11.	Introduction to CNC machines	1	10/10/2023		TLM2	
12.	3D printing	1	11/10/2023		TLM2	
13.	Smart manufacturing	1	12/10/2023		TLM2	
14.	Thermal Engineering: Working principle of Boilers, Otto cycle, Diesel cycle	2	13/10/2023 14/10/2023		TLM2	
15.	Refrigeration and air-conditioning cycles	1	17/10/2023		TLM2	
16.	IC engines, 2-Stroke and 4-Stroke engines	1	18/10/2023		TLM2	
17.	SI/CI Engines	1	19/10/2023		TLM2	
18.	Components of Electric and Hybrid Vehicles	1	25/10/2023		TLM2	
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

UNIT-III: POWERPLANTS,MECHANICAL POWER TRANSMISSION &INTRODUCTION TO ROBOTICS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
19.	Power Plants-Working principle of Steam powerplant	1	26/10/2023		TLM2	
20.	Working principle of Diesel, Hydro, Nuclear power plants	2	27/10/2023 28/10/2023		TLM2	
21.	Belt Drives	1	31/10/2023		TLM2	
22.	Chain, Rope drives	1	01/11/2023		TLM2	
23.	Gear Drives and their applications	1	02/11/2023		TLM2	
24.	Introduction to Robotics	1	03/11/2023		TLM2	
25.	Joints & links	1	04/11/2023		TLM2	

26.	Configurations, applications of robotics	1	07/11/2023		TLM2
27.	Revision	1	08/11/2023		TLM3
28.	Revision	1	09/11/2023		TLM3
29.	Revision	1	10/11/2023		TLM3
No. of classes required to complete UNIT-III: 12				No. of classes taken:	

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	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 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	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	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	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	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	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	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	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 multi disciplinary environments.
PO 12	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	To apply the principles of thermal sciences to design and develop various thermal systems.
PSO 2	To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
PSO 3	To apply the basic principles of mechanical engineering design or evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	KAMALA PRIYA BYSANI	Dr.K.MURAHARI	Dr.B.SUDHEER KUMAR	Dr.M.B.S.S REDDY
Signature				



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

COURSE HANDOUT

PART-A

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

PRE-REQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVE (CEO):

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

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

CO1:	Understand basics of computers, the concept of algorithm and algorithmic thinking.	Understand – Level 2
CO2:	Analyze a problem and develop an algorithm to solve it.	Analyze – Level 4
CO3:	Implement various algorithms using the C programming language.	Apply – Level 3
CO4:	Understand more advanced features of C language.	Understand – Level 2
CO5:	Develop problem-solving skills and the ability to debug and optimize the code.	Apply – Level 3

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

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

TEXTBOOKS:

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

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

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: Introduction to Programming and Problem Solving

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Discussion of CEO's and CO's	1	19-09-2023			
2.	History of Computers	1	21-09-2023			
3.	Basic organization of a computer: ALU, input-output units.	2	22-09-2023 22-09-2023			
4.	Memory, program counter	1	25-09-2023			
5.	Introduction to Programming Languages,	1	26-09-2023			
6.	Basics of a Computer Program- Algorithms	1	28-09-2023			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	29-09-2023			
8.	Introduction to Compilation and Execution	1	29-09-2023			
9.	Primitive Data Types	2	03-10-2023 05-10-2023			
10.	Variables, and Constants, Basic Input and Output operations	1	06-10-2023			
11.	Type Conversion, and Casting	1	06-10-2023			
12.	Problem solving techniques: Algorithmic approach, characteristics of algorithm	1	09-10-2023			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	10-10-2023			
14.	Time and space complexities of algorithms.	1	12-10-2023			
No. of classes required to complete UNIT – I: 15				No. of classes taken:		

UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs Conditional Statements	1	13-10-2023			
16.	if, if-else	1	13-10-2023			
17.	switch.	1	16-10-2023			
18.	Example programs on Decision Making and Branching	1	17-10-2023			
19.	Loops: while , Example programs	2	19-10-2023 26-10-2023			
20.	do-while, for, Example programs	2	27-10-2023 27-10-2023			
21.	on Loops	1	30-10-2023			
22.	Break and Continue	1	31-10-2023			
23.	Example programs on Loops	1	02-11-2023			
24.	Revision	1	03-11-2023			
No. of classes required to complete UNIT – II: 12				No. of classes taken:		

UNIT – III: Arrays and Strings

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
25.	Arrays Introduction, Declaration	1	03-11-2023			
26.	Array indexing, Accessing elements	1	06-11-2023			
27.	memory model	1	07-11-2023			
28.	programs with array of integers	1	09-11-2023			
29.	Introduction to two dimensional arrays	1	10-11-2023			
30.	2D Array indexing, Accessing elements	1	10-11-2023			
31.	programs with 2D arrays	1	20-11-2023			
32.	Introduction to Strings	1	21-11-2023			
33.	Reading and Writing Operations on Strings	1	23-11-2023			
34.	String Handling Functions	1	24-11-2023			
35.	Example Programs using Strings	1	24-11-2023			
No. of classes required to complete UNIT – III: 11				No. of classes taken:		

UNIT – IV: Pointers & User Defined Data types

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
36.	Introduction to Pointers	1	28-11-2023			
37.	dereferencing and address operators	1	30-11-2023			
38.	pointer and address arithmetic	1	01-12-2023			
39.	array manipulation using pointers	2	01-12-2023			
			04-12-2023			
40.	User-defined data types	1	05-12-2023			
41.	Structures , Definition and Initialization	2	07-12-2023			
			08-12-2023			
42.	Example programs	1	08-12-2023			
43.	Unions	2	11-12-2023			
			12-12-2023			
44.	Example programs	1	14-12-2023			
45.	Revision	1	15-12-2023			
No. of classes required to complete UNIT – IV: 13				No. of classes taken:		

UNIT – V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Functions	1	15-12-2023			
47.	Function Declaration and Definition	1	18-12-2023			
48.	Function call Return Types	1	19-12-2023			
49.	Arguments	1	21-12-2023			
50.	modifying parameters inside functions using pointers	2	22-12-2023			
			22-12-2023			
51.	arrays as parameters	1	26-12-2023			
52.	Scope and Lifetime of Variables	1	28-12-2023			

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

Content Beyond the Syllabus:

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

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

PART-D

PROGRAMME OUTCOMES (POs):

P01	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	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.
P03	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.
P04	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.
P05	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
P06	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
P07	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.
P08	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
P09	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	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.
P011	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.
P012	Life-long learning: Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	J Naga Raju	Dr. B. Srinivasa Rao	S. Siva Ramakrishna	Dr. O. Rama Devi
Signature				



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Course Handout / Lesson Plan

PART-A

Name of Course Instructor K.Sudhakar

Course Name & Code: IT WORKSHOP LAB (23IT51)

L-T-P Structure: 0-0-2-1

Program/Sem/Sec: B.Tech / 1 /SEC-B

Credits: 1

A.Y.: 2023-24

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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



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REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): IT WORKSHOP LAB (23IT51)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching & Learning Methods	HOD Sign Weekly
I	PC Hardware & Software Installation					
	Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit to your instructor.		23.09.2023		TLM 4	
	Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify		23.09.2023		TLM 4	



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	the work and follow it up with a Viva. Also students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.				
	Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.		23.09.2023		TLM 4
	Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot (VMWare) with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva		30.09.2023		TLM 4
	Task 5: Every student should install BOSS on the computer. The system should be configured as dual boot (VMWare) with both Windows and BOSS. Lab instructors should		30.09.2023		TLM 4



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	verify the installation and follow it up with a Viva					
II	Internet & World Wide Web					
	Task1: Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN		07.10.2023		TLM 4	
	Task 2: Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.		07.10.2023		TLM 4	
	Task 3: Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few		14.10.2023		TLM 4	



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	topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student					
	Task 4: Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.		14.10.2023		TLM 4	
III. LaTeX and WORD						
	Task 1: Word Orientation: The mentor needs to give an overview of La TeX and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of La TeX and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using La TeXand word – Accessing, overview of toolbars, saving files, Using		28.10.2023		TLM 4	



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	help and resources, rulers, format painter in word.				
	Task 2: Using LaTeX and Word to create a project certificate. Features to be covered:- Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.		28.10.2023		TLM 4
	Task 3: Creating project abstract Features to be covered:-Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.		04.11.2023		TLM 4
	Task 4: Creating a Newsletter: Features to be covered:- Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.		04.11.2023		TLM 4
IV. EXCEL Excel Orientation					



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	Task 1: Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text		11.11.2023		TLM 4	
	Task 2: Calculating GPA -. Features to be covered:- Cell Referencing, Formulae in excel – average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP		18.11.2023		TLM 4	
	Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting		25.11.2023		TLM 4	
V. Powerpoint Orientation						
	Task 1: Students will be working on basic power point utilities and tools which help them create basic powerpoint presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.		25.11.2023		TLM 4	



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	Task 2: Interactive presentations - Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.		02.12.2023		TLM 4	
	Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), and Inserting – Background, textures, Design Templates, Hidden slides.		09.12.2023		TLM 4	
VI. AI TOOLS – ChatGPT						
	Task 1: Prompt Engineering: Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them. • Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of France?"		16.12.2023		TLM 4	
	Task 2: Creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and		30.12.2023		TLM 4	



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	let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas • Ex: Prompt: "In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality.					
	Task 3: Language Translation: Experiment with translation tasks by providing a sentence in one language and asking the model to translate it into another language. Compare the output to see how accurate and fluent the translations are. • Ex:Prompt: "Translate the following English sentence to French: 'Hello, how are you doing today?'"		06.01.2024		TLM 4	

Content Beyond the Syllabus :

S No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign
1	Bing Chat (Chat GPT Version 4)	1	13.01.2024		TLM4	



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

PART-C

EVALUATION PROCESS (R23 Regulations): According to Academic Regulations of R23 Distribution and Weightage of Marks for Laboratory Courses is as follows

Continuous Internal Evaluation (CIE): The Continuous Internal Evaluation (CIE) is based on the following parameters:

Parameter	Marks
Day to Day work	15
Record	15
Internal Test	
Total	30

Semester End Examinations (SEE):The Semester End examinations (SEE) for laboratory courses shall be jointly conducted by internal and external examiners with 3 hours' duration and evaluated for 35 marks. The performance of the student shall be evaluated as per the parameters indicated below:

Parameter	Marks
Procedure/Algorithm	20
Experimentation/Program execution	30
Result/Inference	
Viva voce	20
Total	70



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

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 analyse 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, demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics, responsibilities, and norms of the engineering practice.
PO 9	Individual and teamwork: 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, 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.



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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.
PSO 2	To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.
PSO 3	To provide a concrete foundation and enrich their abilities for Employment and Higher studies in Artificial Intelligence and Data science with ethical values.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	K Sudhakar	P.Nagababu	K Sudhakar	O.Rama Devi
Signature				



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FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. R. Padma Venkat

Course Name & Code : CE LAB, 23FE51

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

Credits: 01

Program/Sem/Sec : B. Tech- I SEM – AI&DS -B

A.Y. : 2023-24

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

List of Activities:

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

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

Suggested Software:

1. Walden Infotech
2. Young India Films

Reference Books:

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

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	03	20-09-23		TLM4	
2.	Self Introduction & Introducing others	03	27-09-23		TLM4	
3.	Vowels & Consonants	03	04-10-23		TLM1, TLM5	
4.	Neutralization / Accent rules	03	11-10-23		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	18-10-23		TLM4	
6.	Role Play-I(Formal and Informal)	03	25-10-23		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	01-11-23		TLM1, TLM5	
8.	Group Discussion	03+3	08-11-23 22-11-23		TLM4, TLM6	

9.	Debate	03+3	29-11-23 06-12-23		TLM4, TLM6
10.	PPT & Poster Presentation	03 + 03	13-12-23 20-12-23		TLM2, TLM4
11.	Mock Interviews	03 + 03	27-12-23 03-1-24		TLM1, TLM6
12.	Lab Internal Exam	03	10-1-24		
No. of classes required to complete Syllabus: 48			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

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	Dr. R. Padma Venkat	Dr. R. Padma Venkat	Dr. A. Ramireddy	Dr. A. Ramireddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.Vijaya Dasaradha

Course Name & Code : Chemistry Lab&23FE52

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

Program/Sem/Sec : B.Tech/I-sem/AI&DS-B

Credits:1.5

A.Y. :2023-24

Pre requisites: Nil

Course Educational Objective:

- To enable the students to perform different types of volumetric titrations.
- It provides an overview of preparation of polymers, nanomaterials and analytical techniques.

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

CO1: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus. (Analyze)

CO2: Acquire practical knowledge related to preparation of Bakelite and nanomaterials. (Apply)

CO3: Measure the strength of acid present in Pb-Acid battery. (Apply)

CO4: Determine the cell constant and conductance of solutions. (Apply)

CO5: Analyze organic compounds by using UV-Visible and IR spectroscopy. (Apply)

POs \ COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	-	-	1	2	-	-	-	-	-
CO2	3	-	1	-	-	2	1	-	-	-	-	-
CO3	3	2	1	-	-	-	2	-	-	-	-	-
CO4	3	1	-	-	-	-	-	-	-	-	-	-
CO5	3	2	-	-	2	-	-	-	-	-	-	-
1 = Slight (Low)			2 = Moderate (Medium)				3 = Substantial (High)					

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

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to Engineering chemistry lab	3	21-09-2023		TLM1		
2.	Preparation of a Bakelite	3	05-10-2023		TLM4	CO1	
3.	Determination of amount of HCl using standard Na ₂ CO ₃ solution	3	12-10-2023		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	19-10-2023		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	26-10-2023		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	02-11-2023		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	09-11-2023		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	23-11-2023		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	30-11-2023		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	07-12-2023		TLM4	CO4	
11.	Wavelength measurement of sample through UV-Visible Spectroscopy	3	14-12-2023		TLM4	CO4	
12.	Identification of simple organic compounds by IR	3	21-12-2023		TLM4	CO4	
13.	Revision	3	28-12-2023		TLM4	CO4	
14.	Revision	3	04-01-2024		TLM4	CO4	
15.	Internal Exam	3	11-01-2024		TLM4	CO4	
	Total						

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

Part - C

EVALUATION PROCESS:

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

(a) Continuous Internal Evaluation(CIE):

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

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

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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

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				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

COURSEHANDOUT

PART-A

Name of Course Instructor : J Naga Raju

Course Name & Code : Computer Programming Lab (20CS51)

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

Credits: 1.5

Program/Sem/Sec : B.Tech./AI&DS/I/B

A.Y. : 2023-24

PRE-REQUISITE: Fundamentals of Mathematics.

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

COURSEOUTCOMES(COs): Attheendofthecourse,thestudentwillbeableto:

CO1:	Read, understand, and trace the execution of programs written in C language. (Understand)	Apply–Level2
CO2:	Select the right control structure for solving the problem. (Apply)	Apply–Level3
CO3:	Develop C programs which utilize memory efficiently using programming constructs like pointers. (Apply)	Apply–Level3
CO4:	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C.(Apply).	Apply–Level3
CO5:	Improve individual / teamwork skills, communication and report writing skills with ethical values.	

COURSEARTICULATIONMATRIX(CorrelationbetweenCOs,POs&PSOs):

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		18-09-2023	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		25-09-2023	DM5
3.	Week3:Exercise Programs on Variable types and type conversions	03		02-10-2023	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		09-10-2023	DM5
5.	Week5:Exercise Programs on Branching and logical expressions	03		16-10-2023	DM5
6.	Week6:Exercise Programs on Loops, while and for loops	03		30-10-2023	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		06-11-2023	DM5
8.	Week8:ExerciseProgramson2 D arrays, sorting and Strings.	03		20-11-2023	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		27-11-2023	DM5
10.	Week10:ExerciseProgramson Bit fields, Self-Referential Structures, Linked lists	03		04-12-2023	DM5
11.	Week 11:Exercise Programson Functions, call by value, scope and extent.	03		11-12-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		18-12-2023	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		02-01-2024	DM5
14.	Week 14: Exercise Programs on File handling.	03		02-01-2024	DM5
15.	Lab Internal	03			DM5

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

PROGRAMME OUTCOMES (POs):

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PO12	Life-long learning: Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.
PSO2	To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.
PSO3	To provide a concrete foundation and enrich their abilities for Employment and Higher studies in Artificial Intelligence and Data science with ethical values.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	J. Naga Raju	Dr. B. Srinivasa Rao	S. Siva Ramakrishna	Dr. O. Rama Devi
Signature				

