LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
PART-A

Name of Course Instructor: Dr. R. Padma Venkat
Course Name & Code   : Communicative English (T) & 23FE01
L-T-P Structure   **: 2-0-0**   **Credits:** 02
Program/Sem/Sec   : B. Tech, I Sem, CSM - A
A.Y.   **:** 2023-24

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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	20-09-23 21-09-23		TLM1 TLM 6	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	23-09-23		TLM2 TLM5	
3.	Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences	01	27-09-23		TLM1 TLM6 TLM5	
4.	Parts of speech	02	30-09-23 04-10-23		TLM2 TLM6	
5.	Basic Sentence Structures, Forming questions	01	05-10-23		TLM2 TLM6	
6.	Synonyms, Antonyms	01	07-10-23		TLM2 TLM5	
7.	Affixes, Root Words	01	11-10-23		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 18-10-23		TLM1 TLM 6	
9.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	19-10-23		TLM2 TLM5	
10.	Structure of Paragraph – Paragraph Writing	01	25-10-23		TLM1 TLM6 TLM5	
11.	Cohesive Devices- linkers	02	26-10-23 28-10-23		TLM2 TLM6	
12.	Use of Articles and zero article, Prepositions	02	01-11-23 02-11-23		TLM2 TLM6	
13.	Homophones, Homographs, Homonyms	03	04-11-23 08-11-23 09-11-23		TLM2 TLM5	

No. of classes required to complete UNIT-II: 11   **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	22-11-23		TLM1 TLM 6	
15.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	23-11-23		TLM2 TLM5	
16.	Summarizing, Note-making, Paraphrasing	01	25-11-23		TLM1 TLM6 TLM5	
17.	Verbs- Tenses, Subject-verb agreement	03	29-11-23 30-11-23 02-12-23		TLM2 TLM6	

| 18. | Compound words, Collocations | 02 | 06-12-23 07-12-23 | | 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	13-12-23 14-12-23		TLM1 TLM 6	
20.	Study of graphic elements in text to display complicated data	02	16-12-23 20-12-23		TLM2 TLM5	
21.	Letter Writing: Official Letters, Resumes	02	21-12-23 23-12-23		TLM1 TLM6 TLM5	
22.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	03	27-12-23 28-12-23 30-12-23		TLM2 TLM6	
23.	Words often confused, Jargons	03	18-12-23 19-12-23 22-12-23		TLM2 TLM5	

| **No. of classes required to complete UNIT-IV: 12** | | | **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	26-12-23 29-12-23		TLM1 TLM 6	
25.	Reading Comprehension	01	03-1-24		TLM2 TLM5	
26.	Structured Essays on specific topics	01	04-1-24		TLM1 TLM6 TLM5	
27.	Editing Texts – Correcting Common errors	02	06-1-24 10-1-24		TLM2 TLM6	
28.	Technical Jargon	01	11-1-24		TLM2 TLM5	

| **No. of classes required to complete UNIT-V: 07** | | | **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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department

Name of the Faculty	Dr. R. Padma Venkat	Dr. R. Padma Venkat	Dr. A. Ramireddy	Dr. A. Ramireddy
Signature				

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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 & 20FE02
L-T-P Structure : 3-0-0   Credits:03
Program/Sem/Sec : B.Tech./I Sem/CSM-A   A.Y. : 2023-24

PREREQUISITE: Nil

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

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

CO1	Understand the fundamentals of quantum mechanics and molecular orbital energy diagrams for molecules. (Understand)
CO2	Summarize the suitability of advanced materials like semiconductors, superconductors, super capacitors and nano materials, in advanced fields. (Understand)
CO3	Apply Nernst equation in calculating cell potentials and understand conductometric, potentiometric titrations, electrochemical sensors and compare batteries for different applications. (Understand)
CO4	Outline the importance of polymers and conducting polymers in advanced technologies. (Understand)
CO5	Understand the fundamentals of UV-Visible, IR spectroscopic techniques and basic principles of chromatographic techniques. (Understand)

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

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

Textbooks:

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

Reference: Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: STRUCTURE AND BONDING MODELS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Fundamentals Of Quantum Mechanics	1	19-09-2023		TLM1	
2.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	21-09-2023		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	25-09-2023 & 26-09-2023		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO)	2	29-09-2023 & 03-10-2023		TLM1	
6.	Energy level diagrams-Summary	1	05-10-2023		TLM1	
7.	π-molecular orbitals of butadiene	1	06-10-2023		TLM1	
8.	π-molecular orbitals of benzene	1	09-10-2023		TLM1	
9.	Calculation of Bond order	1	10-10-2023		TLM1	
10.	Revision and assignment	1	12-10-2023		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	13-10-2023		TLM1	
2.	Semiconductors - Basic concept & applications	1	16-10-2023		TLM1	
3.	Super conductors - Introduction	1	17-10-2023		TLM1	
4.	Super conductors - Basic concept & applications	1	19-10-2023		TLM1	
5.	Supercapacitors - Introduction	1	26-10-2023		TLM1	
6.	Supercapacitors - Basic concept- classification & applications	1	27-10-2023		TLM1	
7.	Nano materials - Introduction	1	30-10-2023		TLM2	
8.	Nano materials - classification	1	31-10-2023		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	02-11-2023		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	2	03-11-2023 & 06-11-2023		TLM2	
11.	Revision and assignment	1	07-11-2023		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	09-11-2023		TLM1	
2.	Cell potential calculations and numerical problems	2	10-11-2023 & 20-11-2023		TLM1	
3.	Potentiometry- potentiometric titrations (redox titrations)	1	21-11-2023		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	23-11-2023		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors	1	24-11-2023		TLM1	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	with examples					
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	27-11-2023 & 28-11-2023		TLM1	
7.	Fuel cells, hydrogen-oxygenfuel cell– working of the cells	1	30-11-2023		TLM1	
8.	PolymerElectrolyte Membrane Fuel cells (PEMFC)	1	01-12-2023		TLM1	
9.	Revision and assignment	1	04-12-2023		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	05-12-2023		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	07-12-2023		TLM1	
3.	Mechanisms of polymer formation	1	08-12-2023		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	11-12-2023		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	12-12-2023 & 14-12-2023		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	18-12-2023		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	19-12-2023		TLM1	
9.	Revision and assignment	1	21-12-2023		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	26-12-2023		TLM1	
3.	UV-Visible Spectroscopy	1	28-12-2023		TLM1	
4.	electronic transition, Instrumentation	1	29-12-2023		TLM1	
5.	IR spectroscopies, fundamental modes	1	02-01-2024		TLM1	
6.	selection rules, Instrumentation	1	04-01-2024		TLM1	
7.	Chromatography-Basic Principle	1	05-01-2024		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	2	08-01-2024 & 09-01-2024		TLM1	
9.	Revision and assignment	1	11-01-2024		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	12-01-2024		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				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT
Part-A

PROGRAM	:	I B. Tech., I-Sem., CSE(AI&ML) A
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	7	08-09-2023 TO 15-09-2023	08-09-2023 TO 15-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-09-2023		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
4.	Introduction to Unit I, Matrices	1	21-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	22-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	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	03-10-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	04-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	06-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	09-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	10-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	11-10-2023		TLM1	CO1	T1,T2	
17.	**TUTORIAL 1**	1	13-10-2023		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to Unit II	1	12-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	17-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	18-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	19-10-2023		TLM1	CO2	T1,T2	
23.	Finding Inverse and Powers of matrix	1	25-10-2023		TLM1	CO2	T1,T2	
24.	Diagonalization of a matrix	1	26-10-2023		TLM1	CO2	T1,T2	
25.	Diagonalization of a matrix	1	27-10-2023		TLM1	CO2	T1,T2	
26.	Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	

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
27.	Nature of Quadratic Forms	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Reduction of Quadratic form to Canonical form	1	01-11-2023		TLM1	CO2	T1,T2	
29.	Orthogonal Transformation	1	02-11-2023		TLM1	CO2	T1,T2	
30.	**TUTORIAL 2**	1	03-11-2023		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	09-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	10-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem with remainders	1	22-11-2023		TLM1	CO3	T1,T2	
39.	Taylor's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
40.	Maclaurin's theorem with remainders	1	24-11-2023		TLM1	CO3	T1,T2	
41.	Maclaurin's theorem	1	27-11-2023		TLM1	CO3	T1,T2	
42.	Problems and applications	1	28-11-2023		TLM1	CO3	T1,T2	
43.	**TUTORIAL 3**	1	01-12-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
44.	Introduction to Unit IV	1	29-11-2023		TLM1	CO4	T1,T2	
45.	Functions of several variables	1	30-11-2023		TLM1	CO4	T1,T2	
46.	Continuity and Differentiability	1	04-12-2023		TLM1	CO4	T1,T2	
47.	Partial Derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
48.	Total derivatives	1	06-12-2023		TLM1	CO4	T1,T2	
49.	Chain rule, Directional Derivative	1	07-12-2023		TLM1	CO4	T1,T2	
50.	Taylor's Series expansion	1	08-12-2023		TLM1	CO4	T1,T2	
51.	Maclaurin's series expansion	1	11-12-2023		TLM1	CO4	T1,T2	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
52.	Jacobian	1	12-12-2023		TLM1	CO4	T1,T2	
53.	Functional Dependence	1	13-12-2023		TLM1	CO4	T1,T2	
54.	Maxima and Minima	1	14-12-2023		TLM1	CO4	T1,T2	
55.	Maxima and Minima	1	15-12-2023		TLM1	CO4	T1,T2	
56.	Lagrange Multiplier Method	1	18-12-2023		TLM1	CO4	T1,T2	
57.	Lagrange Multiplier Method	1	19-12-2023		TLM1	CO4	T1,T2	
58.	**TUTORIAL 4**	1	22-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		15		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
59.	Introduction to Unit-V	1	20-12-2023		TLM1	CO5	T1,T2	
60.	Double Integrals - Cartesian coordinates	1	21-12-2023		TLM1	CO5	T1,T2	
61.	Double Integrals - Cartesian coordinates	1	26-12-2023		TLM1	CO5	T1,T2	
62.	Double Integrals- Polar co ordinates	1	27-12-2023		TLM1	CO5	T1,T2	
63.	Triple Integrals - Cartesian coordinates	1	28-12-2023		TLM1	CO5	T1,T2	
64.	Triple Integrals - Spherical coordinates	1	29-12-2023		TLM1	CO5	T1,T2	
65.	Change of order of Integration	1	02-01-2024		TLM1	CO5	T1,T2	
66.	Change of order of Integration	1	03-01-2024		TLM1	CO5	T1,T2	
67.	Change of variables	1	04-01-2024		TLM1	CO5	T1,T2	
68.	Finding area by double Integral	1	05-01-2024		TLM1	CO5	T1,T2	
69.	Finding Volume by double and triple Integral	1	08-01-2024		TLM1	CO5	T1,T2	
70.	Revision	1	09-01-2024		TLM1	CO5	T1,T2	
71.	Revision	1	10-01-2024		TLM1	CO5	T1,T2	
72.	**TUTORIAL 5**	1	11-12-2023		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
73.	Other applications of double integral	1	12-01-2023		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 CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: B RAMA KRISHNA
Course Name & Code   : Basic Civil and Mechanical Engineering & 23CM01
L-T-P Structure   : 3-0-0   **Credits:** 3
Program/Sem/Sec   : B.Tech, I SEM- CSM-A SEC   **A.Y.:** 2023-24

PREREQUISITE: NIL

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

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

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

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

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction CO's & PO's, Subject	1	19-09-2023		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	20-09-2023		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	21-09-2023		**TLM2**	
4.	Geo-technical Engineering-Transportation Engineering, Hydraulics and Water Resources Engineering	1	22-09-2023		**TLM2**	
5.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	25-09-2023		**TLM2**	
6.	Construction Materials-Cement -types	1	26-09-2023		**TLM2**	
7.	Aggregate types- Bricks-classifications, Steel-properties - types	1	27-09-2023		**TLM2**	
8.	Cement concrete- Applications	1	29-09-2023		**TLM2**	
9.	Introduction to Prefabricated construction Techniques	1	03-10-2023		**TLM2**	
10.	Revision	1	04-10-2023			
No. of classes required to complete UNIT-I: 9				**No. of classes taken:**		

UNIT-II: Surveying

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	Objectives of Surveying, Horizontal Measurements	1	05-10-2023		**TLM2**	
12.	Compass Surveying overview- Angular Measurements and Introduction to Bearings	1	06-10-2023		**TLM2**	
13.	Simple problems on bearings	1	09-10-2023		**TLM1**	
14.	-Problems -practice	1	10-10-2023		**TLM1**	

15.	Levelling introduction	1	11-10-2023		**TLM1**	
16.	Levelling instruments used for levelling	1	12-10-2023		**TLM2**	
17.	Simple problems on levelling and bearings	1	13-10-2023		**TLM2**	
18.	problems on levelling	1	16-10-2023		**TLM2**	
19.	Problems -practice	1	17-10-2023		**TLM2**	
20.	Contour mapping	1	18-10-2023		**TLM2**	
21.	Revision	1	19-10-2023			
No. of classes required to complete UNIT-II:10				**No. of classes taken:**		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	**Transportation Engineering** Importance of Transportation in Nation's economic development	1	25-10-2023		**TLM2**	
23.	Types of Highway Pavements	1	26-10-2023		**TLM2**	
24.	Flexible Pavements - Rigid Pavements Simple Differences	1	27-10-2023		**TLM2**	
25.	Basics of Harbour, Tunnel,	1	30-10-2023		**TLM2**	
26.	Basics of Airport, and Railway Engineering	1	31-10-2023		**TLM2**	
27.	**Water Resources and Environmental Engineering** Introduction, Sources of water-	1	01-11-2023		**TLM2**	
28.	Quality of water- Specifications	1	02-11-2023		**TLM2**	
29.	Introduction to Hydrology	1	03-11-2023		**TLM2**	
30.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	06-11-2023		**TLM2**	
31.	Simple introduction to Dams and Reservoirs	1	07-11-2023		**TLM2**	
32.	Over view on importance of roads and infra	1	08-11-2023		**TLM2**	
33.	Revision	1	09&10-11-2023			
34.	**Mid-1 exams**		**13-11-2023 to 18-11-2023**			
No. of classes required to complete UNIT-III:10				**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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Head of the Department
Name of the Faculty	B RAMA KRISHNA	B RAMA KRISHNA	Dr J Venkatewararao
Signature			

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

COURSE HANDOUT
PART-A

Name of Course Instructor : Mr. B. Rajendra Prasad
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech./I/A 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, 1988dition, 2015

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

REFERENCE BOOKS:

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: Introduction to Programming and Problem Solving

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Discussion of CEO's and CO's	1	19-09-2023			
2.	History of Computers	1	21-09-2023			
3.	Basic organization of a computer: ALU, input-output units.	2	22-09-2023 23-09-2023			
4.	Memory, program counter	1	25-09-2023			
5.	Introduction to Programming Languages,	1	26-09-2023			
6.	Basics of a Computer Program-Algorithms	1	28-09-2023			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	29-09-2023			
8.	Introduction to Compilation and Execution	1	30-10-2023			
9.	Primitive Data Types	2	01-10-2023 03-10-2023			
10.	Variables, and Constants, Basic Input and Output operations	1	05-10-2023			
11.	Type Conversion, and Casting	1	06-10-2023			
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	2	07-10-2023 09-10-2023			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	2	10-10-2023 12-10-2023			
14	Time and space complexities of algorithms.	1	13-10-2023			
No. of classes required to complete UNIT – I: 18				**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	14-10-2023			
16.	if, if-else	2	16-10-2023 17-10-2023			
17.	switch.	1	19-10-2023			
18.	Example programs on Decision Making and Branching	1	26-10-2023			
19.	Loops: while , Example programs	2	27-10-2023 28-10-2023			
20.	do-while, for, Example programs	2	30-10-2023 31-10-2023			
21.	on Loops	2	02-11-2023 03-11-2023			
22.	Break and Continue	2	04-11-2023 06-11-2023			
23.	Example programs on Loops	2	07-11-2023 09-11-2023			
24.	Revision	1	11-11-2023			
No. of classes required to complete UNIT – II: 16				**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	20-11-2023			
26.	Array indexing, Accessing elements	1	21-11-2023			
27.	memory model	1	23-11-2023			
28.	programs with array of integers	1	24-11-2023			
29.	Introduction to two dimensional arrays	1	25-11-2023			
30.	2D Array indexing, Accessing elements	1	27-11-2023			
31.	programs with 2D arrays	1	28-11-2023			
32.	Introduction to Strings	1	30-11-2023			
33.	Reading and Writing Operations on Strings	1	01-12-2023			
34.	String Handling Functions	1	02-12-2023			
35.	Example Programs using Strings	1	04-12-2023			
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	05-12-2023			
37.	dereferencing and address operators	1	07-12-2023			
38.	pointer and address arithmetic	1	08-12-2023			
39.	array manipulation using pointers	2	09-12-2023 / 11-12-2023			
40.	User-defined data types	1	12-12-2023			
41.	Structures , Definition and Initialization	2	14-12-2023 / 15-12-2023			
42.	Example programs	1	16-12-2023			
43.	Unions	2	18-12-2023 / 19-12-2023			
44.	Example programs	1	21-12-2023			
45.	Revision	1	22-12-2023			
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	23-12-2023			
47.	Function Declaration and Definition	1	26-12-2023			
48.	Function call Return Types	1	28-12-2023			
49.	Arguments	1	29-12-2023			
50.	modifying parameters inside functions using pointers	2	30-12-2023 / 02-01-2024			
51.	arrays as parameters	1	04-01-2024			
52.	Scope and Lifetime of Variables	1	05-01-2024			

53.	Introduction to Files	1	06-01-2024			
54.	Basics of File Handling	1	08-01-2024			
55.	Operations on Files	1	09-01-2024			
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	11-01-2024			
57.	Introduction to Data Structures	1	12-01-2024			

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	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	**Mr.B.Rajendra Prasad**	**Dr. B. Srinivasa Rao**	**Mr.S.Siva Rama Krishna**	**Dr.S.Jayaprada**
Signature				

Department of Computer Science and Engineering (AI & ML)

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. CHIRANJEEVI RAMPILLA
Course Name & Code : IT WORKSHOP Lab & 23IT51
L-T-P Structure : 0-0-2   **Credits: 1**
Program/Sem/Sec : B.Tech. – CSE- AI & ML /I/A   **A.Y.:** 2023-24
PREREQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

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

1 - Low   **2 –** Medium   **3 –** High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
			PC Hardware & Software Installation			
1.	Task-1	3	23-9-2023		**DM5**	
2.	Task-2	3	23-9-2023		**DM5**	
3.	Task-3	3	30-09-2023		**DM5**	
4.	Task-4	3	30-09-2023		**DM5**	
5.	Task-5	3	07-10-2023		**DM5**	
			Internet & World Wide Web			
6.	Task-1	3	07-10-2023		**DM5**	
7.	Task-2	3	14-10-2023		**DM5**	
8.	Task-3	3	14-10-2023		**DM5**	
9.	Task-4	3	28-10-2023		**DM5**	
			LaTex and WORD			
10.	Task-1	3	28-10-2023		**DM5**	
11.	Task-2	3	04-11-2023		**DM5**	
12.	Task-3	3	04-11-2023		**DM5**	
13.	Task-4	3	11-11-2023		**DM5**	
			EXCEL			

14.	Task-1	3	11-11-2023		DM5	
15.	Task-2	3	25-11-2023		DM5	
LOOKUP/VLOOKUP						
16.	Task-1	3	02-12-2023		DM5	
POWER POINT						
17.	Task-1	3	16-12-2023		DM5	
18.	Task-2	3	16-12-2023		DM5	
19.	Task-3	3	23-12-2023		DM5	
AI TOOLS – ChatGPT						
20.	Task-1	3	23-12-2023		DM5	
21.	Task-2	3	30-12-2023		DM5	
22.	Task-3	3	06-01-2024		DM5	
23.	Internal exam	3	13-01-2024		DM5	

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

PART-C

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. R.CHIRANJEEVI	Mr. P.NAGABABU	Dr. D. VENKATA SUBBAIAH	Dr. S.JAYAPRADA
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
Accredited by NAAC with 'A' Grade & NBA (Under Tier - I),
ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
PART-A

Name of Course Instructor: Dr. R. Padma Venkat
Course Name & Code   : CE LAB, 23FE51
L-T-P Structure   : 0-0-2   **Credits:** 01
Program/Sem/Sec   : B. Tech- I SEM – CSM -A
A.Y.   : 2023-24

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

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

List of Activities:

1. a. Vowels & Consonants
   b. Neutralization / Accent rules

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

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

Suggested Software:

1. Walden Infotech
2. Young India Films

Reference Books:

Raman Meenakshi, Sangeeta-Sharma, *Technical Communication,* Oxford Press 2018.
Taylor Grant: *English Conversation Practice,* Tata McGraw-Hill Education India, 2016.
Hewing's, Martin, Cambridge Academic English (B2), CUP, 2012.
J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English, (*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	19-09-23		TLM4	
2.	Self Introduction & Introducing others	03	26-09-23		TLM4	
3.	Vowels & Consonants	03	10-10-23		TLM1, TLM5	
4.	Neutralization / Accent rules	03	17-10-23		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	24-10-23		TLM4	
6.	Role Play-I(Formal and Informal)	03	31-10-23		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	7-11-23		TLM1, TLM5	

8.	Group Discussion	03+3	21-11-23 28-11-23		TLM4, TLM6	
9.	Debate	03	05-12-23 12-12-23		TLM4, TLM6	
10.	PPT & Poster Presentation	03+03	19-12-23 26-12-23		TLM2, TLM4	
11.	Mock Interviews	03	02-1-24		TLM1, TLM6	
12.	Lab Internal Exam	03	09-1-24			
No. of classes required to complete Syllabus: 42				**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
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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

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Lakshmi V R Babu Syamala
Course Name & Code : Chemistry Lab & 23FE52
L-T-P Structure : 0-0-3   Credits:1.5
Program/Sem/Sec : B.Tech./I sem/CSM-A   **A.Y. :**2023-24

Pre requisites: Nil

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

Course Outcomes: After completion of the course, the students will be able to,
CO1: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus. (Analyze)
CO2: Acquire practical knowledge related to preparation of Bakelite and nanomaterials. (Apply)
CO3: Measure the strength of acid present in Pb-Acid battery. (Apply)
CO4: Determine the cell constant and conductance of solutions. (Apply)
CO5: Analyze organic compounds by using UV-Visible and IR spectroscopy. (Apply)

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

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to Engineering chemistry lab	3	25-09-2023		TLM1		
2.	Preparation of a Bakelite	3	09-10-2023		TLM4	CO1	
3.	Determination of amount of HCl using standard Na_2CO_3 solution	3	16-10-2023		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	30-10-2023		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	06-11-2023		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	20-11-2023		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	27-11-2023		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	04-12-2023		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	11-12-2023		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	18-12-2023		TLM4	CO4	
11.	Internal Exam	3	08-01-2024		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):

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

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

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING(AUTONOMOUS)
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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodcsm@lbrce.ac.in, csmoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (AI&ML)

COURSEHANDOUT
PART-A

Name of Course Instructor   : Mr. B. Rajendra Prasad

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

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

Program/Sem/Sec   : B.Tech.–CSE-AI&ML /I Sem-A   A.Y. :2023-24

PRE-REQUISITE: Fundamentals of Mathematics.

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

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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	3	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO4	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
C05	-	-	-	-	-	-	-	2	2	2	2	2	-	-	-

1 –Low	**2** –Medium	**3–** High

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		20-09-2023	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		27-09-2023	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		04-10-2023	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		11-10-2023	DM5
5.	Week5: Exercise Programs on Branching and logical expressions	03		18-10-2023	DM5
6.	Week6: Exercise Programs on Loops, while and for loops	03		25-10-2023	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		01-11-2023	DM5
8.	Week8: Exercise Programs on2 D arrays, sorting and Strings.	03		22-11-2023	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		29-11-2023	DM5
10.	Week10:Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03		06-12-2023	DM5
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03		13-12-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		20-12-2023	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		27-12-2023	DM5
14.	Week 14: Exercise Programs on File handling.	03		10-01-2024	DM5
15.	Lab Internal	03		24-01-2024	DM5

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

PART-C

PROGRAMMEOUTCOMES(POs):

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals,andanengineeringspecializationtothesolutionofcomplexengineeringproblems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and Environmental considerations.
PO4	**Conduct investigations of complex problems**: Use research-based knowledge and Research methods including design of experiments, analysis and inter pretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex Engineering activities with an understanding of the limitations
PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
PO7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and Need for sustainable development.
PO8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individualandteamwork**:Functioneffectivelyasanindividual,andasamemberorleaderindivers eteams, and in multidisciplinary settings.
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give And receive clear instructions.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the Engineering and management principles and apply the set oone'sown work, asamember andleaderinateam,tomanageprojectsandinmultidisciplinaryenvironments.
PO12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMMESPECIFICOUTCOMES(PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software projectdevelopmentusingopen-sourceprogrammingenvironmentforthesuccessoforganization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT asper the society needs.
PSO3	Toinculcateanabilitytoanalyze,designandimplementdatabaseapplications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr.B.Rajendra Prasad**	**Dr. B. Srinivas Rao**	**Mr.A.S.R.C.Murthy**	**Dr.S.Jayaprada**
Signature				

FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
PART-A

Name of Course Instructor: ANURADHA MATTA
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : 2-0-0   **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem – CSM - 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):

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				TLM1			
2.	Introduction to the course	3 Weeks	31-08-2023 TO 16-09-2023		TLM1			
3.	Course Outcomes, Program Outcomes				TLM2			

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Human Values: Gift of Magi	02	20-09-2023& 23-09-2023		TLM1 TLM 6	CO1	T1,T2	
2.	Skimming to get main idea; Scanning for specific pieces of information	01	25-09-2023		TLM2 TLM5	CO1	T1,T2	
3.	Mechanics of Writing: Capitalization, Spelling & Punctuation	01	27-09-2023		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	Parts of Sentences & Parts of speech	01	30-09-2023		TLM2 TLM6	CO1	T1,T2	
5.	Basic Sentence Structures,	01	04-10-2023		TLM2 TLM6	CO3	T1,T2	
6.	Forming questions	01	09-10-2023		TLM2 TLM6	CO1	T1,T2	
7.	Synonyms, Antonyms	01	11-10-2023		TLM2 TLM5	CO1	T1,T2	
8.	Affixes, Root Words	01	16-10-2023		TLM2 TLM5	CO1	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
9.	Nature: The Brook by Alfred Tennyson	02	18& 25-10-2023		TLM1 TLM 6	CO2	T1,T2	
10.	Identifying Sequence of ideas, Linking ideas into a Paragraph	01	28-10-2023		TLM2 TLM5	CO2	T1,T2	
11.	Structure of Paragraph – Paragraph Writing	01	30-10-2023		TLM1 TLM6 TLM5	CO2	T1,T2	
12.	Cohesive Devices- linkers	01	01-11-2023		TLM2 TLM6	CO2	T1,T2	
13.	Use of Articles and zero article,	02	04-11-2023& 06-11-2023		TLM2 TLM6	CO2	T1,T2	
14.	Prepositions	01	08-11-2023		TLM2 TLM6	CO2	T1,T2	
15.	Homophones, Homographs, Homonyms	01	10-11-2023		TLM2 TLM5	CO2	T1,T2	
No. of classes required to complete UNIT-II: 09			**No. of classes taken:**					

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
16.	Biography: Elon Musk	02	20&22-11-2023		TLM1 TLM 6	CO3	T1,T2	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Reading and making basic inferences – recognizing and interpreting the text clues for comprehension	01	25-11-2023		TLM2 TLM5	CO3	T1,T2	
18.	Summarizing, Note-making, Paraphrasing	01	27-11-2023		TLM1 TLM6 TLM5	CO3	T1,T2	
19.	Verbs- Tenses, Subject-verb agreement	03	29-11-2023& 02&04-12-2023		TLM2 TLM6	CO3	T1,T2	
20.	Compound words, Collocations	01	6-12-2023		TLM2 TLM5	CO3	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
21.	Inspiration: The Toys of Peace- by Saki	02	11-12-2023 &13-12-2023		TLM1 TLM 6	CO4	T1,T2	
22.	Study of graphic elements in text to display complicated data	01	16-12-2023		TLM2 TLM5	CO4	T1,T2	
23.	Letter Writing : Official Letters, Resumes	01	18-12-2023		TLM1 TLM6 TLM5	CO4	T1,T2	
24.	Reporting verbs, Direct & Indirect Speech, Active & Passive voice	02	20&23-12-202		TLM2 TLM6	CO4	T1,T2	
25.	Words often confused, Jargons	01	27-12-2023		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 07						**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
26.	Motivation: The Power of Interpersonal Communication	02	30-12-2023 & 03-01-2024		TLM1 TLM 6	CO5	T1,T2	
27.	Reading Comprehension	01	06-01-2024		TLM2 TLM5	CO5	T1,T2	
28.	Structured Essays on specific topics	01	08-01-2024		TLM1 TLM6 TLM5	CO5	T1,T2	
29.	Editing Texts – Correcting Common errors	01	10-01-2024		TLM2 TLM6	CO5	T1,T2	
30.	Technical Jargon	01	13-01-2024		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 06						**No. of classes taken:**		

S. No.	Topics to be covered beyond the syllabus	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	WORD ANALOGY	1	13-01-2024		TLM2 &5	
No. of classes required to complete UNIT-V: 01				**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)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PROGRAMME OUTCOMES (POs):

PO 1	**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
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PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Anuradha M	Dr. R. Padma	Dr.A. Ramireddy	Dr. A. Ramireddy
Signature				
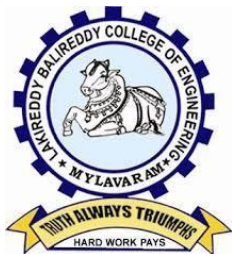
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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. V.Parvathi
Course Name & Code   :Chemistry & 23FE02
L-T-P Structure   :3-0-0   **Credits:03**
Program/Sem/Sec   : B.Tech/Isem/CSM-B   **A.Y. :**2023-24

PREREQUISITE: Nil

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

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

CO1	Understand the fundamentals of quantum mechanics and molecular orbital energydiagrams for molecules(Understand)
CO2	Summarize the suitability of advanced materials like semiconductors,superconductors, super capacitors and nano materials, in advanced fields(Understand)
CO3	Apply Nernst equation in calculating cell potentials and understand conductometric,potentiometric titrations, electrochemical sensors and compare batteries for differentapplications(Understand)
CO4	Outline the importance of polymers and conducting polymers in advancedtechnologies(Understand)
CO5	Understand the fundamentals of UV-Visible, IR spectroscopic techniques and basicprinciples of chromatographic techniques(Understand)

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

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

Textbooks:

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

Reference: Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: STRUCTURE AND BONDING MODELS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.		1	19-09-2023		TLM1	
2.		1	20-09-2023		TLM1	
3.	Bridge Course	1	21-09-2023		TLM1	
4.		1	23-09-2023		TLM1	
5.	Fundamentals Of Quantum Mechanics	1	26-09-2023		TLM1	
6.	Schrodinger Wave Equation	1	27-09-2023		TLM1	
7.	Significance of Ψ and Ψ^2	1	30-09-2023		TLM1	
8.	Practice of equations of given in 6&7	1	03-10-2023		TLM1	
9.	Particle In one dimensional box	1	04-10-2023		TLM1	
10.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules	1	05-10-2023		TLM1	
11.	Energy level diagrams of O_2 and CO	1	07-10-2023		TLM1	
12.	Calculation of Bond order	1	10-10-2023		TLM1	
13.	π-molecular orbitals of butadiene	1	11-10-2023		TLM1	
14.	π-molecular orbitals ofbenzene	1	12-10-2023		TLM1	
15	Practice of Molecular orbital diagrams		17-10-2023		TLM1	
16	Practice of Molecular orbital diagrams		18-10-2023		TLM1	
No. of classes required to complete UNIT-I: 16				No. of classes taken:		

UNIT-II: MODERN ENGINEERING MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Semiconductors - Introduction	1	25-10-2023		TLM1	
2.	Semiconductors - Basic concept&applications	1	26-10-2023		TLM1	
3.	Super conductors - Properties	1	28-10-2023		TLM1	
4.	Super conductors - Types &applications	1	31-10-2023		TLM1	
5.	Supercapacitors - Introduction	1	01-11-2023		TLM1	
6.	Supercapacitors - Basic concept-classification&applications	1	02-11-2023		TLM1	
7.	Nano materials - Introduction	1	04-11-2023		TLM2	
8.	Nano materials - classification	1	07-11-2023		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	08-11-2023		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	1	09-11-2023		TLM2	
11	Revision for mid 1	1	11-11-2023		TLM2	
No. of classes required to complete UNIT-II: 11				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	21-11-2023		TLM1	
2.	Cell potential calculations and numerical problems	1	22-11-2023		TLM1	
3.	Potentiometry-potentiometric titrations (redox titrations)	1	23-11-2023		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	25-11-2023		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors	1	28-11-2023		TLM1	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	with examples					
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	1	29-11-2023		TLM1	
7.	Fuel cells, hydrogen-oxygenfuel cell– working of the cells	1	30-11-2023		TLM1	
8.	PolymerElectrolyte Membrane Fuel cells (PEMFC)	1	02-12-2023		TLM1	
No. of classes required to complete UNIT-III: 08				No. of classes taken:		

UNIT-IV: POLYMER CHEMISTRY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to polymers, functionality of monomers	1	05-12-2023		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	06-12-2023		TLM1	
3.	Mechanisms of polymer formation	1	07-12-2023		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	12-12-2023		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	13-12-2023		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	14-12-2023		TLM1	
7.	Conducting polymers – polyacetylene and applications	1	16-12-2023		TLM1	
8.	polyaniline, – mechanism of conduction, applications.	1	19-12-2023		TLM1	
9	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	20-12-2023		TLM1	
10	Practise of preparation of polymers equations	1	21-12-2023		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	23-12-2023		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	26-12-2023		TLM1	
3.	UV-Visible Spectroscopy	1	27-12-2023		TLM1	
4.	electronic transitions	1	28-12-2023		TLM1	
5.	Instrumentation	1	30-12-2023		TLM1	
6.	IR spectroscopy , fundamental modes	1	02-01-2024		TLM1	
7.	Selection rules,	1	03-01-2024		TLM1	
8.	Instrumentation	1	04-01-2024		TLM1	
9	Chromatography-Basic Principle	1	06-01-2024		TLM1	
10	Classification-HPLC: Principle, Instrumentation and Applications	1	09-01-2024		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 in advanced technologies.	1	10-01-2024		TLM1	
2	Applications of superconductors and nanomaterials	1	11-01-2024		TLM1	
3	Technology in advanced batteries and applications of polymers.	1	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 engineeringproblems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriateconsiderationforthepublichealthandsafety,andthecultural,societal,andenviron mentalconsiderations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of theinformation to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modernengineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**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, beingable to comprehend andwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgivean dreceiveclear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of theengineeringandmanagementprinciplesandapplythesetoone'sownwork,asamemberandle aderinateam, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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

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ISO 21001 : 2018, 50001 : 2018, 14001: 2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT
Part-A

PROGRAM	**:** I B. Tech., I-Sem., CSE(AI&ML) B
ACADEMIC YEAR	**:** 2023-24
COURSE NAME & CODE	**:** Linear Algebra & Calculus
L-T-P STRUCTURE	**:** 3-0-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Dr. M.Srinivasa Reddy
COURSE COORDINATOR	**:** Dr. A. Rami Reddy
PRE-REQUISITES	**:** Basics of Matrices, Differentiation, Integration

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

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

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

CO2: Use Eigen values and Eigen vectors 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", 44ndEdition, Khanna Publishers, New Delhi, 2017.
T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

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

Part-B
COURSE DELIVERY PLAN (LESSON PLAN):

S. No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Bridge Course	7	08-09-2023 TO 15-09-2023	08-09-2023 TO 15-09-2023	TLM1			
2.	Introduction to the course	1	19-09-2023		TLM1			
3.	Course Outcomes, Program Outcomes	1	20-09-2023		TLM2			

UNIT-I: Matrices

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
4.	Introduction to Unit I, Matrices	1	21-09-2023		TLM1	CO1	T1,T2	
5.	Rank of a matrix	1	23-09-2023		TLM1	CO1	T1,T2	
6.	Echelon form	1	25-09-2023		TLM1	CO1	T1,T2	
7.	Normal form	1	26-09-2023		TLM1	CO1	T1,T2	
8.	Cauchy-Binet formulae	1	27-09-2023		TLM1	CO1	T1,T2	
9.	Inverse by Gauss-Jordan method	1	30-09-2023		TLM1	CO1	T1,T2	
10.	System of Linear Equations	1	03-10-2023		TLM1	CO1	T1,T2	
11.	Homogeneous System of Equations	1	04-10-2023		TLM1	CO1	T1,T2	
12.	Homogeneous System of Equations	1	05-10-2023		TLM1	CO1	T1,T2	
13.	Non-Homogeneous System of Equations	1	07-10-2023		TLM1	CO1	T1,T2	
14.	Gauss Elimination Method	1	09-10-2023		TLM1	CO1	T1,T2	
15.	Jacobi Iteration Method	1	10-10-2023		TLM1	CO1	T1,T2	
16.	Gauss-Seidel Method	1	11-10-2023		TLM1	CO1	T1,T2	
17.	**TUTORIAL 1**	1	12-10-2023		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	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
18.	Introduction to Unit II	1	14-10-2023		TLM1	CO2	T1,T2	
19.	Eigen values, Eigen vectors	1	16-10-2023		TLM1	CO2	T1,T2	
20.	Eigen values, Eigen vectors	1	17-10-2023		TLM1	CO2	T1,T2	
21.	Properties	1	18-10-2023		TLM1	CO2	T1,T2	
22.	Cayley-Hamilton Theorem	1	19-10-2023		TLM1	CO2	T1,T2	

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
23.	Finding Inverse and Powers of matrix	1	25-10-2023		TLM1	CO2	T1,T2	
24.	Diagonalization of a matrix	1	26-10-2023		TLM1	CO2	T1,T2	
25.	Diagonalization of a matrix	1	28-10-2023		TLM1	CO2	T1,T2	
26.	Quadratic Forms	1	30-10-2023		TLM1	CO2	T1,T2	
27.	Nature of Quadratic Forms	1	31-10-2023		TLM1	CO2	T1,T2	
28.	Reduction of Quadratic form to Canonical form	1	01-11-2023		TLM1	CO2	T1,T2	
29.	Orthogonal Transformation	1	02-11-2023		TLM1	CO2	T1,T2	
30.	**TUTORIAL 2**	1	03-11-2023		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	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
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	09-11-2023		TLM1	CO3	T1,T2	
35.	Lagrange's mean value theorem	1	11-11-2023		TLM1	CO3	T1,T2	
36.	Cauchy's mean value theorem	1	20-11-2023		TLM1	CO3	T1,T2	
37.	Cauchy's mean value theorem	1	21-11-2023		TLM1	CO3	T1,T2	
38.	Taylor's theorem with remainders	1	22-11-2023		TLM1	CO3	T1,T2	
39.	Taylor's theorem	1	23-11-2023		TLM1	CO3	T1,T2	
40.	Maclaurin's theorem with remainders	1	25-11-2023		TLM1	CO3	T1,T2	
41.	Maclaurin's theorem	1	27-11-2023		TLM1	CO3	T1,T2	
42.	Problems and applications	1	28-11-2023		TLM1	CO3	T1,T2	
43.	**TUTORIAL 3**	1	29-11-2023		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

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

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
44.	Introduction to Unit IV	1	30-11-2023		TLM1	CO4	T1,T2	
45.	Functions of several variables	1	02-12-2023		TLM1	CO4	T1,T2	

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
46.	Continuity and Differentiability	1	04-12-2023		TLM1	CO4	T1,T2	
47.	Partial Derivatives	1	05-12-2023		TLM1	CO4	T1,T2	
48.	Total derivatives	1	06-12-2023		TLM1	CO4	T1,T2	
49.	Chain rule, Directional Derivative	1	07-12-2023		TLM1	CO4	T1,T2	
50.	Taylor's Series expansion	1	9-12-2023		TLM1	CO4	T1,T2	
51.	Maclaurin's series expansion	1	11-12-2023		TLM1	CO4	T1,T2	
52.	Jacobian	1	12-12-2023		TLM1	CO4	T1,T2	
53.	Functional Dependence	1	13-12-2023		TLM1	CO4	T1,T2	
54.	Maxima and Minima	1	14-12-2023		TLM1	CO4	T1,T2	
55.	Maxima and Minima	1	16-12-2023		TLM1	CO4	T1,T2	
56.	Lagrange Multiplier Method	1	18-12-2023		TLM1	CO4	T1,T2	
57.	Lagrange Multiplier Method	1	19-12-2023		TLM1	CO4	T1,T2	
58.	**TUTORIAL 4**	1	20-12-2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		15				No. of classes taken:		

UNIT-V: Multiple Integrals (Multi variable Calculus)

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
59.	Introduction to Unit-V	1	21-12-2023		TLM1	CO5	T1,T2	
60.	Double Integrals - Cartesian coordinates	1	23-12-2023		TLM1	CO5	T1,T2	
61.	Double Integrals - Cartesian coordinates	1	26-12-2023		TLM1	CO5	T1,T2	
62.	Double Integrals- Polar co ordinates	1	27-12-2023		TLM1	CO5	T1,T2	
63.	Triple Integrals - Cartesian coordinates	1	30-12-2023		TLM1	CO5	T1,T2	
64.	Triple Integrals - Spherical coordinates	1	01-01-2024		TLM1	CO5	T1,T2	
65.	Change of order of Integration	1	02-01-2024		TLM1	CO5	T1,T2	
66.	Change of order of Integration	1	03-01-2024		TLM1	CO5	T1,T2	
67.	Change of variables	1	04-01-2024		TLM1	CO5	T1,T2	
68.	Finding area by double Integral	1	06-01-2024		TLM1	CO5	T1,T2	
69.	Finding Volume by double and triple	1	08-01-2024		TLM1	CO5	T1,T2	
70.	Revision	1	09-01-2024		TLM1	CO5	T1,T2	
71.	Revision	1	10-01-2024		TLM1	CO5	T1,T2	
72.	**TUTORIAL 5**	1	11-12-2023		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
73.	Other applications of double integral	1	13-01-2023		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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team,

PO 12	to manage projects and in multidisciplinary environments.
	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr.M.Srinivasa Reddy	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: B RAMA KRISHNA
Course Name & Code   : Basic Civil and Mechanical Engineering &23CM01
L-T-P Structure   **: 3-0-0**   **Credits:** 3
Program/Sem/Sec   : B.Tech, I SEM- CSM-B SEC   **A.Y.:** 2023-24

PREREQUISITE: NIL

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

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

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

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

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction CO's & PO's, Subject	1	19-09-2023		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	20-09-2023		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	21-09-2023		**TLM2**	
4.	Geo-technical Engineering- Transportation Engineering, Hydraulics and Water Resources Engineering	1	22-09-2023		**TLM2**	
5.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	23-09-2023		**TLM2**	
6.	Construction Materials-Cement -types	1	26-09-2023		**TLM2**	
7.	Aggregate types- Bricks-classifications, Steel-properties - types	1	27-09-2023		**TLM2**	
8.	Cement concrete- Applications	1	29-09-2023		**TLM2**	
9.	Introduction to Prefabricated construction Techniques	1	30-10-2023		**TLM2**	
10.	Revision	1	03-10-2023			
No. of classes required to complete UNIT-I: 9				**No. of classes taken:**		

UNIT-II: Surveying

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	Objectives of Surveying, Horizontal Measurements	1	04-10-2023		**TLM2**	
12.	Compass Surveying overview- Angular Measurements and Introduction to Bearings	1	05-10-2023		**TLM2**	
13.	Simple problems on bearings	1	06-10-2023		**TLM1**	
14.	Problems -practice	1	07-10-2023		**TLM1**	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Levelling introduction-	1	10-10-2023		**TLM1**	
16.	Levelling instruments used for levelling	1	11-10-2023		**TLM2**	
17.	Simple problems on levelling and bearings	1	12-10-2023		**TLM2**	
18.	problems on levelling	1	13-10-2023		**TLM2**	
19.	Problems -practice	1	14-10-2023		**TLM2**	
20.	Contour mapping	1	17-10-2023		**TLM2**	
21.	Revision	1	18-10-2023			
No. of classes required to complete UNIT-II:10				**No. of classes taken:**		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	**Transportation Engineering** Importance of Transportation in Nation's economic development	1	19-10-2023		**TLM2**	
23.	Types of Highway Pavements	1	25-10-2023		**TLM2**	
24.	Flexible Pavements - Rigid Pavements Simple Differences	1	26-10-2023		**TLM2**	
25.	Basics of Harbour, Tunnel,	1	27-10-2023		**TLM2**	
26.	Basics of Airport, and Railway Engineering	1	28-10-2023		**TLM2**	
27.	**Water Resources and Environmental Engineering** Introduction, Sources of water-	1	31-10-2023		**TLM2**	
28.	Quality of water- Specifications	1	01-11-2023		**TLM2**	
29.	Introduction to Hydrology	1	02-11-2023		**TLM2**	
30.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	03-11-2023		**TLM2**	
31.	Simple introduction to Dams and Reservoirs	1	04-11-2023		**TLM2**	
32.	Over view on importance of roads and infra	1	07-11-2023		**TLM2**	
33.	Revision	1	08-11-2023 To 10-11-2023			
34.	**Mid-1 exams**		**13-11-2023 to 18-11-2023**			
No. of classes required to complete UNIT-III:10				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Head of the Department
Name of the Faculty	B RAMA KRISHNA	B RAMA KRISHNA	Dr J Venkatewararao
Signature			

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

Department of Computer Science and Engineering (AI & ML)

COURSE HANDOUT
PART-A

Name of Course Instructor : Mr. CHIRANJEEVI RAMPILLA
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 3-0-0   Credits: 3
Program/Sem/Sec : B.Tech./CSE – AI & ML /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, 1988dition, 2015
T2: Schaum's Outline of Programming with C, Byron S Gottfried, McGraw-Hill Education, 1996

REFERENCE BOOKS:

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: Introduction to Programming and Problem Solving

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Discussion of CEO's and CO's	1	19-09-2023		TLM2	
2.	Introduction	1	19-09-2023			
3.	History of Computers	1	20-09-2023		TLM2	
4.	Basic organization of a computer: ALU, input-output units.	2	20-09-2023		TLM2	
			25-09-2023			
5.	Memory, program counter	1	26-09-2023		TLM2	
6.	Introduction to Programming Languages,	1	26-09-2023		TLM2	
7.	Basics of a Computer Program- Algorithms	1	27-09-2023		TLM2	
8.	Flowcharts (Using Dia Tool), pseudo code.	1	27-09-2023		TLM2	
9.	Introduction to Compilation and Execution	1	03-10-2023		TLM2	
10.	Primitive Data Types	2	03-10-2023		TLM2	
			04-10-2023			
11	Variables, and Constants	1	04-10-2023		TLM2	
12.	Basic Input and Output operations	1	09-10-2023			
13.	Type Conversion, and Casting	1	10-10-2023		TLM2	
14.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	10-10-2023		TLM2	
15	Problem solving strategies: Top-down approach, Bottom-up approach	1	11-10-2023		TLM2	
16	Time and space complexities of algorithms.	1	11-10-2023		TLM2	
17	Revision	1	16-10-2023		TLM2	

No. of classes required to complete UNIT – I: 19   **No. of classes taken:**

UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Simple sequential programs Conditional Statements	1	17-10-2023		TLM2	
19.	if, if-else	1	17-10-2023		TLM2	
20.	switch.	1	18-10-2023		TLM2	
21	Example programs on Decision Making and Branching	1	18-10-2023		TLM2	
22	Loops: while , Example programs	2	25-10-2023		TLM2	
			25-10-2023			
23.	do-while, for, Example programs	2	30-10-2023		TLM2	
			31-10-2023			
24.	on Loops	1	31-10-2023		TLM2	
25.	Break and Continue	1	01-11-2023		TLM2	
26	Example programs on Loops	1	01-11-2023			
27.	Example programs on Loops	1	06-11-2023		TLM2	
28.	Revision	1	07-11-2023		TLM2	

No. of classes required to complete UNIT – II: 13   **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
29.	Arrays Introduction, Declaration	1	07-11-2023		TLM2	
30.	Array indexing, Accessing elements	1	08-11-2023		TLM2	
31.	memory model	1	08-11-2023		TLM2	
32.	programs with array of integers	1	20-11-2023		TLM2	
33.	Introduction to two dimensional arrays	1	21-11-2023		TLM2	
34.	2D Array indexing, Accessing elements	1	21-11-2023		TLM2	
35.	programs with 2D arrays	1	22-11-2023		TLM2	
36.	Introduction to Strings	1	22-11-2023		TLM2	
37.	Reading and Writing Operations on Strings	1	27-11-2023		TLM2	
38.	String Handling Functions	1	28-11-2023		TLM2	
39.	Example Programs using Strings	1	28-11-2023		TLM2	
40	Example Programs using Strings	1	29-11-2023		TLM2	
41	Revision	1	29-11-2023		TLM2	

No. of classes required to complete UNIT – III: 13 **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
42.	Introduction to Pointers	1	04-12-2023		TLM2	
43.	dereferencing and address operators	1	05-12-2023		TLM2	
44.	pointer and address arithmetic	1	05-12-2023		TLM2	
45.	array manipulation using pointers	2	06-12-2023 06-12-2023		TLM2	
46	Example Programs using Pointers	1	11-12-2023		TLM2	
47	User-defined data types	1	12-12-2023		TLM2	
48.	User-defined data types	1	12-12-2023		TLM2	
49.	Structures , Definition and Initialization	2	13-12-2023 13-12-2023		TLM2	
50.	Example programs	1	18-12-2023		TLM2	
51.	Unions	2	19-12-2023 19-12-2023		TLM2	
52.	Example programs	1	20-12-2023		TLM2	
53.	Revision	1	20-12-2023		TLM2	

No. of classes required to complete UNIT – IV: 15 **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
54.	Introduction to Functions, Declaration, Definition	1	26-12-2023		TLM2	
55.	Function call Return Types	1	26-12-2023		TLM2	
56.	Arguments	1	27-12-2023		TLM2	
57.	modifying parameters inside functions using pointers	1	27-12-2023		TLM2	
58.	arrays as parameters	1	01-01-2024		TLM2	
59	Example Programs using Functions	1	02-01-2024			

60.	Scope and Lifetime of Variables	1	02-01-2024		TLM2	
61.	Introduction to Files	1	03-01-2024		TLM2	
62.	Basics of File Handling & Operations	1	03-01-2024		TLM2	
63	Revision	1	08-01-2024		TLM2	
64	Revision	1	09-01-2024		TLM2	
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
65.	Application Development using C	1	09-01-2024		TLM2	
66.	Introduction to Data Structures	1	10-01-2024		TLM2	
67	Introduction to Data Structures	1	10-01-2024		TLM2	

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

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	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	Mr. R.CHIRANJEEVI	DR. B.SRINIVASA RAO	MR.S. SIVA RAMAKRISHNA	Dr. S.JAYAPRADA
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (AI&ML)

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs.RAZEENA BEGUM
Course Name & Code : IT WORKSHOP Lab & 23IT51
L-T-P Structure : 0-0-2   **Credits: 1**
Program/Sem/Sec : B.Tech. – CSE(AI&ML)/I/C   **A.Y.:** 2023-24
PREREQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):
The objective of the course is to impart knowledge about the components of PC, Assembling PC, Installation of OS, software's like MS-Office, LaTex and concepts related to Networking, Internet as well as antivirus.

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

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

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

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

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

1 - Low   **2 –**Medium   **3 –** High

REFERENCE BOOKS:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	PC Hardware & Software Installation					
1.	Task-1	3	22-9-2023		**DM5**	
2.	Task-2	3	29-9-2023		**DM5**	
3.	Task-3	3	29-9-2023		**DM5**	
4.	Task-4	3	06-10-2023		**DM5**	
5.	Task-5	3	06-10-2023		**DM5**	
	Internet & World Wide Web					
6.	Task-1	3	13-10-2023		**DM5**	
7.	Task-2	3	13-10-2023		**DM5**	
8.	Task-3	3	27-10-2023		**DM5**	
9.	Task-4	3	27-10-2023		**DM5**	
	LaTex and WORD					
10.	Task-1	3	03-11-2023		**DM5**	
11.	Task-2	3	03-11-2023		**DM5**	
12.	Task-3	3	10-11-2023		**DM5**	
13.	Task-4	3	10-11-2023		**DM5**	
	EXCEL					
14.	Task-1	3	24-11-2023		**DM5**	

15.	Task-2	3	24-11-2023		DM5	

	LOOKUP/VLOOKUP					
16.	Task-1	3	01-12-2023		DM5	

	POWER POINT					
17.	Task-1	3	08-12-2023		DM5	
18.	Task-2	3	15-12-2023		DM5	
19.	Task-3	3	22-12-2023		DM5	

	AI TOOLS – ChatGPT					
20.	Task-1	3	29-12-2023		DM5	
21.	Task-2	3	05-01-2023		DM5	
22.	Task-3	3	05-01-2023		DM5	
23.	Internal exam	3	12-01-2024		DM5	

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

PART-C

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs.Razeena Begum	Mr.P.Nagababu	Dr. D. Venkata Subbaiah	Dr. S.Jayaprada
Signature				

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
PART-A

Name of Course Instructor: M. ANURADHA
Course Name & Code : LAB, 23FE51
L-T-P Structure : 0-0-2   **Credits:** 01
Program/Sem/Sec : B. Tech(CSM B)- I SEM
A.Y. : 2023-24

PREREQUISITE: NIL

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

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

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

COURSE ARTICULATION MATRIX
(Correlation between COs & POs)

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

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

List of Activities:

1.a. Vowels & Consonants

   b. Neutralization / Accent rules

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

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

Suggested Software:

1.   Walden Infotech
2.   Young India Films

Reference Books:

Raman Meenakshi, Sangeeta-Sharma, *Technical Communication,* Oxford Press 2018.

Taylor Grant: *English Conversation Practice,* Tata McGraw-Hill Education India, 2016.

Hewing's, Martin, Cambridge Academic English (B2), CUP, 2012.

J. Sethi & P.V. Dhamija: *A Course in Phonetics and Spoken English, (*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	25-9-2023		TLM4	
2.	Self Introduction & Introducing others	03	09-10-2023		TLM4	
3.	Vowels & Consonants	03	16-10-2023		TLM1, TLM5	
4.	Neutralization / Accent rules	03	30-10-2023		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	03	06-11-2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	20-11-2023		TLM4	
7.	e-mail Writing, Resume writing, Cover letter, SOP	03	27-11--2023		TLM1, TLM5	
8.	Group Discussion	03	04-12-2023		TLM4, TLM6	

9.	Debate	03	11-12-2023		TLM4, TLM6	
10.	PPT & Poster Presentation	03	18-12-2023		TLM2, TLM4	
11.	Mock Interviews	03	08-01-2024		TLM1, TLM6	
12.	Lab Internal Exam	03	08-01-2024			
No. of classes required to complete Syllabus:39				**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. A. Ramireddy
Signature				

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. V.Parvathi
Course Name & Code   : Chemistry Lab&23FE52
L-T-P Structure   **:0-0-3**   **Credits:1.5**
Program/Sem/Sec   : B.Tech/ Isem/CSM-B   **A.Y. :**2023-24

 Pre requisites: Nil

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

Course Outcomes: After completion of the course, the students will be able to,
CO1: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus. (Analyze)
CO2: Acquire practical knowledge related to preparation of Bakelite and nanomaterials. (Apply)
CO3: Measure the strength of acid present in Pb-Acid battery. (Apply)
CO4: Determine the cell constant and conductance of solutions. (Apply)
CO5: Analyze organic compounds by using UV-Visible and IR spectroscopy. (Apply)

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

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to Engineering chemistry lab	3	22-09-2023		TLM1		
2.	Preparation of a Bakelite	3	29-09-2023		TLM4	CO1	
3.	Determination of amount of HCl using standard Na2CO3 solution	3	06-10-2023		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	13-10-2023		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	27-10-2023		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	03-11-2023		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	10-11-2023		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	24-11-2023		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	01-12-2023		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	08-12-2023		TLM4	CO4	
11.	Wavelength measurement of sample through UV-Visible Spectroscopy	3	15-12-2023		TLM4	CO4	
12.	Identification of simple organic compounds by IR	3	22-12-2023		TLM4	CO4	
13.	Additional experiment	3	29-12-2023		TLM4	CO1	
14	Additional experiment	3	05-01-2024		TLM4	CO1	
15	Internal Exam	3	12-01-2024				

Part - C

EVALUATION PROCESS:

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

(a) _Continuous Internal Evaluation(CIE):_

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

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

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineeringsciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmentalconsiderations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and researchmethodsincludingdesignofexperiments,analysisandinterpretationofdata,

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

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

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hodcsm@lbrce.ac.in, csmoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING (AI&ML)

COURSEHANDOUT
PART-A

Name of Course Instructor   : Mr.CHIRANJEEVI RAMPILLA

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

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

Program/Sem/Sec   : B.Tech.–CSE-AI&ML /I Sem-B   A.Y. :2023-24

PRE-REQUISITE: Fundamentals of Mathematics.

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

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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	3	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
CO4	3	2	2	-	3	-	-	-	-	-	-	-	3	-	-
C05	-	-	-	-	-	-	-	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		21-09-2023	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		05-10-2023	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		12-10-2023	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		19-10-2023	DM5
5.	Week5: Exercise Programs on Branching and logical expressions	03		26-10-2023	DM5
6.	Week6: Exercise Programs on Loops, while and for loops	03		02-11-2023	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		09-11-2023	DM5
8.	Week8: Exercise Programs on2 D arrays, sorting and Strings.	03		09-11-2023	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		23-11-2023	DM5
10.	Week10:Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03		30-11-2023	DM5
11.	Week 11: Exercise Programs on Functions, call by value, scope and extent.	03		07-12-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		14-12-2023	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		21-12-2023	DM5
14.	Week 14: Exercise Programs on File handling.	03		28-12-2023	DM5
15.	Lab Internal	03		11-01-2024	DM5

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

PART-C

PROGRAMMEOUTCOMES(POs):

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals,andanengineeringspecializationtothesolutionofcomplexengineeringproblems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and Environmental considerations.
PO4	**Conduct investigations of complex problems**: Use research-based knowledge and Research methods including design of experiments, analysis and inter pretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex Engineering activities with an understanding of the limitations
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PO8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individualandteamwork**:Functioneffectivelyasanindividual,andasamemberorleaderindivers eteams, and in multidisciplinary settings.
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give And receive clear instructions.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the Engineering and management principles and apply the set oone'sown work, asamember andleaderinateam,tomanageprojectsandinmultidisciplinaryenvironments.
PO12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMMESPECIFICOUTCOMES(PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software projectdevelopmentusingopen-sourceprogrammingenvironmentforthesuccessoforganization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT asper the society needs.
PSO3	Toinculcateanabilitytoanalyze,designandimplementdatabaseapplications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. R.CHIRANJEEVI	Dr. B. SRINIVASA RAO	Mr. A.S.R.C.MURTHY	Dr. S.JAYAPRADA
Signature				