LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. B. Sreenivasa Reddy
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem ....I IT-A.....
A.Y. : 2025-26

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 / PO's →	Programme Outcomes											
	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	2 Weeks	04-08-2025 TO 16-08-2025		TLM1	CO1		
2.	Introduction to the course				TLM1	CO1		
3.	Course Outcomes, Program Outcomes				TLM2	CO1		

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	18-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	22-08-2025 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	28-08-2025 29-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	01-09-2025 04-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	02	05-09-2025 08-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	11-09-2025 12-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 12						**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

1.	**Nature: The Brook by Alfred Tennyson**	03	15-09-2025 18-09-2025 19-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	22-09-2025 25-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	01	26-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices-linkers**	01	06-10-2025		TLM2 TLM6	CO2	T1,T2	
5.	**Use of Articles and zero article, Prepositions**	03	09-10-2025 10-10-2025 13-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	02	16-10-2025 17-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 12						**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**
1.	**Biography: Elon Musk**	02	27-10-2025 30-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	31-10-2025 03-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	06-11-2025 07-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	10-11-2025 13-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	14-11-2025		TLM2 TLM5	CO3	T1,T2	
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**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
1.	**Inspiration: The Toys of Peace- by Saki**	02	17-11-2025 20-11-2025		TLM1 TLM 6	CO4	T1,T2	

2.	**Study of graphic elements in text to display complicated data**	02	21-11-2025 24-11-2025		TLM2 TLM5	CO4	T1,T2	
3.	**Letter Writing : Official Letters, Resumes**	02	27-11-2025 28-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	01-12-2025 04-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	05-12-2025		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 09						**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
1.	**Motivation: The Power of Interpersonal Communication**	01	08-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	01	11-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	01	12-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	01	15-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	18-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 05						**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**	01	19-12-2025		TLM2 &5	
2.	**One-word substitutes**	01	22-12-2025		TLM2 &5	
3.	**Technical vocabulary**	01	26-12-2025		TLM2 &5	
No. of classes required to complete UNIT-V:				**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

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	**Mr. B. Sreenivasa Reddy**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Samaikya
Course Name & Code : Communicative English & 23FE01
L-T-P Structure : **3-0-0** **Credits:** 02
Program/Sem/Sec : B. Tech, I Sem (IT-B)
A.Y. : 2025-26

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 / PO's →	Programme Outcomes											
	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	2 Weeks	04-08-2025 TO 16-08-2025		TLM1	CO1		
2.	Introduction to the course				TLM1	CO1		
3.	Course Outcomes, Program Outcomes				TLM2	CO1		

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	18-08-2025 21-08-2025		TLM1 TLM 6	CO1	T1,T2	
2.	**Skimming to get main idea; Scanning for specific pieces of information**	02	23-08-2025 25-08-2025		TLM2 TLM5	CO1	T1,T2	
3.	**Mechanics of Writing: Capitalization, Spelling, Punctuation & Parts of Sentences**	02	28-08-2025 30-08-2025		TLM1 TLM6 TLM5	CO1	T1,T2	
4.	**Parts of speech**	02	01-09-2025 04-09-2025		TLM2 TLM6	CO1	T1,T2	
5.	**Basic Sentence Structures, Forming questions**	01	06-09-2025		TLM2 TLM6	CO1	T1,T2	
6.	**Synonyms, Antonyms, Affixes, Root Words**	02	08-09-2025 11-09-2025		TLM2 TLM5	CO1	T1,T2	
No. of classes required to complete UNIT-I: 11						**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

1.	**Nature: The Brook by Alfred Tennyson**	02	13-09-2025 15-09-2025		TLM1 TLM 6	CO2	T1,T2	
2.	**Identifying Sequence of ideas, Linking ideas into a Paragraph**	02	18-09-2025 20-09-2025		TLM2 TLM5	CO2	T1,T2	
3.	**Structure of Paragraph – Paragraph Writing**	02	22-09-2025 25-09-2025		TLM1 TLM6 TLM5	CO2	T1,T2	
4.	**Cohesive Devices- linkers**	02	27-09-2025 06-10-2025		TLM2 TLM6	CO2	T1,T2	
5.	**Use of Articles and zero article, Prepositions**	01	09-10-2025		TLM2 TLM6	CO2	T1,T2	
6.	**Homophones, Homographs, Homonyms**	01	11-10-2025		TLM2 TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II: 10						**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
1.	**Biography: Elon Musk**	02	27-10-2025 30-10-2025		TLM1 TLM 6	CO3	T1,T2	
2.	**Reading and making basic inferences – recognizing and interpreting the text clues for comprehension**	02	01-11-2025 03-11-2025		TLM2 TLM5	CO3	T1,T2	
3.	**Summarizing, Note-making, Paraphrasing**	02	06-11-2025 08-11-2025		TLM1 TLM6 TLM5	CO3	T1,T2	
4.	**Verbs- Tenses, Subject-verb agreement**	02	10-11-2025 13-11-2025		TLM2 TLM6	CO3	T1,T2	
5.	**Compound words, Collocations**	01	15-11-2025		TLM2 TLM5	CO3	T1,T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Inspiration: The Toys of Peace- by Saki**	02	17-11-2025 20-11-2025		TLM1 TLM 6	CO4	T1,T2	
2.	**Study of graphic elements in text to display complicated data**	02	22-11-2025 24-11-2025		TLM2 TLM5	CO4	T1,T2	

3.	**Letter Writing : Official Letters, Resumes**	02	27-11-2025 29-11-2025		TLM1 TLM6 TLM5	CO4	T1,T2	
4.	**Reporting verbs, Direct & Indirect Speech, Active & Passive voice**	02	01-12-2025 04-12-2025		TLM2 TLM6	CO4	T1,T2	
5.	**Words often confused, Jargons**	01	06-12-2025		TLM2 TLM5	CO4	T1,T2	
No. of classes required to complete UNIT-IV: 09						**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
1.	**Motivation: The Power of Interpersonal Communication**	02	08-12-2025 11-12-2025		TLM1 TLM 6	CO5	T1,T2	
2.	**Reading Comprehension**	02	13-12-2025 15-12-2025		TLM2 TLM5	CO5	T1,T2	
3.	**Structured Essays on specific topics**	02	18-12-2025 19-12-2025		TLM1 TLM6 TLM5	CO5	T1,T2	
4.	**Editing Texts – Correcting Common errors**	02	20-12-2025 22-12-2025		TLM2 TLM6	CO5	T1,T2	
5.	**Technical Jargon**	01	27-12-2025		TLM2 TLM5	CO5	T1,T2	
No. of classes required to complete UNIT-V: 09						**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**	01	13-10-2025		TLM2 &5	
2.	**One-word substitutes**	01	16-10-2025		TLM2 &5	
3.	**Technical vocabulary**	01	18-10-2025		TLM2 &5	
No. of classes required to complete : 03				**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

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	**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	**Mrs. K. Samaikya**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Y. Subbareddy
Course Name & Code : Chemistry & 23FE02
L-T-P Structure : **3-0-0** **Credits: 03**
Program/Sem/Sec : I B.Tech./I Sem/IT-A **A.Y. :**2025-26

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, Dhanpat Rai, 2013.
2. Peter Atkins, Julio de Paula and James Keeler, Atkins' Physical Chemistry, 10/e, Oxford University Press, 2010.

Reference: Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): CSE-A

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.	Introduction to chemistry course, CO's &PO's & Bridge Course Fundamentals of Quantum Mechanics	2	18-08-2025 & 19-08-2025		TLM1	
2.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	21-08-2025		TLM1	
3.	Particle in one dimensional box	1	22-08-2025		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	25-08-2025 & 26-08-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams (CO, NO, etc.)	1	28-08-2025		TLM1	
6.	Energy level diagrams-Summary	1	29-09-2025		TLM1	
7.	π-molecular orbitals of butadiene	1	01-09-2025		TLM1	
8.	π-molecular orbitals ofbenzene	1	02-09-2025		TLM1	
9.	Calculation of Bond order	1	04-09-2025		TLM1	
10.	Revision and assignment	1	08-09-2025		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	09-09-2025		TLM1	
2.	Semiconductors - Basic concept & applications	1	11-09-2025		TLM1	
3.	Super conductors - Introduction	1	12-09-2025		TLM1	
4.	Super conductors - Basic concept & applications	1	15-09-2025		TLM1	
5.	Super capacitors - Introduction, Basic concept	1	16-09-2025		TLM1	
6.	Super capacitors - classification & applications	1	18-09-2025		TLM1	
7.	Nano materials - Introduction	1	19-09-2025		TLM2	
8.	Nano materials - classification	1	22-09-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	23-09-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	2	25-09-2025 & 26-09-2025		TLM2	
11.	Revision and assignment	2	06-10-2025 & 07-10-2025		TLM1	
No. of classes required to complete UNIT-II: 13				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	09-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	2	10-10-2025 & 13-10-2025		TLM1	
3.	Potentiometry- potentiometric titrations (redox titrations)	1	14-10-2025		TLM1	
4.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	16-10-2025		TLM1	
5.	Electrochemical sensors – potentiometric sensors with examples,	1	17-10-2025		TLM1	

	amperometric sensors with examples					
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	27-10-2025 & 28-10-2025		TLM1	
7.	Fuel cells, hydrogen-oxygen fuel cell– working of the cells	1	30-10-2025		TLM1	
8.	Polymer Electrolyte Membrane Fuel cells (PEMFC)	1	31-10-2025		TLM1	
9.	Revision and assignment	2	03-11-2025 & 04-11-2025		TLM1	
No. of classes required to complete UNIT-III: 12				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	06-11-2025		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	07-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	10-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	11-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	13-11-2025 & 14-11-2025		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	17-11-2025		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	18-11-2025		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	20-11-2025		TLM1	
9.	Revision and assignment	2	21-11-2025 & 24-11-2025		TLM1	
No. of classes required to complete UNIT-IV: 11				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	25-11-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	27-11-2025		TLM1	
3.	UV-Visible Spectroscopy	1	28-11-2025		TLM1	
4.	electronic transition, Instrumentation	2	01-12-2025		TLM1	
5.	IR spectroscopy, fundamental modes	2	02-12-2025 & 04-12-2025		TLM1	
6.	selection rules, Instrumentation	1	05-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	08-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	3	09-12-2025 & 11-12-2025 & 12-12-2025		TLM1	
9.	Revision and assignment	2	15-12-2025 & 16-12-2025		TLM1	
No. of classes required to complete UNIT-V: 13				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.	5	18, 19, 22,23 & 26-12-2025		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	**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. Y. Subbareddy**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodit@lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Sri Lakshmi
Course Name & Code :Chemistry&23FE02
L-T-P Structure :3-0-0 **Credits:03**
Program/Sem/Sec : IB.Tech./ISem/IT-B **A.Y. :**2025-26

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): IT-B

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.	Introduction to chemistry course, CO's &PO's& Bridge Course Fundamentals of Quantum Mechanics	2	19-08-2025 & 20-08-2025		TLM1	
2.	Schrodinger Wave Equation, Significance of Ψ and Ψ^2	1	21-08-2025		TLM1	
3.	Particle in one dimensional box	1	22-08-2025		TLM1	
4.	Molecular Orbital Theory – Bonding in Homonuclear diatomic molecules-Energy level diagrams (N_2 ,etc)	2	26-08-2025 & 28-08-2025		TLM1	
5.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules-Energy level diagrams(CO, NO, etc.)	2	29-08-2025 & 02-09-2025		TLM1	
6.	Energy level diagrams-Summary	1	03-09-2025		TLM1	
7.	π-molecular orbitals of butadiene	1	04-09-2025		TLM1	
8.	π-molecular orbitals ofbenzene	1	05-09-2025		TLM1	
9.	Calculation of Bondorder	1	09-09-2025		TLM1	
10.	Revision and assignment	2	10-09-2025 & 11-09-2025		TLM1	
No. of classes required to complete UNIT-I: 14				No. of classes taken:		

UNIT-II: MODERN ENGINEERING MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Semiconductors - Introduction	2	12-09-2025 & 16-09-2025		TLM1	
2.	Semiconductors - Basic concept&applications	1	17-09-2025		TLM1	
3.	Super conductors - Introduction	1	18-09-2025		TLM1	
4.	Super conductors - Basic concept&applications	2	19-09-2025 & 23-09-2025		TLM1	
5.	Supercapacitors - Introduction, Basic concept	1	24-09-2025		TLM1	
6.	Supercapacitors - classification&applications	1	25-09-2025		TLM1	
7.	Nano materials - Introduction	1	26-09-2025		TLM2	
8.	Nano materials - classification	2	07-10-2025 & 08-10-2025		TLM2	
9.	Nano materials - properties and applications of fullerenes	2	09-10-2025 & 10-10-2025		TLM2	
10.	Nano materials - carbon nanotubes and graphene nanoparticles	2	14-10-2025 & 15-10-2025		TLM2	
11.	Revision and assignment	2	16-10-2025 & 17-10-2025		TLM1	
No. of classes required to complete UNIT-II: 17				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	28-10-2025		TLM1	
2.	Cell potential calculations and numerical problems	1	29-10-2025		TLM1	
3.	Potentiometry-potentiometric titrations (redox titrations)	1	30-10-2025		TLM1	
4.	Concept of conductivity, conductivitycell,	1	31-10-2025		TLM1	

	conductometric titrations (acid-base titrations)					
5.	Electrochemical sensors – potentiometric sensors with examples, amperometric sensors with examples	1	04-11-2025		TLM1	
6.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	2	11-11-2025 & 12-11-2025		TLM1	
7.	Fuel cells, hydrogen-oxygenfuel cell– working of the cells	1	13-11-2025		TLM1	
8.	PolymerElectrolyte Membrane Fuel cells (PEMFC)	1	14-11-2025		TLM1	
9.	Revision and assignment	1	18-11-2025		TLM1	
No. of classes required to complete UNIT-III: 10				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	19-11-2025		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	20-11-2025		TLM1	
3.	Mechanisms of polymer formation	1	21-11-2025		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	25-11-2025		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	2	26-11-2025 & 27-11-2025		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	28-11-2025		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	02-12-2025		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	03-12-2025		TLM1	

9.	Revision and assignment	1	04-12-2025		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	05-12-2025		TLM1	
2.	Absorption of radiation: Beer-Lambert's law	1	09-12-2025		TLM1	
3.	UV-Visible Spectroscopy	1	10-12-2025		TLM1	
4.	electronic transition, Instrumentation	1	11-12-2025		TLM1	
5.	IR spectroscopy, fundamental modes	1	12-12-2025		TLM1	
6.	selection rules, Instrumentation	1	16-12-2025		TLM1	
7.	Chromatography-Basic Principle	1	17-12-2025		TLM1	
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	18-12-2025		TLM1	
9.	Revision and assignment	1	19-12-2025		TLM1	
No. of classes required to complete UNIT-V: 09				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	2	24-12-2025 & 26-12-2025		TLM1	

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 (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	**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	**Mrs. K. Sri Lakshmi**	**Dr.V.Parvathi**	**Dr.V.Parvathi**	**Dr.T.Satyanarayana**
Signature				

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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: 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-I-Sem., IT-A **A.Y.:** 2025-26

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	20-08-2025		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	21-08-2025		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	22-08-2025		**TLM2**	
4.	Geo-technical Engineering-Transportation Engineering	1	23-08-2025		**TLM2**	
5.	Hydraulics and Water Resources Engineering Environmental Engineering	1	28-08-2025		**TLM2**	
6.	Building Construction and Planning-	1	29-08-2025		**TLM2**	
7.	Construction Materials-Cement -types	1	30-08-2025		**TLM2**	
8.	Aggregate types- Bricks-classifications	1	03-09-2025		**TLM2**	
9.	Steel-properties - types	1	04-09-2025		**TLM2**	
10.	Cement concrete- Applications	1	06-09-2025		**TLM2**	
11.	Introduction to Prefabricated construction Techniques, Over view-Prefabricated construction	1	10-09-2025		**TLM2**	
No. of classes required to complete UNIT-I: 11				**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
1.	Objectives of Surveying, Horizontal Measurements	1	11-09-2025		**TLM2**	
2.	Angular Measurements, Compass survey	1	12-09-2025		**TLM2**	
3.	Introduction to Bearings,	1	13-09-2025		**TLM2**	
4.	Simple problems on bearings	1	17-09-2025		**TLM2**	
5.	Levelling introduction-	1	18-09-2025		**TLM2**	
6.	Practice problems	1	19-09-2025		**TLM2**	
7.	Levelling instruments used for levelling	1	24-09-2025		**TLM1**	
8.	Practice problems	1	25-09-2025		**TLM1**	
9.	Contour mapping	1	26-09-2025		**TLM2**	
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
1.	Transportation Engineering Importance of Transportation in Nation's economic development	1	27-09-2025		**TLM2**	
2.	Types of Highway Pavements	1	27-09-2025		**TLM2**	
3.	Basics of Harbour, Tunnel	1	08-10-2025		**TLM2**	
4.	Basics of Airport,	1	09-10-2025		**TLM2**	
5.	Railway Engineering	1	10-10-2025		**TLM2**	
6.	Water Resources and Environmental Engineering Introduction	1	11-10-2025		**TLM2**	
7.	Sources of water, Quality of water-Specifications	1	15-10-2025		**TLM2**	
8.	Introduction to Hydrology	1	16-10-2025		**TLM2**	
9.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	17-10-2025		**TLM2**	
10.	Simple introduction to Dams and Reservoirs	1	18-10-2025		**TLM2**	
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)	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III)	M1=15
I-Quiz Examination (Units-I, II & UNIT-III)	Q1=10
Assignment-II (Unit- IV, V & VI)	A2=5
II- Descriptive Examination (Unit- IV, V & VI)	M2=15
II-Quiz Examination (Unit- IV, V & VI)	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. Ramakrishna**	**B. Ramakrishna**	**Dr. K.V.Ramana**
Signature			

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: P. KEERTHI

Course Name & Code : Basic Civil and Mechanical Engineering & 23CM01

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

Program/Sem/Sec : B.Tech., I-I-Sem., IT-B **A.Y.:** 2025-26

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	18-08-2025		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	20-08-2025		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	21-08-2025		**TLM2**	
4.	Geo-technical Engineering-Transportation Engineering	1	23-08-2025		**TLM2**	
5.	Hydraulics and Water Resources Engineering Environmental Engineering	1	25-08-2025		**TLM2**	
6.	Building Construction and Planning-	1	28-08-2025		**TLM2**	
7.	Construction Materials-Cement -types	1	30-08-2025		**TLM2**	
8.	Aggregate types- Bricks-classifications	1	01-09-2025		**TLM2**	
9.	Steel-properties - types	1	03-09-2025		**TLM2**	
10.	Cement concrete- Applications	1	04-09-2025		**TLM2**	
11.	Introduction to Prefabricated construction Techniques, Over view-Prefabricated construction	1	06-09-2025		**TLM2**	
No. of classes required to complete UNIT-I: 11				**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
1.	Objectives of Surveying, Horizontal Measurements	1	08-09-2025		**TLM2**	
2.	Angular Measurements, Compass survey	1	10-09-2025		**TLM2**	
3.	Introduction to Bearings,	1	11-09-2025		**TLM2**	
4.	Simple problems on bearings	1	15-09-2025		**TLM2**	
5.	Levelling introduction-	1	17-09-2025		**TLM2**	
6.	Practice problems	1	18-09-2025		**TLM2**	
7.	Levelling instruments used for levelling	1	20-09-2025		**TLM1**	
8.	Practice problems	1	22-09-2025		**TLM1**	
9.	Practice problems	1	24-09-2025		**TLM2**	
10.	Contour mapping	1	25-09-2025		**TLM2**	
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
1.	Transportation Engineering Importance of Transportation in Nation's economic development	1	27-09-2025		**TLM2**	
2.	Types of Highway Pavements	1	06-09-2025		**TLM2**	
3.	Basics of Harbour, Tunnel, Airport, Railways.	1	08-10-2025		**TLM2**	
4.	Water Resources and Environmental Engineering Introduction	1	09-10-2025		**TLM2**	
5.	Sources of water, Quality of water-Specifications	1	13-10-2025		**TLM2**	
6.	Introduction to Hydrology	1	15-10-2025		**TLM2**	
7.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	16-10-2025		**TLM2**	
8.	Simple introduction to Dams and Reservoirs	1	18-10-2025		**TLM2**	
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)	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III)	M1=15
I-Quiz Examination (Units-I, II & UNIT-III)	Q1=10
Assignment-II (Unit- IV, V & VI)	A2=5
II- Descriptive Examination (Unit- IV, V & VI)	M2=15
II-Quiz Examination (Unit- IV, V & VI)	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	**P. Keerthi**	**B. Ramakrishna**	**Dr. K.V.Ramana**
Signature			

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

http://lbrce.ac.in/it/index.php, hodit@lbrce.ac.in Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Sambasivarao Ch

Course Name & Code : Introduction to Programming (23CS01)

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

Program/Sem/Sec : B.Tech. – IT / I Sem / A A.Y. : 2025-26

PRE-REQUISITE: Mathematics, Basic Computer concepts

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- 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, concept of algorithms and flowcharts	Understand –Level 2
CO2:	Understand the features of C programming language	Understand –Level 2
CO3:	Interpret the problem and develop an algorithm to solve it	Apply – Level 3
CO4:	Implement various algorithms using the C programming language.	Apply – Level 3
CO5:	Develop skills required for problem-solving and optimizing the code	Apply – Level 3

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

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

TEXTBOOKS:

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

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, Rema Theraja, 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 COs and CEOs, History of Computers	1	19-08-2025			
2.	Basic organization of a computer	1	20-08-2025			
3.	Introduction to Programming Languages	1	21-08-2025			
4.	Algorithms and Pseudo code	1	22-08-2025			
5.	Tutorial -1	1	23-08-2025			
6.	Flowcharts	1	26-08-2025			
7.	Structure of 'C' program	1	28-08-2025			
8.	Introduction to Compilation and Execution	1	29-08-2025			
9.	Tutorial -2	1	30-08-2025			
10.	Data Types	2	02-09-2025 03-09-2025			
11.	Variables and Constants	1	04-09-2025			
12.	Tutorial -3	1	06-09-2025			
13.	Operators	2	09-09-2025 10-09-2025			
14.	Basic I/O Operations	1	11-09-2025			
15.	Type Conversion and Casting	1	12-09-2025			
16.	**Problem Solving Strategies:** Top-Down Approach, Bottom-Up Approach	1	16-09-2025			
17.	Time and space complexities of Algorithms	1	17-09-2025			
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	18-09-2025			
19.	Two-way selection statements	1	19-09-2025			
20.	Tutorial -4	1	20-09-2025			
21.	Multi-way selection statements	2	23-09-2025 24-09-2025			
22.	Example programs on Decision Making and Branching	2	25-09-2025 26-09-2025			
23.	Tutorial -5	1	27-09-2025			
24.	**Loops:** while Loop with Examples	2	07-10-2025 08-10-2025			
25.	do-while Loop with Examples	2	09-10-2025 10-10-2025			
26.	for Loop with Examples	2	14-10-2025 15-10-2025			
27.	Break and Continue Statement	1	16-10-2025			
28.	Example programs	1	17-10-2025			
29.	Tutorial -5	1	18-10-2025			
No. of classes required to complete UNIT – II: 17				**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
30.	**Arrays:** Introduction to 1D-Arrays, Declaration, and Initialization	1	28-10-2025			
31.	1D-Array Indexing, Accessing Elements of 1D-Array	1	29-10-2025			
32.	Programs on 1D-Arrays	2	30-10-2025			
33.	Introduction to 2D-Arrays, Declaration, and Initialization	1	31-10-2025			
34.	Tutorial -6	1	04-11-2025			
35.	2D-Array Indexing, Accessing Elements of 2D-Array	1	05-11-2025			
36.	Programs on 2D-Arrays	2	06-11-2025 07-11-2025			
37.	Introduction to Strings	1	11-11-2025			
38.	String manipulation	1	12-11-2025			
39.	String Handling Functions	1	13-11-2025			
40.	Programs on Strings	2	14-11-2025 15-11-2025			
41.	Tutorial -7	1	18-11-2025			
No. of classes required to complete UNIT – III:15				**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.	**Pointers:** Introduction to Pointers	1	19-11-2025			
43.	Dereferencing and Address Operators	1	20-11-2025			
44.	Pointer and Address Arithmetic	2	21-11-2025 22-11-2025			
45.	Tutorial -8	1	25-11-2025			
46.	Array Manipulation using Pointers	1	26-11-2025			
47.	**User-defined Data Types:** Structure, Declaration, and Initialization	2	27-11-2025 28-11-2025			
48.	Concepts of Structures	1	29-11-2025			
49.	Tutorial -8	1	02-12-2025			
50.	Programs on Structures	1	03-12-2025			
51.	Union, Declaration, and Initialization	1	04-12-2025			
52.	Concepts of Union	1	05-12-2025			
53.	Programs on Union	1	06-12-2025			
54.	Tutorial -9	1	09-12-2025			
No. of classes required to complete UNIT – IV:15				**No. of classes taken:**		

UNIT – V: Functions & File Handling

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
55.	**Functions:** Introduction, Function Declaration and Definition	1	10-12-2025			
56.	Function Call – Return Types and Arguments	1	11-12-2025			
57.	Modifying parameters inside functions using pointers	1	12-12-2025			
58.	Arrays as parameters	1	13-12-2025			
59.	Recursion and Example	1	16-12-2025			
60.	Scope and Lifetime of Variables	1	17-12-2025			
61.	**File Handling:** Introduction to Files, Basics of File Handling	1	18-12-2025			
62.	File Operations	1	19-12-2025			
63.	Tutorial -10	1	20-12-2025			
64.	Example Programs on File Handling	2	23-12-2025 24-12-2025			
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.	Searching and sorting	1	26-12-2025			

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
Assignmenton Cycle – I(Units-I, II)	A1=5
MID – I DescriptiveExamination (Units-I, II)	M1=15
MID – I Objective /QuizExamination (Units-I, II)	Q1=10
Mid – I Total Marks: A1 + M1 + Q1	MT1 = 30
Assignment on Cycle – II(Unit-III, IV & V)	A2=5
MID – II Descriptive Examination (UNIT-III, IV & V)	M2=15
MID – II Objective / Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid – II Total Marks: A2 + M2 + Q2	MT2 = 30
ContinuousInternal Evaluation (CIE): 80% of Max (MT1, MT2) + 20% of Min (MT1, MT2)	C = 30
Semester End Examination (SEE): S	S = 70
Total Marks (T) = C + S	T = 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 engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	**Organize, Analyze and Interpret the data to extract meaningful conclusions.**
PSO2	**Design, Implement and Evaluate a computer-based system to meet desired needs.**
PSO3	**Develop IT application services with the help of different current engineering tools.**

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. Ch. Sambasivarao**	**Dr. M. Srinivasa Rao**	**Dr. K. Phaneendra**	**Dr. D. Ratna Kishore**
Signature				

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http://lbrce.ac.in/it/index.php, hodit@lbrce.ac.in Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Rajasekhar Kommaraju
Course Name & Code : Introduction to Programming (23CS01)
L-T-P Structure : 3-0-0 Credits: 3
Program/Sem/Sec : B.Tech. – IT / I Sem / B A.Y. : 2025-26

PRE-REQUISITE: Mathematics, Basic Computer concepts

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- 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, concept of algorithms and flowcharts	Understand –Level 2
CO2:	Understand the features of C programming language	Understand –Level 2
CO3:	Interpret the problem and develop an algorithm to solve it	Apply – Level 3
CO4:	Implement various algorithms using the C programming language.	Apply – Level 3
CO5:	Develop skills required for problem-solving and optimizing the code	Apply – Level 3

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

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

TEXTBOOKS:

T1: "The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice- Hall, 1988
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, Rema Theraja, 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 COs and CEOs, History of Computers	1	19-08-2025			
2.	Basic organization of a computer	1	20-08-2025			
3.	Introduction to Programming Languages	1	21-08-2025			
4.	Algorithms and Pseudo code	1	23-08-2025			
5.	Tutorial -1	1	25-08-2025			
6.	Flowcharts	1	26-08-2025			
7.	Structure of 'C' program	1	28-08-2025			
8.	Introduction to Compilation and Execution	1	30-08-2025			
9.	Tutorial -2	1	01-09-2025			
10.	Data Types	2	02-09-2025 03-09-2025			
11.	Variables and Constants	1	04-09-2025			
12.	Tutorial -3	1	06-09-2025			
13.	Operators	2	08-09-2025 09-09-2025			
14.	Basic I/O Operations	1	10-09-2025			
15.	Type Conversion and Casting	1	11-09-2025			
16.	**Problem Solving Strategies:** Top-Down Approach, Bottom-Up Approach	1	16-09-2025			
17.	Time and space complexities of Algorithms	1	17-09-2025			
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	18-09-2025			
19.	Two-way selection statements	1	20-09-2025			
20.	Tutorial -4	1	22-09-2025			
21.	Multi-way selection statements	2	23-09-2025 24-09-2025			
22.	Example programs on Decision Making and Branching	1	25-09-2025			
23.	Tutorial -5	1	27-09-2025			
24.	**Loops:** while Loop with Examples	2	06-10-2025 07-10-2025			
25.	do-while Loop with Examples	2	08-10-2025 09-10-2025			
26.	for Loop with Examples	2	11-10-2025 13-10-2025			
27.	Break and Continue Statement	1	14-10-2025			
28.	Example programs	1	15-10-2025			
29.	Tutorial -5	1	16-10-2025			
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
30.	**Arrays:** Introduction to 1D-Arrays, Declaration, and Initialization	1	27-10-2025			
31.	1D-Array Indexing, Accessing Elements of 1D-Array	1	28-10-2025			
32.	Programs on 1D-Arrays	2	29-10-2025			
33.	Introduction to 2D-Arrays, Declaration, and Initialization	1	30-10-2025			
34.	Tutorial -6	1	01-11-2025			
35.	2D-Array Indexing, Accessing Elements of 2D-Array	1	03-11-2025			
36.	Programs on 2D-Arrays	2	04-11-2025 05-11-2025			
37.	Introduction to Strings	1	06-11-2025			
38.	String manipulation	1	08-11-2025			
39.	String Handling Functions	1	10-11-2025			
40.	Programs on Strings	2	11-11-2025 12-11-2025			
41.	Tutorial -7	1	13-11-2025			
No. of classes required to complete UNIT – III:15				**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.	**Pointers:** Introduction to Pointers	1	15-11-2025			
43.	Dereferencing and Address Operators	1	17-11-2025			
44.	Pointer and Address Arithmetic	2	18-11-2025 19-11-2025			
45.	Tutorial -8	1	20-11-2025			
46.	Array Manipulation using Pointers	1	22-11-2025			
47.	**User-defined Data Types:** Structure, Declaration, and Initialization	2	24-11-2025 25-11-2025			
48.	Concepts of Structures	1	26-11-2025			
49.	Tutorial -8	1	27-11-2025			
50.	Programs on Structures	1	29-11-2025			
51.	Union, Declaration, and Initialization	1	04-12-2025			
52.	Concepts of Union	1	01-12-2025			
53.	Programs on Union	1	02-12-2025			
54.	Tutorial -9	1	03-12-2025			
No. of classes required to complete UNIT – IV:15				**No. of classes taken:**		

UNIT – V: Functions & File Handling

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
55.	**Functions:** Introduction, Function Declaration and Definition	1	04-12-2025			
56.	Function Call – Return Types and Arguments	1	06-12-2025			
57.	Modifying parameters inside functions using pointers	1	08-12-2025			
58.	Arrays as parameters	1	09-12-2025			
59.	Recursion and Example	1	10-12-2025			
60.	Scope and Lifetime of Variables	1	11-12-2025			
61.	**File Handling:** Introduction to Files, Basics of File Handling	1	13-12-2025			
62.	File Operations	1	15-12-2025			
63.	Tutorial -10	1	16-12-2025			
64.	Example Programs on File Handling	2	17-12-2025 18-12-2025			
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.	Searching and sorting	1	22-12-2025			

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
Assignmenton Cycle – I(Units-I, II)	A1=5
MID – I DescriptiveExamination (Units-I, II)	M1=15
MID – I Objective /QuizExamination (Units-I, II)	Q1=10
Mid – I Total Marks: A1 + M1 + Q1	MT1 = 30
Assignment on Cycle – II(Unit-III, IV & V)	A2=5
MID – II Descriptive Examination (UNIT-III, IV & V)	M2=15
MID – II Objective / Quiz Examination (UNIT-III, IV & V)	Q2=10
Mid – II Total Marks: A2 + M2 + Q2	MT2 = 30
ContinuousInternal Evaluation (CIE): 80% of Max (MT1, MT2) + 20% of Min (MT1, MT2)	C = 30
Semester End Examination (SEE): S	S = 70
Total Marks (T) = C + S	T = 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.
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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
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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 engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	**Organize, Analyze and Interpret the data to extract meaningful conclusions.**
PSO2	**Design, Implement and Evaluate a computer-based system to meet desired needs.**
PSO3	**Develop IT application services with the help of different current engineering tools.**

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. K Rajasekhar**	**Dr. M. Srinivasa Rao**	**Dr. K. Phaneendra**	**Dr. D. Ratna Kishore**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Geetharenuka Jalluri
Course Name & Code :IT WORKSHOP Lab &23IT51
L-T-P Structure :0-0-2 **Credits:1**
Program/Sem/Sec : B.Tech. – IT-A **A.Y.:**2025-26
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 troubleshooting the malfunctioning of PC. (Understand)
CO2	Develop presentation /documentation using Office tools and LaTeX (Apply)
CO3	Build dialogs and documents using ChatGPT. (Apply)
CO4	Improve individual / teamwork skills, communication and report writing skills with ethical values. (Apply)

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	-	-	-	-	-	-	-	-	-	3
CO3	3	-	-	-	2	-	-	-	-	-	-	-	-	-	3
CO4	-	-	-	-	-	-	-	2	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	19/08/2025		**TLM-4,5**	
2.	Task-2	3	26/08/2025		**TLM-4,5**	
3.	Task-3	3	02/09/2025		**TLM-4,5**	
4.	Task-4	3	09/09/2025		**TLM-4,5**	
5.	Task-5	3	09/09/2025		**TLM-4,5**	
Internet & World Wide Web						
6.	Task-1	3	16/09/2025		**TLM-4,5**	
7.	Task-2	3	23/09/2025		**TLM-4,5**	
8.	Task-3	3	07/10/2025		**TLM-4,5**	
9.	Task-4	3	07/10/2025		**TLM-4,5**	
LaTex and WORD						
10.	Task-1	3	14/10/2025		**TLM-4,5**	
11.	Task-2	3	28/10/2025		**TLM-4,5**	
12.	Task-3	3	04/11/2025		**TLM-4,5**	
13.	Task-4	3	04/11/2025		**TLM-4,5**	
EXCEL						
14.	Task-1	3	11/11/2025		**TLM-4,5**	
15.	Task-2	3	18/11/2025		**TLM-4,5**	
LOOKUP/VLOOKUP						
16.	Task-1	3	25/11/2025		**TLM-4,5**	
POWER POINT						
17.	Task-1	3	02/12/2025		**TLM-4,5**	
18.	Task-2	3	02/12/2025		**TLM-4,5**	
19.	Task-3	3	9/12/2025		**TLM-4,5**	
AI TOOLS – ChatGPT						
20.	Task-1	3	16/12/2025		**TLM-4,5**	

21.	Task-2	3	16/12/2025		**TLM-4,5**	
22.	Task-3	3	16/12/2025		**TLM-4,5**	
23.	Internal exam	3	23/12/2025		**TLM-4,5**	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM 4**	Demonstration (Lab/Field Visit)
TLM 2	PPT	**TLM 5**	ICT (NPTEL/Swayam Prabha/MOOCS) - 16
TLM 3	Tutorial	**TLM 6**	Group Discussion/Project

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):

PSO1	Organize, Analyze and Interpret the data to extract meaningful conclusions
PSO2	Design, Implement and Evaluate a computer-based system to meet desired needs
PSO3	Develop IT application services with the help of different current engineering tools.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	J Geetharenuka	Mr.N Srikanth	Mr.G.Rajendra	Dr D.Ratnakishore
Signature				

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodit@lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Ch. Malathi
Course Name & Code **:** IT Workshop Lab &23IT51
L-T-P Structure **:**0-0-2 **Credits:**1
Program/Sem/Sec : B.Tech - IT/I/B **A.Y.:**2025-26

PREREQUISITE **:**NIL

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

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

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

CO1	Identify the components of a PC and Assemble & disassemble the same. **(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	-	-	-	-	-
1 - Low **2** –Medium **3** –High															

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

REFERENCE BOOKS:

R1	Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
R2	The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech,2013, 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.	Peripherals of a computer	3	22-08-2025		DM5	
2.	Disassemble and Assemble the PC	3	29-08-2025		DM5	
3.	Instal MS WINDOWS Operating System	3	12-09-2025		DM5	
4.	Instal LINUX Operating System	3	19-09-2025		DM5	
5.	Instal BOSS Operating System	3	26-09-2025		DM5	
Internet & World Wide Web						
6.	Orientation & connectivity Boot Camp	3	10-10-2025		DM5	
7.	Web Browsers and Surfing the Web	3	10-10-2025		DM5	
8.	Search Engines	3	17-10-2025		DM5	
9.	Cyber Hygiene	3	17-10-2025		DM5	
LaTeX and WORD						
10.	Word orientation	3	31-10-2025		DM5	
11.	Creating a Certificate	3	31-10-2025		DM5	
12.	Creating project abstract features	3	07-11-2025		DM5	
13.	Creating News Latter	3	14-11-2025		DM5	

EXCEL						
14.	Excel orientation	3	21-11-2025		DM5	
15.	Calculating GPA	3	21-11-2025		DM5	
LOOKUP/VLOOKUP						
16.	H LOOKUP-V LOOKUP	3	28-11-2025		DM5	
POWER POINT						
17.	PPT Basics	3	05-12-2025		DM5	
18.	Interactive Presentations	3	05-12-2025		DM5	
19.	Master Layouts	3	12-12-2025		DM5	
AI TOOLS – ChatGPT						
20.	Prompt Engineering	3	12-12-2025		DM5	
21.	Creative writing	3	19-12-2025		DM5	
22.	Language Translation	3	19-12-2025		DM5	
23.	Internal exam	3	26-12-2025		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 Analyse Analog and Digital Electronic Circuits or systems and implement real time applications in the field of VLSI and Embedded Systems using relevant tools.
PSO 3	Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Dr. Ch. Malathi	Mr.N. Srikanth	Dr. D. Venkata Subbaiah	Dr. D. Ratna kishore
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. B. Sreenivasa Reddy
Course Name & Code : CE LAB, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech .....I .IT-A.....
A.Y. : 2025-26

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

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	Tentative	Actual	Teaching	HOD

		Classes Required	Date of Completion	Date of Completion	Learning Methods	Sign Weekly
1.	Introduction to syllabus	03	20-08-2025		TLM4	
2.	Vowels & Consonants	06	03-09-2025 10-09-2025		TLM1 TLM5	
3.	Neutralization	03	17-09-2025		TLM1, TLM5	
4.	Accent rules	03	24-09-2025		TLM1, TLM5	
5.	JAM-I (Short and Structured Talks) Self Introduction & Introducing others	06	08-10-2025 15-10-2025		TLM4	
6.	Role Play-I (Formal and Informal)	03	29-10-2025		TLM4	
7.	e-mail Writing,	03	12-11-2025		TLM1, TLM5	
8.	Resume writing, Cover letter, SOP	03	19-11-2025		TLM1, TLM5	
9.	Group Discussion: methods & Practice	03	26-11-2025		TLM4, TLM6	
10.	Debate: methods & Practice	03	03-12-2025		TLM4, TLM6	
11.	PPT Presentation	03	10-12-2025		TLM2, TLM4	
12.	Poster Presentation	03	17-12-2025		TLM2, TLM4	
13.	Mock Interviews	03	24-12-2025		TLM1, TLM6	
14.	Lab Internal Exam	03	24-12-2025			
No. of classes required to complete Syllabus:				**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

Laboratory Examination:

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.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. B. Sreenivasa Reddy**			**Dr. T.Satyanarayana**

Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Samaikya
Course Name & Code : Communicative English Lab, 23FE51
L-T-P Structure : **0-0-3** **Credits:** 01
Program/Sem/Sec : B. Tech (IT-B) I SEM
A.Y. : 2025-26

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. Vowels& Consonants

2. Neutralization/ Accent Rules

3. Communication Skills: JAM

4. Roleplay or Conversational Practice

5. E-mail Writing

6. Resume writing, Cover letter, SOP

7. Group Discussions - methods & Practice

8. Debates – Methods and practice

9. PPT Presentations & Poster Presentations

10. Interview Skills

Suggested Software:

1. Walden

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	19-08-2025		TLM4	
2.	Self Introduction & Introducing others	03	26-08-2025		TLM4	
3.	Vowels & Consonants	06	02-09-2025 09-09-2025		TLM1, TLM5	
4.	Neutralization / Accent rules	03	16-09-2025		TLM1, TLM5	
5.	JAM-I(Short and Structured Talks)	06	23-09-2025 07-10-2025		TLM4	
6.	Role Play-I(Formal and Informal)	06	14-10-2025 28-10-2025		TLM4	
7.	E-mail Writing, resume writing, Cover letter, SOP	06	04-11-2025 11-11-2025		TLM1, TLM5	
8.	Group Discussion	03	18-11-2025		TLM4, TLM6	
9.	Debate	03	25-11-2025		TLM4, TLM6	
10.	PPT & Poster Presentation	06	02-12-2025 09-12-2025		TLM2, TLM4	
11.	Mock Interviews	03	16-12-2025		TLM1, TLM6	
12.	Lab Internal Exam	03	23-12-2025			
No. of classes required to complete Syllabus: 51				**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

Laboratory Examination:

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.
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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	**Mrs. K. Samaikya**	**Dr. R. Padma Venkat**	**Dr. R. Padma Venkat**	**Dr. T. Satyanarayana**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Y.Subbareddy & Ms. K. Sri Lakshmi
Course Name & Code : Chemistry Lab & 23FE52
L-T-P Structure : **0-0-3** **Credits: 1.5**
Program/Sem/Sec : I B.Tech./I Sem/IT-A **A.Y. :** 2025-26

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: At the end 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: Analyze important parameters of water to check its suitability for drinking purpose and industrial applications. (**Analyze)**
CO5: Improve individual / teamwork skills, communication and report writing skills with ethical values. (**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): CSE-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 Chemistry lab, CO's, PO's	3	23-08-2025		TLM1	CO1	
2	Explanation of chemicals and glassware	3	30-08-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	06-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	20-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	27-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	11-10-2025		TLM4	CO3	
7.	Estimation of Ferrous ion by Dichrometry	3	18-10-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	01-11-2025		TLM4	CO1	
9.	Estimation of total hardeness of given water sample	3	08-11-2025		TLM4	CO4	
10.	Alkalinity of water sample	3	15-11-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	22-11-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	29-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	06-12-2025		TLM4	CO1	
14.	Additional experiment/repeat	3	13-12-2025		TLM4	CO	
15.	Additional experiment/repeat	3	20-12-2025		TLM4	CO	
16.	Internal Exam	3	27-12-2025		TLM4		
	Total	48					

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:

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.
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PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
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PO 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. Y. Subbareddy**	**Dr. V.Parvathi**	**Dr. V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

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hodit@lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. K. Sri Lakshmi & Mr. S. Vijaya dasaradha
Course Name & Code : Chemistry Lab&23FE52
L-T-P Structure :0-0-3 **Credits:1.5**
Program/Sem/Sec : I B.Tech./I Sem/Sec-B **A.Y. :**2025-26

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: At the end 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: Analyze important parameters of water to check its suitability for drinking purpose andindustrial applications. (**Analyze)**
CO5: Improve individual / teamwork skills, communication and report writing skills with ethical values. (**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): CSE-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 Chemistry lab, CO's,PO's	3	18-08-2025		TLM1	CO1	
2	Explanation of chemicals and glassware	3	25-08-2025		TLM4	CO1	
3.	Preparation of a Bakelite	3	01-09-2025		TLM4	CO2	
4.	Measuring of pH of water sample	3	08-09-2025		TLM4	CO4	
5.	Determination of amount of HCl using standard Na_2CO_3 solution	3	15-09-2025		TLM4	CO1	
6.	Determination of Strength of an acid in Pb-Acid battery	3	22-09-2025		TLM4	CO3	
7.	Estimation of Ferrous ion by Dichrometry	3	06-10-2025		TLM4	CO1	
8.	Estimation of Ferrous ion by permanganometry	3	13-10-2025		TLM4	CO1	
9.	Estimation of total hardeness of given water sample	3	27-10-2025		TLM4	CO4	
10.	Alkalinity of water sample	3	03-11-2025		TLM4	CO4	
11.	Conductometric titration of strong acid *versus* strong base	3	10-10-2025		TLM4	CO1	
12.	Conductometric titration of weak acid *versus* strong base	3	17-11-2025		TLM4	CO1	
13.	Additional experiment/repeat	3	24-11-2025		TLM4	CO1	
14.	Additional experiment/repeat	3	01-12-2025		TLM4	CO	
15.	Additional experiment/repeat	3	08-12-2025 & 15-11-2025		TLM4	CO	
16.	Internal Exam	3	22-12-2025		TLM4		
	Total						

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:

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	**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	**Mrs. K. Sri Lakshmi**	**Dr.V.Parvathi**	**Dr.V.Parvathi**	**Dr. T.Satyanarayana**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

http://lbrce.ac.in/it/index.php, hodit@lbrce.ac.in Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Sambasivarao Ch

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

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

Program/Sem/Sec : B.Tech. – IT / I Sem / A A.Y. : 2025-26

PRE-REQUISITE: Mathematics, Basic Computer Terminology

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

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

CO1:	Read, understand, and trace the execution of programs written in C language	**(Understand-L2)**
CO2:	Apply the right control structure for solving the problem	**(Apply-L3)**
CO3:	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, pointers and files in C	**(Apply-L3)**
CO4:	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	-	-	-	-	-	-	-	3	3	3
CO2	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
CO3	3	2	2	-	3	-	-	-	-	-	-	-	3	3	3
CO4	-	-	-	-	-	-	-	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.	Week – 1	06	18/08/25 25/08/25		DM5
2.	Week – 2	03	01/09/25		DM5
3.	Week – 3	03	08/09/25		DM5
4.	Week – 4	03	15/09/25		DM5
5.	Week – 5	03	22/09/25		DM5
6.	Week – 6	03	06/10/25		DM5
7.	Week – 7	03	13/10/25		DM5
8.	Week – 8	03	27/10/25		DM5
9.	Week – 9	03	03/11/25		DM5
10.	Week – 10	03	10/11/25		DM5
11.	Week – 11	03	17/11/25		DM5
12.	Week – 12	03	24/11/25		DM5
13.	Week – 13	03	01/12/25		DM5
14.	Week – 14	03	08/12/25		DM5
15.	Practice all weeks	03	15/12/25		DM4
16.	Internal Lab Exam	03	22/12/25		DM4

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

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.
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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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	**Organize, Analyze and Interpret the data to extract meaningful conclusions.**
PSO2	**Design, Implement and Evaluate a computer-based system to meet desired needs.**
PSO3	**Develop IT application services with the help of different current engineering tools.**

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. Ch. Sambasivarao**	**Dr. M. Srinivasa Rao**	**Dr. K. Phaneendra**	**Dr. D. Ratna Kishore**
Signature				

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Rajasekhar Kommaraju
Course Name & Code : Computer Programming Lab (23CS51)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech. – IT / I Sem / B A.Y. : 2025-26

PRE-REQUISITE: Mathematics, Basic Computer Terminology

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

PART-B

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		Required as per the Schedule	Taken		
1.	Week – 1	06	20/08/25 03/09/25		DM5
2.	Week – 2	03	10/09/25		DM5
3.	Week – 3	03	17/09/25		DM5
4.	Week – 4	03	24/09/25		DM5
5.	Week – 5	03	01/10/25		DM5
6.	Week – 6	03	08/10/25		DM5
7.	Week – 7	03	15/10/25		DM5
8.	Week – 8	03	29/10/25		DM5
9.	Week – 9	03	05/11/25		DM5
10.	Week – 10	03	12/11/25		DM5
11.	Week – 11	03	19/11/25		DM5
12.	Week – 12	03	26/11/25		DM5
13.	Week – 13	03	03/12/25		DM5
14.	Week – 14	03	10/12/25		DM5
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PART-C

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Name of the Faculty	**Mr. K. Rajasekhar**	**Dr. M. Srinivasa Rao**	**Dr. K. Phaneendra**	**Dr. D. Ratna Kishore**
Signature				