LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

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

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

Textbooks:

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

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

Reference Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction CO's & PO's, Subject	1	13-2-24		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	15-2-24		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	16-2-24		**TLM2**	
4.	Geo-technical- Transportation Engineering	1	17-2-24		**TLM2**	
5.	Engineering, Hydraulics and Water Resources Engineering	1	19-2-24		**TLM2**	
6.	Environmental Engineering-Scope of each discipline -	1	20-2-24		**TLM2**	
7.	Building Construction and Planning-	1	22-2-24		**TLM2**	
8.	Construction Materials-Cement -types	1	23-3-24		**TLM2**	
9.	Aggregate types- Bricks-classifications, Steel-properties - types	1	24-4-24		**TLM2**	
10.	Cement concrete- Applications	1	26-2-24		**TLM2**	
11.	Introduction to Prefabricated construction Techniques	1	27-2-24		**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
12.	Introduction Surveying	1	29-2-24		**TLM2**	
13.	Objectives of Surveying, Horizontal Measurements	1	1-3-24		**TLM2**	
14.	Compass Surveying overview- Angular Measurements and Introduction to Bearings	1	2-3-24		**TLM2**	
15.	Simple problems on bearings	1	4-3-24		**TLM1**	

16.	-Problems -practice	1	5-3-24		**TLM1**	
17.	Levelling introduction	1	7-3-24		**TLM1**	
18.	Levelling instruments used for levelling	1	11-3-24		**TLM2**	
19.	Simple problems on levelling and bearings	1	12-3-24		**TLM2**	
20.	problems on levelling	1	14-3-24		**TLM2**	
21.	Problems -practice	1	15-3-24		**TLM2**	
22.	Contour mapping	1	16-3-24		**TLM2**	
No. of classes required to complete UNIT-II:11				**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
23.	**Transportation Engineering** Importance of Transportation in Nation's economic development	1	18-3-24		**TLM2**	
24.	Types of Highway Pavements	1	19-3-24		**TLM2**	
25.	Flexible Pavements - Rigid Pavements	1	21-3-24		**TLM2**	
26.	Simple Differences	1	22-3-24		**TLM2**	
27.	Basics of Harbour, Tunnel	1	23-3-24		**TLM2**	
28.	Basics of Airport, and Railway Engineering	1	26-3-24		**TLM2**	
29.	**Water Resources and Environmental Engineering** Introduction, -	1	27-3-24		**TLM2**	
30.	Sources of water	1	28-3-24		**TLM2**	
31.	Quality of water- Specifications	1	30-3-24		**TLM2**	
32.	Introduction to Hydrology	1	1-4-24		**TLM2**	
33.	Rainwater Harvesting-Water Storage	1	2-4-24		**TLM2**	
34.	Conveyance Structures	1	4-4-24		**TLM2**	
35.	(Simple introduction to Dams and Reservoirs),	1	6-4-24		**TLM2**	
36.	**Mid-II exams**					
No. of classes required to complete UNIT-III:13				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

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**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**M.KARTHIK KUMAR**	**B.RAMAKRISHNA**	**Dr.C.Rajamallu**	**Dr.J.Venkateswara rao**
Signature				

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.VijayaDasaradha
Course Name & Code **:** Chemistry&23FE02
L-T-P Structure **:3-0-0** **Credits:03**
Program/Sem/Sec : B.Tech/I-Sem/ECE-A **A.Y. :**2023-24

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

Textbooks:

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

Reference: Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: STRUCTURE AND BONDING

MODELS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Fundamentals Of Quantum Mechanics	1	13-02-2024		TLM1	
2.	Fundamentals Of Quantum Mechanics	1	14-02-2024		TLM1	
3.	Schrodinger Wave Equation	1	15-02-2024		TLM1	
4.	Significance of Ψ and Ψ^2	1	16-02-2024		TLM2	
5.	Particle In one dimensional box	1	20-02-2024		TLM1	
6.	Molecular Orbital Theory – Bonding in Homo and Hetero nuclear Diatomic Molecules	1	21-02-2024		TLM1	
7.	Energy level diagrams of O_2 and N_2	1	22-02-2024		TLM2	
8.	Energy level diagrams of CO and NO	1	23-02-2024		TLM1	
9.	π-molecular orbitals of butadiene	1	27-02-2024		TLM1	
10.	π-molecular orbitals of benzene	1	28-02-2024		TLM1	
11.	Calculation of Bond order	1	29-02-2024		TLM2	
12.	Practice of Molecular orbital diagrams	1	01-03-2024		TLM1	
13.	Revision	1	05-03-2024		TLM1	
14.	Revision	1	06-03-2024		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	1	07-03-2024		TLM1	
2.	Semiconductors - Basic concept&applications	1	12-03-2024		TLM1	
3.	Super conductors - Introduction	1	13-03-2024		TLM2	
4.	Super conductors - Basic concept&applications	1	14-03-2024		TLM1	
5.	Supercapacitors - Introduction	1	15-03-2024		TLM1	
6.	Supercapacitors - Basic concept-classification&applications	1	19-03-2024		TLM1	
7.	Nano materials - Introduction	1	20-03-2024		TLM2	
8.	Nano materials - classification	1	21-03-2024		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	22-03-2024&26-03-24		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	1	27-03-2024&28-03-24		TLM2	
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

UNIT-III: ELECTROCHEMISTRY AND APPLICATIONS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction Electrochemical cell	1	10-04-2024		TLM1	
2.	Nernst equation derivation	1	12-04-2024		TLM1	
3.	Applications of Nernst equation.	1	16-04-2024		TLM1	
4.	Cell potential calculations and numerical problems	1	18-04-2024		TLM1	
5.	Potentiometry-potentiometric titrations (redox titrations)	1	19-04-2024		TLM1	
6.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	23-04-2024		TLM2	
7.	Electrochemical sensors – potentiometric sensors with examples,	1	24-04-2024		TLM1	

	amperometric sensors with examples					
8.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	1	25-04-2024		TLM1	
9.	Fuel cells, hydrogen-oxygenfuel cell– working of the cells	1	26-04-2024		TLM2	
10.	PolymerElectrolyte Membrane Fuel cells (PEMFC)	1	30-04-2024		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	01-05-2024		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	02-05-2024		TLM1	
3.	Mechanisms of polymer formation	1	03-05-2024		TLM2	
4.	Plastics –Thermo and Thermosetting plastics	1	07-05-2024		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	08-05-2024& 09-05-2024		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	10-05-2024& 14-05-2024		TLM2	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	15-05-2024		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	16-05-2024& 17-05-24		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	21-05-2024		TLM1	

2.	Absorption of radiation: Beer-Lambert's law	1	22-05-2024		TLM1	
3.	UV-Visible Spectroscopy	1	23-05-2024		TLM1	
4.	electronic transition, Instrumentation	1	24-05-2024		TLM1	
5.	IR spectroscopies, fundamental modes	1	28-05-2024		TLM2	
6.	selection rules, Instrumentation	1	29-05-2024		TLM1	
7.	Chromatography-Basic Principle	1	30-05-2024		TLM2	
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	31-05-2024		TLM1	
No. of classes required to complete UNIT-V: 08				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	31-05-2024		TLM1	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineeringproblems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriateconsiderationforthepublichealthandsafety,andthecultural,societal,andenviron mentalconsiderations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of 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 forsustainable 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, beingable to comprehend andwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgivean dreceiveclear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of theengineeringandmanagementprinciplesandapplythesetoone'sownwork,asamemberandle aderinateam, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., II-Sem., ECE - A
ACADEMIC YEAR : 2023-24
COURSE NAME & CODE : Differential Equations & Vector Calculus
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Dr. K.R. Kavitha
COURSE COORDINATOR : Dr. K.R. Kavitha
PRE-REQUISITES : Basics of Vectors**,** Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enlighten the learners in the concept of differential equations and multivariable calculus
- To furnish the learners with basic concepts and techniques at intermediate level to lead them into advanced level by handling various real-world applications.

COURSE OUTCOMES (COs)

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

CO1: Solve the differential equations related to various engineering fields – **L3**

CO2: Apply knowledge of partial differentiation in modeling and solving of Partial differential equations – **L3**

CO3: Interpret the physical meaning of different operators such as gradient, curl and divergence – **L3**

CO4: Evaluate the work done against a field, circulation and flux using Vector Calculus – **L3**

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

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

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

BOS APPROVED TEXT BOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 44nd Edition, Khanna Publishers, New Delhi, 2017.

T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

R1 George B. Thomas, Maurice D. Weir and Joel Hass, "*Thomas Calculus*", 14th Edition, Pearson Publishers, 2018.

R2 Dennis G. Zill and Warren S. Jones and Bartlett, "*Advanced Engineering Mathematics*",2018.

R3 Glyn James, "*Advanced Modern Engineering Mathematics*", 5th Edition, Pearson Publishers, 2018.

R4 R.K. Jain and S.R.K. Iyengar, "*Advanced Engineering Mathematics*", 5th Edition (9th reprint), Alpha Science International Ltd., 2021.

R5 B. V. Ramana, "*Higher Engineering Mathematics*", 3rd Edition McGraw Hill Education, 2017.

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.	Introduction to the course	1	12-02-2024		TLM2			
2.	Course Outcomes, Program Outcomes	1	12-02-2024		TLM2			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
3.	Introduction to UNIT I	1	13-02-2024		TLM1	CO1	T1,T2	
4.	Linear Differential equation	1	14-02-2024		TLM1	CO1	T1,T2	
5.	Bernoulli's DE	1	17-02-2024		TLM1	CO1	T1,T2	
6.	Exact DE	1	19-02-2024		TLM1	CO1	T1,T2	
7.	Exact DE	1	19-02-2024		TLM1	CO1	T1,T2	
8.	Non-exact DE Type I	1	20-02-2024		TLM1	CO1	T1,T2	
9.	Non-exact DE Type II	1	21-02-2024		TLM1	CO1	T1,T2	
10.	Non-exact DE Type III	1	24-02-2024		TLM1	CO1	T1,T2	
11.	Non-exact DE Type IV	1	26-02-2024		TLM1	CO1	T1,T2	
12.	Newton's Law of cooling	1	26-02-2024		TLM1	CO1	T1,T2	
13.	Newton's Law of cooling	1	27-02-2024		TLM1	CO1	T1,T2	
14.	Law of natural growth and decay	1	28-02-2024		TLM1	CO1	T1,T2	
15.	Law of natural growth and decay	1	02-03-2024		TLM1	CO1	T1,T2	
16.	Electrical circuits	1	04-03-2024		TLM1	CO1	T1,T2	
17.	TUTORIAL - I	1	04-03-2024		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		14			No. of classes taken:			

UNIT-II: Linear Differential equations of higher order (Constant Coefficients)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to UNIT II	1	05-03-2024		TLM1	CO1	T1,T2	
19.	Solving a homogeneous DE	1	06-03-2024		TLM1	CO1	T1,T2	
20.	Solving a homogeneous DE	1	11-03-2024		TLM1	CO1	T1,T2	
21.	Finding Particular Integral, P.I for e^{ax+b}	1	11-03-2024		TLM1	CO1	T1,T2	
22.	P.I for Cos bx, or sin bx	1	12-03-2024		TLM1	CO1	T1,T2	
23.	P.I for polynomial function	1	13-03-2024		TLM1	CO1	T1,T2	

24.	P.I for $e^{ax+b}v(x)$	1	16-03-2024		TLM1	CO1	T1,T2	
25.	P.I for $x^k v(x)$	1	18-03-2024		TLM1	CO1	T1,T2	
26.	Method of Variation of parameters	1	18-03-2024		TLM1	CO1	T1,T2	
27.	Method of Variation of parameters	1	19-03-2024		TLM1	CO1	T1,T2	
28.	Simultaneous linear equations	1	20-03-2024		TLM1	CO1	T1,T2	
29.	Simultaneous linear equations	1	23-03-2024		TLM1	CO1	T1,T2	
30.	L-C-R circuits	1	26-03-2024		TLM1	CO1	T1,T2	
31.	Simple Harmonic motion	1	27-03-2024		TLM1	CO1	T1,T2	
32.	TUTORIAL - II	1	30-03-2024		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-II		14			No. of classes taken:			

I MID EXAMINATIONS (01-04-2024 TO 06-04-2024)

UNIT-III: Partial Differential Equations

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
33.	Introduction to Unit III	1	08-04-2024		TLM1	CO2	T1,T2	
34.	Formation of PDE by elimination of arbitrary constants	1	08-04-2024		TLM1	CO2	T1,T2	
35.	Formation of PDE by elimination of arbitrary functions	1	10-04-2024		TLM1	CO2	T1,T2	
36.	Formation of PDE by elimination of arbitrary functions	1	15-04-2024		TLM1	CO2	T1,T2	
37.	Solving of PDE	1	15-04-2024		TLM1	CO2	T1,T2	
38.	Lagrange's Method	1	16-04-2024		TLM1	CO2	T1,T2	
39.	Lagrange's Method	1	20-04-2024		TLM1	CO2	T1,T2	
40.	Homogeneous Linear PDE with constant coefficients	1	22-04-2024		TLM1	CO2	T1,T2	
41.	TUTORIAL - III	1	22-04-2024		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-III		09			No. of classes taken:			

UNIT-IV: Vector Differentiation

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
42.	Introduction to UNIT IV	1	23-04-2024		TLM1	CO3	T1,T2	
43.	Vector Differentiation	1	24-04-2024		TLM1	CO3	T1,T2	
44.	Gradient	1	27-04-2024		TLM1	CO3	T1,T2	
45.	Directional Derivative	1	29-04-2024		TLM1	CO3	T1,T2	

46.	Directional Derivative	1	29-04-2024		TLM1	CO3	T1,T2	
47.	Divergence	1	30-04-2024		TLM1	CO3	T1,T2	
48.	Curl	1	01-05-2024		TLM1	CO3	T1,T2	
49.	Problems	1	04-05-2024		TLM1	CO3	T1,T2	
50.	Solenoidal fields, Irrotational fields, potential surfaces	1	06-05-2024		TLM1	CO3	T1,T2	
51.	Solenoidal fields, Irrotational fields, potential surfaces	1	06-05-2024		TLM1	CO3	T1,T2	
52.	Laplacian, second order operators	1	07-05-2024		TLM1	CO3	T1,T2	
53.	Vector Identities	1	08-05-2024		TLM1	CO3	T1,T2	
54.	Vector Identities	1	11-05-2024		TLM1	CO3	T1,T2	
55.	TUTORIAL IV	1	13-05-2024		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT-V: Vector Integration

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Introduction to Unit-V	1	13-05-2024		TLM1	CO4	T1,T2	
58.	Line Integral	1	14-05-2024		TLM1	CO4	T1,T2	
59.	Circulation	1	15-05-2024		TLM1	CO4	T1,T2	
60.	Work done	1	18-05-2024		TLM1	CO4	T1,T2	
61.	Surface Integral	1	20-05-2024		TLM1	CO4	T1,T2	
62.	Flux	1	20-05-2024		TLM1	CO4	T1,T2	
63.	Volume Integral	1	21-05-2024		TLM1	CO4	T1,T2	
64.	Green's Theorem	1	22-05-2024		TLM1	CO4	T1,T2	
65.	Green's Theorem	1	25-05-2024		TLM1	CO4	T1,T2	
66.	Stoke's Thoerem	1	27-05-2024		TLM1	CO4	T1,T2	
67.	Divergence Theorem	1	28-05-2024		TLM1	CO4	T1,T2	
68.	TUTORIAL - V	1	27-05-2024		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-V		12			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
69.	Non-homogeneous Linear PDE with constant coefficients	2	29-05-2024 01-06-2024		TLM2	CO2	T1,T2	
No. of classes		2			No. of classes taken:			
II MID EXAMINATIONS (03-06-2024 TO 08-06-2024)								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)

TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-CEVALUATION PROCESS (R23 Regulation):

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

PART-D PROGRAMME OUTCOMES (POs):

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

Dr. K.R. Kavitha	**Dr. K.R. Kavitha**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

COURSE HANDOUT

PART-A

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

PRE-REQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVE (CEO):

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

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

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

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

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

TEXTBOOKS:

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

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

REFERENCE BOOKS:

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

R2: Programming in C, ReemaThareja, Oxford, 2016, 2nd edition

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: Introduction to Programming and Problem Solving

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Discussion of CEO's and CO's	1	14-02-2024			
2.	History of Computers	1	15-02-2024			
3.	Basic organization of a computer: ALU, input-output units.	2	16-02-2024 17-02-2024			
4.	Memory, program counter	1	19-02-2024			
5.	Introduction to Programming Languages,	1	21-02-2024			
6.	Basics of a Computer Program-Algorithms	1	22-02-2024			
7.	Flowcharts (Using Dia Tool), pseudo code.	1	23-02-2024			
8.	Introduction to Compilation and Execution	1	24-02-2024			
9.	Primitive Data Types	1	26-02-2024			
10.	Variables, and Constants, Basic Input and Output operations	1	28-02-2024			
11.	Type Conversion, and Casting	1	29-02-2024			
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	01-03-2024			
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	02-03-2024			
14	Time and space complexities of algorithms.	1	04-03-2024			
No. of classes required to complete UNIT – I: 15				**No. of classes taken:**		

UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs Conditional Statements	1	06-03-2024			
16.	if, if-else	2	07-03-2024 09-03-2024			
17.	switch.	1	11-03-2024			
18.	Example programs on Decision Making and Branching	1	13-03-2024			
19.	Loops: while , Example programs	2	14-03-2024 15-03-2024			
20.	do-while, for, Example programs	2	16-03-2024 18-03-2024			
21.	on Loops	2	20-03-2024			
22.	Break and Continue	2	21-03-2024			
23.	Example programs on Loops	2	22-03-2024 23-03-2024			
24.	Revision	1	27-03-2024			
No. of classes required to complete UNIT – II: 16				**No. of classes taken:**		

UNIT – III: Arrays and Strings

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
25.	Arrays Introduction, Declaration	1	28-03-2024			
26.	Array indexing, Accessing elements	1	30-03-2024			
27.	memory model	1	08-04-2024			
28.	programs with array of integers	1	10-04-2024			
29.	Introduction to two dimensional arrays	1	12-04-2024			
30.	2D Array indexing, Accessing elements	1	15-04-2024			
31.	programs with 2D arrays	1	18-04-2024			
32.	Introduction to Strings	1	19-04-2024			
33.	Reading and Writing Operations on Strings	1	20-04-2024			
34.	String Handling Functions	1	22-04-2024			
35.	Example Programs using Strings	1	24-04-2024			
No. of classes required to complete UNIT – III: 11				**No. of classes taken:**		

UNIT – IV: Pointers & User Defined Data types

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
36.	Introduction to Pointers	1	25-04-2024			
37.	dereferencing and address operators	1	26-04-2024			
38.	pointer and address arithmetic	1	27-04-2024			
39.	array manipulation using pointers	2	29-04-2024 01-05-2024			
40.	User-defined data types	1	02-05-2024			
41.	Structures , Definition and Initialization	2	03-05-2024 04-05-2024			
42.	Example programs	1	06-05-2024			
43.	Unions	2	08-05-2024 09-05-2024			
44.	Example programs	1	10-05-2024			
45.	Revision	1	13-05-2024			
No. of classes required to complete UNIT – IV: 13				**No. of classes taken:**		

UNIT – V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Functions	1	15-05-2024			
47.	Function Declaration and Definition	1	16-05-2024			
48.	Function call Return Types	1	17-05-2024			
49.	Arguments	1	18-05-2024			
50.	modifying parameters inside functions using pointers	2	20-05-2024 22-05-2024			
51.	arrays as parameters	1	23-05-2024			
52.	Scope and Lifetime of Variables	1	24-05-2024			

53.	Introduction to Files	1	25-05-2024			
54.	Basics of File Handling	1	27-05-2024			
55.	Operations on Files	1	29-05-2024			
No. of classes required to complete UNIT – V: 11				**No. of classes taken:**		

Content Beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Application Development using C	1	30-05-2024			
57.	Introduction to Data Structures	1	31-05-2024			

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineeringproblems.
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complexengineering 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 dataand synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, andmodern 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 responsibilitiesrelevant to the professional engineering practice
PO7	**Environment and sustainability**: Understand the impact of the professional engineeringsolutions in societal and environmental contexts, and demonstrate the knowledge of, andneed for sustainable development.
PO8	**Ethics**: Apply ethical principles and commit to professional ethics andresponsibilities andnorms of the engineering practice.
PO9	**Individual and teamwork**: Function effectively as an individual, and as a member orleader in diverse teams, and in multidisciplinary settings.
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning**: Recognize the need for and have the preparation and ability to engaging independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.B.Rajendra Prasad	Dr. B. Srinivasa Rao	Mr. S. Siva Rama Krishna	Dr.Y.Amar Babu
Signature				

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DEPARTMENT OF ECE

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.G.VenkataRao, Associate Professor

Course Name & Code : NETWORK ANALYSIS - **Regulation**: R23
L-T-P Structure : 3-0-0 **Credits:** 03
Program/Sem/Sec : B. Tech. II-Sem., ECE-A Sec **A.Y.:** 2023-24

PRE REQUISITE: Fundamentals of Basic Electrical circuits.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To introduce basic laws, mesh & nodal analysis techniques for solving electrical circuits
- To impart knowledge on applying appropriate theorem for electrical circuit analysis
- To explain transient behavior of circuits in time and frequency domains
- To teach concepts of resonance • To introduce open circuit, short circuit, transmission, hybrid parameters and their inter relationship.

Course Outcomes (COs): At the end of the course, students are able to

CO1	Apply fundamental laws and theorems to compute electrical variables of DC circuits **(Apply)**
CO2	Analyze electrical networks during transients in the Laplace domain **(Apply)**
CO3	Apply fundamental laws and theorems to compute electrical variables of AC electrical circuits **(Apply)**
CO4	Analyse resonance circuits **(Analyse)**
CO5	Evaluate variables associated with magnetic circuits **(Apply)**
CO6	Compute the parameters of a two-port network **(Apply)**

Course Articulation Matrix (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	-	-	-	-	-	-	-	-	-	2	2	1	-
CO2	3	3	1	-	-	-	-	-	-	-	-	2	3	1	-
CO3	3	3	1	-	-	-	-	-	-	-	-	2	1	2	-
CO4	2	3	-	-	-	-	-	-	-	-	-	1	2	2	-
CO5	2	2	-	-	-	-	-	-	-	-	-	2	1	2	-
CO6	2	2	2	-	-	-	-	-	-	-	-	1	1	2	-

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

TEXT BOOK(S):

T1	Network Analysis – ME Van Valkenburg, Prentice Hall of India, revised 3rd Edition, 2019.
T2	Engineering Circuit Analysis by William H. Hayt, Jack Kemmerly, Jamie Phillips, Steven M. Durbin, 9 Edition 2020.
T3	Network lines and Fields by John. D. Ryder 2nd Edition, PHI

REFERENCE BOOK(S):

R1 D. Roy Choudhury, Networks and Systems, New Age International Publications, 2013.

R2 Joseph Edminister and Mahmood Nahvi, Electric Circuits, Schaum's Outline Series, 7th Edition, Tata McGraw Hill Publishing Company, New Delhi, 2017

R3 Fundamentals of Electric Circuits by Charles K. Alexander and Matthew N. O. Sadiku, McGraw-Hill Education.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to course, Course Outcomes, Introduction to UNIT-I	1	13/02/24			
2.	Types of circuit components, Types of Sources	1	14/02/24			
3.	Source Transformations	1	15/02/24			
4.	Mesh analysis	1	16/02/24			
5.	And Nodal analysis	1	17/02/24			
6.	problem solving with resistances only including dependent sources also	1	20/02/24			
7.	Principal of Duality with examples	1	21/02/24			
8.	Network Theorems: Superposition, Thevenin's Norton's theorem.	1	22/02/24			
9.	Milliman's, Reciprocity, Compensation theorem	1	23/02/24			
10.	Max Power Transfer, Tellegens theorems	1	24/02/24			
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	Transients: First order differential equations	1	28/02/24			
12.	Definition of time constants, R-L circuit, RC circuit with DC excitation, evaluating initial conditions procedure	1	29/02/24			
13.	second order differential equations, homogeneous, non-homogenous	1	01/03/24			
14.	problem-solving using R-L-C elements with DC excitation	1	02/03/24			
15.	problem-solving using R-L-C elements with AC excitation	1	05/03/24			
16.	Response as related to s-plane rotation of roots	1	06/03/24			
17.	Laplace transform: introduction, Laplace transformation,	1	12/03/24			

	basic theorems					
18.	problem solving using Laplace transform, partial fraction expansion	1	13/03/24			
19.	Heaviside's expansions	1	14/03/24			
20.	problem solving using Laplace transform	1	15/03/24			
21.	Problems	1	16/03/24			
No. of classes required to complete UNIT-II: 11				**No. of classes taken:**		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Steady State Analysis of A.C Circuits: Impedance concept, phase angle	1	19/03/24			
23.	series R-L, R-C, R-L-C circuits problem solving	1	20/03/24			
24.	series R-L, R-C, R-LC circuits problem solving	1	21/03/24			
25.	series R-L, R-C, R-L-C circuits problem solving	1	22/03/24			
26.	Complex impedance and phasor notation for R-L, R-C, R-L-C problem solving using mesh and nodal analysis	1	23/03/24			
27.	Complex impedance and phasor notation for R-L, R-C, R-L-C problem solving using mesh and nodal analysis	1	26/03/24			
28.	Star-Delta conversion	1	27/03/24			
29.	problem solving using Laplace transforms also	1	28/03/24			
30.	problem solving using Laplace transforms also	1	29/03/24			
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
31.	Resonance: Introduction, Definition of Q	1	09/04/24			
32.	Series resonance, Bandwidth of series resonance	1	10/04/24			
33.	Parallel resonance	1	11/04/24			
34.	General case-resistance present in both branches, anti-resonance at all frequencies.	1	12/04/24			
35.	Coupled Circuits: Self-inductance, Mutual inductance	1	16/04/24			
36.	Coefficient of coupling, analysis of coupled circuits,	1	17/04/24			
37.	Natural current, Dot rule of coupled circuits,	1	18/04/24			

38.	conductively coupled equivalent circuits- problem solving	1	19/04/24			
39.	problems	1	20/04/24			
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	HOD Sign Weekly
40.	Two-port Networks: Relationship of two port networks	1	23/04/24			
41.	Z-parameters, Y-parameters	1	24/04/24			
42.	Transmission line parameters, h- parameters	1	25/04/24			
43.	Relationships Between parameter Sets	1	26/04/24			
44.	Parallel & series connection of two port networks, cascading of two port networks	1	27/04/24			
45.	problem solving using dependent sources also	1	01/05/24			
46.	Image and iterative impedances	1	02/05/24			
47.	Image and iterative transfer constants	1	03/05/24			
48.	Insertion loss. Attenuators and pads	1	04/05/24			
49.	Lattice network and its parameters. Impedance matching networks	1	05/05/24			
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
53.	Applications of Network theorems	2			TLM1	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

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

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Date:

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING(AUTONOMOUS)
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An ISO 21001:2018,14001:2015,50001:2018 Certified Institution
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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
hodcsm@lbrce.ac.in, csmoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-222931
DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING (AI&ML)

COURSEHANDOUT

PART-A

NameofCourseInstructor :Dr. B. Rajendra Prasad

CourseName&Code : Computer Programming Lab (20CS51)

L-T-PStructure : 0-0-3 Credits:1.5

Program/Sem/Sec : B.Tech.–ECE/II-Sem-A A.Y. :2023-24

PRE-REQUISITE: Fundamentals of Mathematics.

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

COURSEOUTCOMES(COs): Attheendofthecourse,thestudentwillbeable to:

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

COURSEARTICULATIONMATRIX(CorrelationbetweenCOs,POs&PSOs):

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

1 –Low **2 –**Medium **3–** High

PART-B

COURSEDELIVERYPLAN (LESSONPLAN):

S. No.	Programstobecovered	No.ofClasses		Date ofCompletion	Delivery Method
		Required as per theSchedule	Taken		
1.	Week1: Familiarization with programming environment	03		13-02-2024	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		20-02-2024	DM5
3.	Week3:Exercise Programs on Variable types and type conversions	03		27-02-2024	DM5
4.	Week4:Exercise Programs on Operators and the precedence and as associativity.	03		05-03-2024	DM5
5.	Week5:Exercise Programs on Branching and logical expressions	03		12-03-2024	DM5
6.	Week6:Exercise Programs on Loops, while and for loops	03		19-03-2024	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		26-03-2024	DM5
8.	Week8:ExerciseProgramson2 D arrays, sorting and Strings.	03		16-04-2024	DM5
9.	Week9: ExerciseProgramsonPointers, structures and dynamic memory allocation	03		23-04-2024	DM5
10.	Week10:ExerciseProgramson Bit fields, Self-Referential Structures, Linked lists	03		30-04-2024	DM5
11.	Week 11:ExerciseProgramson Functions, call by value, scope and extent.	03		07-05-2023	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		14-05-2024	DM5
13.	Week 13: Exercise Programs on Call by reference, dangling pointers	03		21-05-2024	DM5
14.	Week 14: Exercise Programs on File handling.	03		28-05-2024	DM5
15.	Lab Internal	03		04-06-2024	DM5

Delivery Methods			
DM1	ChalkandTalk	**DM4**	Assignment/Test/Quiz
DM2	ICTTools	**DM5**	Laboratory/Field Visit
DM3	Tutorial	**DM6**	Web-based Learning

PART-C

PROGRAMMEOUTCOMES(POs):

PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals,andanengineeringspecializationtothesolutionofcomplexengineeringproblems.
PO2	**Problem analysis**: Identify,formulate,reviewresearchliterature,andanalyzecomplexengineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesof mathematics,naturalsciences,andengineeringsciences.
PO3	**Design/development of solutions**: Design solutions for complex engineering problemsanddesignsystemcomponentsorprocessesthatmeetthespecifiedneedswithappropriate considerationforthepublichealthandsafety, and the cultural,societal and Environmentalconsiderations.
PO4	**Conduct investigations of complex problems**: Use research-basedknowledgeand Researchmethodsincludingdesignofexperiments,analysisandinterpretationofdata,andsynthesis of the informationtoprovide validconclusions.
PO5	**Modern tool usage**: Create,select,andapplyappropriatetechniques,resources,andmodernengineeringandITtoolsincludingpredictionandmodellingtocomplex Engineeringactivitieswithanunderstandingofthelimitations
PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilitiesrelevanttothe professional engineeringpractice
PO7	**Environmentandsustainability**:Understandtheimpactoftheprofessionalengineeringsolutionsinsocietalandenvironmentalcontexts,anddemonstratetheknowledgeof,and Needforsustainabledevelopment.
PO8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities andnorms of theengineeringpractice.
PO9	**Individualandteamwork**:Functioneffectivelyasanindividual,andasamemberorleaderindiverse teams, andinmultidisciplinarysettings.
PO10	**Communication**:Communicateeffectivelyoncomplexengineeringactivitieswiththeengineering community and with society at large, such as, being able to comprehend andwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgive Andreceiveclearinstructions.
PO11	**Projectmanagementandfinance**:Demonstrateknowledgeandunderstandingofthe Engineeringandmanagementprinciplesandapplythesetoone'sown work, asamember andleaderinateam,tomanageprojectsandinmultidisciplinaryenvironments.
PO12	**Life-long learning**: Recognize the need for and have the preparation and ability to engageinindependentandlife-long learning inthebroadestcontextof technologicalchange.

PROGRAMMESPECIFICOUTCOMES(PSOs):

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

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.VijayaDasaradha
Course Name & Code **:** Chemistry Lab&23FE52
L-T-P Structure **:0-0-3** **Credits:1.5**
Program/Sem/Sec : B.Tech/I-sem/ECE-A **A.Y. :**2023-24

Pre requisites: Nil

Course Educational Objective:

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

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

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

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

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to Engineering chemistry lab	3	15-02-2024		TLM1		
2.	Preparation of a Bakelite	3	22-02-2024		TLM4	CO1	
3.	Determination of amount of HCl using standard Na_2CO_3 solution	3	29-02-2024		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	07-03-2024		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	14-03-2024		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	21-03-2024		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	28-03-2024		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	18-04-2024		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	25-04-2024		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	02-05-2024		TLM4	CO4	
11.	Wavelength measurement of sample through UV-Visible Spectroscopy	3	09-05-2024		TLM4	CO4	
12.	Identification of simple organic compounds by IR	3	16-05-2024		TLM4	CO4	
13.	Revision	3	23-05-2024		TLM4	CO4	
14	Internal Exam	3	30-05-2024		TLM4	CO4	
	Total						

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

Part - C

EVALUATION PROCESS:

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

(a) Continuous Internal Evaluation(CIE):

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

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

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

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

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

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

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L B Reddy Nagar, Mylavaram-521 230, NTR District, Andhra Pradesh.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. G.Venkata Rao

Course Name & Code : Network Analysis and Simulation Laboratory– 23EC51

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

Program/Sem/Sec : B.Tech., ECE., II-Sem., Section- A A.Y : 2023-24

PRE-REQUISITE: Basic Electrical Engineering Concepts

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To gain hands on experience in verifying Kirchoff's laws and network theorems
- To analyze transient behavior of circuits
- To study resonance characteristics
- To determine 2-port network parameters

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO1	Demonstrate fundamental circuit laws, network theorems, node and mesh analysis of electrical circuits **(Apply)**
CO2	Design resonance circuit for given specifications **(Analyze)**
CO3	Measure time constants of RL & RC circuits **(Apply)**
CO4	Analyze the 1st and 2nd order circuits with respect to parameter variation **(Analyze)**
CO5	Characterize and model the network in terms of all network parameters **(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	2	2	-	1	2	-	-	-	-	2	1	2	2	1	-
CO2	2	2	-	1	2	-	-	-	-	2	2	2	3	1	-
CO3	2	2	-	1	1	-	-	-	-	2	1	2	1	2	-
CO4	2	3	-	1	2	-	-	-	-	2	1	2	2	2	-
CO5	2	2	-	1	2	-	-	-	-	2	2	2	1	2	-

Correlation Levels: **1**-Slight (Low), **2**-Moderate (Medium), **3**-Substantial (High) and No correlation: **'-'**

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section – C

Expt. No	Experiment/s	COs	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
--	Introduction to NA Lab experiments, COs, POs and PSOs	--	3	19-02-24		TLM1	
Cycle – I							
1	Experiment – 1	CO1,CO4	3	26-02-24		TLM4	
2	Experiment – 2	CO1,CO4	3	04-03-24		TLM4	
3	Experiment – 3	CO1,CO4	3	11-03-24		TLM4	
4	Experiment – 4	CO1,CO4	3	18-03-24		TLM4	
5	Experiment – 5	CO1,CO4	3	25-03-24		TLM4	
6	Experiment – 6	CO2,CO4	3	01-04-24		TLM4	
Cycle – II							
7	Experiment – 7	CO1,CO4	3	08-04-24		TLM4	
8	Experiment – 8	CO1,CO4	3	15-04-24		TLM4	
9	Experiment – 9	CO2,CO4	3	29-04-24		TLM4	
10	Experiment – 10	CO3,CO4	3	06-05-24		TLM4	
11	Experiment – 11	CO3,CO4	3	13-05-24		TLM4	
12	Experiment – 12	CO3,CO4	3	20-05-24		TLM4	
13	Experiment beyond the syllabus		3	27-05-24		TLM4	
--	Internal Examination	--	3	03-06-24			

Experiments to be conducted:

Exp. No	CYCLE-1	Exp. No	CYCLE-2
1	Study of components of a circuit and Verification of KCL and KVL	7	To study the transient and steady state response of a 2nd order circuit by varying its various parameters and studying their effects on responses
2	Verification of mesh and nodal analysis for AC circuits	8	Find the Q Factor and Bandwidth of a Series and Parallel Resonance circuit
3	Verification of Superposition, Thevenin's & Norton theorems for AC circuits	9	Determination of open circuit (Z) and short circuit (Y) parameters
4	Verification of maximum power transfer theorem for AC circuits	10	Determination of hybrid (H) and transmission (ABCD) parameters
5	Study of DC transients in RL, RC and RLC circuits	11	Determination of hybrid (H) and transmission (ABCD) parameters
6	To study frequency response of various 1st order RL & RC networks	12	To measure two port parameters of a twin-T network and study its frequency response.

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:

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work = **A**	1,2,3,4,5,6,7,8…	A = 10
Record = **B**	1,2,3,4,5,6,7,8…	B = 05
Internal Test = **C**	1,2,3,4,5,6,7,8…	C = 15
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8…	**30**
Semester End Examinations = D	1,2,3,4,5,6,7,8…	**70**
Total Marks: A + B + C + D = 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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

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

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

Textbooks:

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

Reference: Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: STRUCTURE AND BONDING MODELS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Bridge Course	1	13 -02-2024		TLM1	
2.		1	14-02-2024		TLM1	
3.		1	16-02-2024		TLM1	
4.	Fundamentals Of Quantum Mechanics	1	19-02-2024		TLM1	
5.	Fundamentals Of Quantum Mechanics	1	20-02-2024		TLM1	
6.	Schrodinger Wave Equation & Significance of Ψ and Ψ^2	1	21-02-2024		TLM1	
7.	Particle In one dimensional box	1	23-02-2024		TLM1	
8.	Molecular Orbital Theory – Bonding in Homo- and Heteronuclear Diatomic Molecules	1	26-02-2024		TLM1	
9.	Practice of examples	1	27-02-2024		TLM1	
10.	Practice of examples	1	28-02-2024		TLM1	
11	Practice of examples	1	01-03-2024		TLM1	
12	Energy level diagrams of O_2 and CO	1	04-03-2024		TLM1	
13	π-molecular orbitals of butadiene	1	05-03-2024		TLM1	
14	π-molecular orbitals of benzene	1	07-03-2024		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	1	11-03-2024		TLM1	
2.	Semiconductors - Basic concept&applications	1	12-03-2024		TLM1	
3.	Super conductors - Introduction	1	13-03-2024		TLM1	
4.	Super conductors - Basic concept&applications	1	15-03-2024		TLM1	
5.	Supercapacitors - Introduction	1	18-03-2024		TLM1	
6.	Supercapacitors - Basic concept-classification&applications	1	19-03-2024		TLM1	
7.	Nano materials - Introduction	1	20-03-2024		TLM2	
8.	Nano materials - classification	1	22-03-2024		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	26-03-2024		TLM2	
10	Nano materials - carbon nano tubes and graphene nanoparticles	1	27-03-2024			
No. of classes required to complete UNIT-II: 10				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.	Mid I Analysis	1	08-04-2024		TLM2	
2.	Electrochemical cell, Nernst equation.	1	10-04-2024		TLM1	
3.	Cell potential calculations and numerical problems	1	12-04-2024		TLM1	
4.	Continue...numerical problems.	1	15-04-2024		TLM1	
5.	Potentiometry-potentiometric titrations (redox titrations)	1	16-04-2024		TLM1	
6.	Concept of conductivity, conductivitycell,conductometric titrations (acid-base titrations)	1	19-04-2024		TLM1	
7.	Electrochemical sensors – potentiometric sensors with examples,	1	22-04-2024		TLM1	

	amperometric sensors with examples						
8.	Primary cells – Zinc-air battery, Secondary cells – - working of the batteries including cell reactions	1	23-04-2024		TLM1		
9	lithium-ion batteries working of the batteries including cell reactions	1	24-04-2024		TLM1		
10	Fuel cells, hydrogen-oxygen fuel cell– working of the cells	1	26-04-2024		TLM1		
11	Polymer electrolyte membrane fuel cells (PEMFC)	1	29-04-2024		TLM1		
No. of classes required to complete UNIT-III: 11				No. of classes taken:			

UNIT-IV: POLYMER CHEMISTRY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to polymers, functionality of monomers	1	30-04-2024		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	01-05-2024		TLM1	
3.	Mechanisms of polymer formation	1	03-04-2024		TLM1	
4.	Plastics –Thermo and Thermosetting plastics	1	06-04-2024		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	07-04-2024		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	08-04-2024		TLM1	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	10-04-2024		TLM1	
8.	Contd conducting polymers.	1	13-04-2024		TLM1	
9	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	14-04-2024		TLM1	

No. of classes required to complete UNIT-IV: 9				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	15-05-2024		TLM2	
2.	Absorption of radiation: Beer-Lambert's law	1	17-05-2024		TLM2	
3.	UV-Visible Spectroscopy	1	20-05-2024		TLM2	
4.	electronic transition, Instrumentation	1	21-05-2024		TLM2	
5.	IR spectroscopies, fundamental modes	1	22-05-2024		TLM2	
6.	selection rules, Instrumentation	1	24-05-2024		TLM2	
7.	Chromatography-Basic Principle	1	27-05-2024		TLM2	
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	28-05-2024		TLM2	
No. of classes required to complete UNIT-V: 8				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	29-05-2024		TLM2	
2	Applications of polymers in advanced technologies .	1	31-05-2024		TLM2	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineeringproblems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriateconsiderationforthepublichealthandsafety,andthecultural,societal,andenviron mentalconsiderations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of theinformation to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modernengineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
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PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, beingable to comprehend andwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgivean dreceiveclear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of theengineeringandmanagementprinciplesandapplythesetoone'sownwork,asamemberandle aderinateam, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

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

Pre requisites: Nil

Course Educational Objective:

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

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

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

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

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	HOD Sign Weekly
1.	Introduction to Engineering chemistry lab	3	16-02-2024		TLM1		
2.	Demonstration of volumetric analysis	**3**	23-02-2024		TLM4	CO1	
3.	Preparation of a Bakelite	3	23-02-2024		TLM4	CO2	
4.	Determination of amount of HCl using standard Na2CO3 solution	3	15-03-2024		TLM4	CO1	
5.	Determination of Strength of an acid in Pb-Acid battery	3	22-03-2024		TLM4	CO3	
6.	Estimation of Ferrous Iron by Dichrometry	3	12-04-2024		TLM4	CO1	
7.	Conductometric titration of strong acid vs. strong base	3	19-04-2024		TLM4	CO4	
8.	Conductometric titration of weak acid vs. strong base	3	26-04-2024		TLM4	CO4	
9	Determination of alkalinity And conc of individual ions	3	03-05-2024		TLM4	CO1	
10.	Estimation of Ferrous Iron by permanganometry	3	10-05-2024		TLM4	CO1	
11.	Estimation of total hardness of water by EDTA method	3	17-05-2024		TLM4	CO2	
12.	Measurement of pH//Revision/ Experiment for absentees for regular lab.	3	24-05-2024		TLM4	CO4	
13	Internal Exam	3	31-05-2024				

Part - C

EVALUATION PROCESS:

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

(a) Continuous Internal Evaluation(CIE):

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

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

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

and synthesis of the information to provide valid conclusions.

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

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., CSE-D
ACADEMIC YEAR	**:** 2023-24
COURSE NAME & CODE	**:** Differential Equations & Vector Calculus
L-T-P STRUCTURE	**:** 3-0-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** G.VIJAYA LAKSHMI
COURSE COORDINATOR	**:** Dr. K.R.Kavitha
PRE-REQUISITES	**:** Basics of Vectors**,** Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enlighten the learners in the concept of differential equations and multivariable calculus
- To furnish the learners with basic concepts and techniques at intermediate level to lead them into advanced level by handling various real-world applications.

COURSE OUTCOMES (COs)

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

CO1: Solve the differential equations related to various engineering fields – **L3**

CO2: Apply knowledge of partial differentiation in modeling and solving of Partial differential equations – **L3**

CO3: Interpret the physical meaning of different operators such as gradient, curl and divergence – **L3**

CO4: Evaluate the work done against a field, circulation and flux using Vector Calculus – **L3**

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

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

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

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

BOS APPROVED TEXT BOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 44nd Edition, Khanna Publishers, New Delhi, 2017.

T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

R1 George B. Thomas, Maurice D. Weir and Joel Hass, "*Thomas Calculus*", 14th Edition, Pearson Publishers, 2018.

R2 Dennis G. Zill and Warren S. Jones and Bartlett, "*Advanced Engineering Mathematics*",2018.

R3 Glyn James, "*Advanced Modern Engineering Mathematics*", 5th Edition, Pearson Publishers, 2018.

R4 R.K. Jain and S.R.K. Iyengar, "*Advanced Engineering Mathematics*", 5th Edition (9th reprint), Alpha Science International Ltd., 2021.

R5 B. V. Ramana, "*Higher Engineering Mathematics*", 3rd Edition McGraw Hill Education, 2017.

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.	Introduction to the course	1	12-02-2024		TLM2			
2.	Course Outcomes, Program Outcomes	1	13-02-2024		TLM2			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
3.	Introduction to UNIT I	1	14-02-2024		TLM1	CO1	T1,T2	
4.	Linear Differential equation	1	15-02-2024		TLM1	CO1	T1,T2	
5.	Bernoulli's DE	1	17-02-2024		TLM1	CO1	T1,T2	
6.	Exact DE	1	19-02-2024		TLM1	CO1	T1,T2	
7.	Exact DE	1	20-02-2024		TLM1	CO1	T1,T2	
8.	Non-exact DE Type I	1	21-02-2024		TLM1	CO1	T1,T2	
9.	Non-exact DE Type II	1	22-02-2024		TLM1	CO1	T1,T2	
10.	Non-exact DE Type III	1	24-02-2024		TLM1	CO1	T1,T2	
11.	Non-exact DE Type IV	1	26-02-2024		TLM1	CO1	T1,T2	
12.	Newton's Law of cooling	1	27-02-2024		TLM1	CO1	T1,T2	
13.	Newton's Law of cooling	1	28-02-2024		TLM1	CO1	T1,T2	
14.	Law of natural growth and decay	1	29-02-2024		TLM1	CO1	T1,T2	
15.	Law of natural growth and decay	1	02-03-2024		TLM1	CO1	T1,T2	
16.	Electrical circuits	1	04-03-2024		TLM1	CO1	T1,T2	
17.	TUTORIAL - I	1	05-03-2024		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		15			No. of classes taken:			

UNIT-II: Linear Differential equations of higher order (Constant Coefficients)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to UNIT II	1	06-03-2024		TLM1	CO1	T1,T2	
19.	Solving a homogeneous DE	1	07-03-2024		TLM1	CO1	T1,T2	
20.	Solving a homogeneous DE	1	11-03-2024		TLM1	CO1	T1,T2	
21.	Finding Particular Integral, P.I for e^{ax+b}	1	12-03-2024		TLM1	CO1	T1,T2	
22.	P.I for Cos bx, or sin bx	1	13-03-2024		TLM1	CO1	T1,T2	
23.	P.I for polynomial function	1	14-03-2024		TLM1	CO1	T1,T2	

24.	P.I for $e^{ax+b}v(x)$	1	16-03-2024		TLM1	CO1	T1,T2	
25.	P.I for $x^k v(x)$	1	18-03-2024		TLM1	CO1	T1,T2	
26.	Method of Variation of parameters	1	19-03-2024		TLM1	CO1	T1,T2	
27.	Method of Variation of parameters	1	20-03-2024		TLM1	CO1	T1,T2	
28.	Simultaneous linear equations	1	21-03-2024		TLM1	CO1	T1,T2	
29.	Simultaneous linear equations	1	23-03-2024		TLM1	CO1	T1,T2	
30.	L-C-R circuits	1	26-03-2024		TLM1	CO1	T1,T2	
31.	TUTORIAL - II	1	27-03-2024		TLM3	CO1	T1,T2	
32.	Simple Harmonic motion	1	28-03-2024		TLM1	CO1	T1,T2	
33.	Revision	1	30-03-2024		TLM1	CO1		
No. of classes required to complete UNIT-II		14			No. of classes taken:			

I MID EXAMINATIONS (01-04-2024 TO 06-04-2024)

UNIT-III: Partial Differential Equations

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
34.	Introduction to Unit III	1	08-04-2024		TLM1	CO2	T1,T2	
35.	Formation of PDE by elimination of arbitrary constants	1	10-04-2024		TLM1	CO2	T1,T2	
36.	Formation of PDE by elimination of arbitrary functions	1	13-04-2024		TLM1	CO2	T1,T2	
37.	Formation of PDE by elimination of arbitrary functions	1	15-04-2024		TLM1	CO2	T1,T2	
38.	Solving of PDE	1	16-04-2024		TLM1	CO2	T1,T2	
39.	Lagrange's Method	1	18-04-2024		TLM1	CO2	T1,T2	
40.	Lagrange's Method	1	20-04-2024		TLM1	CO2	T1,T2	
41.	Homogeneous Linear PDE with constant coefficients	1	22-04-2024		TLM1	CO2	T1,T2	
42.	TUTORIAL - III	1	23-04-2024		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-III		09			No. of classes taken:			

UNIT-IV: Vector Differentia

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
43.	Introduction to UNIT IV	1	24-04-2024		TLM1	CO3	T1,T2	
44.	Vector Differentiation	1	25-04-2024		TLM1	CO3	T1,T2	
45.	Gradient	1	27-04-2024		TLM1	CO3	T1,T2	

46.	Directional Derivative	1	29-04-2024		TLM1	CO3	T1,T2	
47.	Directional Derivative	1	30-04-2024		TLM1	CO3	T1,T2	
48.	Divergence	1	01-05-2024		TLM1	CO3	T1,T2	
49.	Curl	1	02-05-2024		TLM1	CO3	T1,T2	
50.	Problems	1	04-05-2024		TLM1	CO3	T1,T2	
51.	Solenoidal fields, Irrotational fields, potential surfaces	1	06-05-2024		TLM1	CO3	T1,T2	
52.	Solenoidal fields, Irrotational fields, potential surfaces	1	07-05-2024		TLM1	CO3	T1,T2	
53.	Laplacian, second order operators	1	08-05-2024		TLM1	CO3	T1,T2	
54.	Vector Identities	1	09-05-2024		TLM1	CO3	T1,T2	
55.	TUTORIAL IV	1	13-05-2024		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

UNIT-V: Vector Integration

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Introduction to Unit-V	1	14-05-2024		TLM1	CO4	T1,T2	
58.	Line Integral	1	15-05-2024		TLM1	CO4	T1,T2	
59.	Circulation	1	16-05-2024		TLM1	CO4	T1,T2	
60.	Work done	1	18-05-2024		TLM1	CO4	T1,T2	
61.	Surface Integral	1	20-05-2024		TLM1	CO4	T1,T2	
62.	Surface Integral	1	21-05-2024		TLM1	CO4	T1,T2	
63.	Flux	1	22-05-2024		TLM1	CO4	T1,T2	
64.	Green's Theorem	1	23-05-2024		TLM1	CO4	T1,T2	
65.	Green's Theorem	1	25-05-2024		TLM1	CO4	T1,T2	
66.	Stoke's Thoerem	1	27-05-2024		TLM1	CO4	T1,T2	
67.	Divergence Theorem	1	28-05-2024		TLM1	CO4	T1,T2	
68.	TUTORIAL - V	1	29-05-2024		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-V		12			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
69.	Non-homogeneous Linear PDE with constant coefficients	2	30-05-2024 01-06-2024		TLM2	CO2	T1,T2	
No. of classes		2			No. of classes taken:			
II MID EXAMINATIONS (03-06-2024 TO 08-06-2024)								

Teaching Learning Methods

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

PART-CEVALUATION PROCESS (R23 Regulation):

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

PART-D PROGRAMME OUTCOMES (POs):

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

G.VIJAYA LAKSHMI	Dr.K.R.Kavitha	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALIREDDY COLLEGE OF ENGINEERING

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Phone:08659-222933,Fax:08659-222931

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSEHANDOUT

PART-A

Name of Course Instructor : G.V.Rajya Lakshmi

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

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

Program/Sem/Sec :B.Tech.–ECE /II-Sem/B A.Y. :2023-24

PRE-REQUISITE: Fundamentals of Mathematics.

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

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

COURSEARTICULATIONMATRIX(CorrelationbetweenCOs,POs&PSOs):

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

1 –Low **2 –**Medium **3–** High

PART-B

COURSE DELIVERY PLAN -LESSONPLAN:

S. No.	Programs to be covered	No.of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week1: Familiarization with programming environment	03		13-02-24	DM5
2.	Week2: Problem-solving using Algorithms and Flow charts.	03		20-02-24	DM5
3.	Week3: Exercise Programs on Variable types and type conversions	03		27-02-24	DM5
4.	Week4: Exercise Programs on Operators and the precedence and as associativity.	03		05-03-24	DM5
5.	Week5:Exercise Programs on Branching and logical expressions	03		12-03-24	DM5
6.	Week6:Exercise Programs on Loops, while and for loops	03		19-03-24	DM5
7.	Week7: Exercise Programs on 1 D Arrays & searching.	03		26-03-24	DM5
8.	Week8:Exercise Programs on 2 D arrays, sorting and Strings.	03		16-04-24	DM5
9.	Week9: Exercise Programs on Pointers, structures and dynamic memory allocation	03		23-04-24	DM5
10.	Week10: Exercise Programs on Bit fields, Self-Referential Structures, Linked lists	03		30-04-24	DM5
11.	Week 11: Exercise Programs on Functions, call by value, scope andextent.	03		07-05-24	DM5
12.	Week 12: Exercise Programs on Recursion, the structure of recursive calls	03		14-05-24	DM5
13.	Week 13: Exercise Programs on Call by reference, danglingpointers	03		21-05-24	DM5
14.	Week 14: Exercise Programs on File handling.	03		28-05-24	DM5
15.	Problem Solving ability Test	03		04-06-24	DM5
16.	Lab Internal	03		13-02-24	DM5

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

PART-C

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**G.V.Rajya Lakshmi**	**Dr.Y.Vijay Bhaskar Reddy**	**Dr.Y.Vijay Bhaskar Reddy**	**Dr. D. Veeraiah**
Signature				

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HAND OUT

PART-A

Name of Course Instructor :Mrs.G.V.Rajya Lakshmi
Course Name & Code :Introduction to Programming(23CS01)
L-T-P Structure :3-0-0 Credits:3
Program/Sem/Sec :B.Tech-ECE/II/B A.Y.:2023-24

PRE-REQUISITE:NIL

COURSE EDUCATIONAL OBJECTIVE(CEO):

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

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

CO1:	Understand basics of computers, the concept of algorithm and algorithmic thinking.	Understand–Level 2
CO2:	Analyze a problem and develop an algorithm to solve it.	Analyze – Level4
CO3:	Implement various algorithms using the C programming language.	Apply–Level3
CO4:	Understand more advanced features of C language.	Understand–Level 2
CO5:	Develop problem-solving skills and the ability to debug and optimize the code.	Apply–Level3

COURSE ARTICULATION MATRIX (CorrelationbetweenCOs,POs&PSOs):

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

TEXTBOOKS:

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

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

REFERENCEBOOKS:

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT–I: Introduction to Programming and Problem Solving

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Discussion of CEO's and CO's	1	12-02-24		TLM2	
2.	History of Computers	1	13-02-24		TLM2	
3.	Basic organization of a computer: ALU, input-output units.	2	14-02-24 15-02-24		TLM2	
4.	Memory, program counter	1	17-02-24		TLM1, TLM2	
5.	Introduction to Programming Languages,	1	19-02-24		TLM1, TLM2	
6.	Basics of a Computer Program-Algorithms	1	20-02-24		TLM1	
7.	Flowcharts (Using Dia Tool), pseudo code.	1	21-02-24		TLM1	
8.	Introduction to Compilation and Execution	1	22-02-24		TLM1	
9.	Primitive Data Types	2	24-02-24 26-02-24		TLM1	
10.	Variables, and Constants, Basic Input and Output operations	1	27-02-24		TLM1	
11.	Type Conversion, and Casting	1	28-02-24		TLM1	
12.	**Problem solving techniques:** Algorithmic approach, characteristics of algorithm	1	29-02-24		TLM1	
13.	Problem solving strategies: Top-down approach, Bottom-up approach	1	02-03-24		TLM1	
14	Time and space complexities of algorithms.	1	04-03-24		TLM1	
No.of classes required to complete UNIT–I:15				**No.of classes taken:**		

UNIT–II:ControlStructures

S. No.	Topics to be covered	No. of ClassesRequired	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Simple sequential programs Conditional Statements	1	05-03-24		TLM1	
16.	if, if-else	1	06-03-24		TLM1, TLM2	
17.	Else-if ladder, nested if	1	07-03-24		TLM1, TLM2	
18.	Switch, sample programs	1	09-03-24		TLM1, TLM2	
19.	Example programs on DecisionMaking and Branching	2	11-03-24 12-03-24		TLM1, TLM2	
20.	Loops: while , Example programs	1	13-03-24		TLM1, TLM2	
21.	Loops: do-while, Example programs	1	14-03-24		TLM1	
22.	Loops: for, Example programs	1	16-03-24		TLM1	
23.	Nested Loops with examples	1	18-03-24		TLM1	
24.	Break , Example programs	1	19-03-24		TLM1	

25.	Continue, Example programs	1	20-03-24		TLM1	
26.	Example programs on loops	1	21-03-24		TLM1	
27.	Example programs on loops	1	23-03-24		TLM1	
28.	Revision	1	26-03-24		TLM1	
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 ClassesRequired	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
29.	Arrays Introduction, Declaration	1	27-03-24		TLM1, TLM2	
30.	Array indexing, Accessing elements	1	28-03-24		TLM1, TLM2	
31.	memory model	1	30-03-24		TLM1, TLM2	
32.	programs with array of integers	1	08-04-24		TLM1, TLM2	
33.	Introduction to two dimensional arrays	1	10-04-24		TLM1, TLM2	
34.	2D Array indexing, Accessing elements	1	13-04-24		TLM1, TLM2	
35.	programs with 2D arrays	1	15-04-26		TLM1, TLM2	
36.	Introduction to Strings	1	16-04-24		TLM1, TLM2	
37.	Reading and Writing Operations on Strings	1	18-04-24		TLM1, TLM2	
38.	String Handling Functions	1	20-04-24		TLM1, TLM2	
No.of classes required to complete UNIT–III:10				**No.of classes taken:**		

UNIT–IV:Pointers & User Defined Datatypes

S. No.	Topics to be covered	No. of ClassesRequired	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
39	Introduction to Pointers	1	22-04-24		TLM1, TLM2	
40.	dereferencing and address operators	1	23-04-24		TLM1, TLM2	
41.	pointer and address arithmetic	1	24-04-24		TLM1, TLM2	
42.	array manipulation using pointers	1	25-04-24		TLM1, TLM2	
43	Introduction to User-defined data types	1	27-04-24		TLM1, TLM2	
44.	Structures , Definition and Initialization	1	29-04-24		TLM1, TLM2	
45.	Example programs	1	30-04-24		TLM1, TLM2	
46.	Unions, examples	1	01-05-24		TLM1, TLM2	
47.	Difference between structures&unions	1	02-05-24		TLM1, TLM2	
48.	Structures and pointers	1	04-05-24		TLM1, TLM2	
49.	Revision	1	06-05-24		TLM1, TLM2	
No.of classes required to complete UNIT–IV:11				**No.of classes taken:**		

UNIT–V: Functions and FileHandling

S. No.	Topics to be covered	No. of ClassesRequired	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign We

						ekly
50.	Introduction to Functions	1	07-05-24		TLM1	
51.	Function Declaration and Definition	1	08-05-24		TLM1, TLM2	
52.	Function call Return Types	1	09-05-24		TLM1, TLM2	
53.	Function Arguments, types	1	13-05-24		TLM1, TLM2	
54.	modifying parameters inside functions using pointers	1	14-05-24		TLM1, TLM2	
55.	Examples on function with pointers	1	15-05-24		TLM1, TLM2	
56.	arrays as parameters	1	16-05-24		TLM1, TLM2	
57.	Scope and Lifetime of Variables	1	18-05-24		TLM1, TLM2	
58.	Introduction to Files	1	20-05-24		TLM1, TLM2	
59.	Basics of File Handling	1	21-05-24		TLM1, TLM2	
60.	Operations on Files	1	22-05-24		TLM1, TLM2	
No.of classes required to complete UNIT–V:11				**No.of classes taken:**		

Content Beyond the Syllabus:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
61.	Application Development usingC	1	27-05-24			
62.	Introduction to Data Structures	1	28-05-24			
63.	Introduction to Data Structures	1	29-05-24			

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

PART-C

EVALUATION PROCESS (R23 Regulation):

EvaluationTask	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
MidMarks =80%ofMax((M1+Q1+A1),(M2+Q2+A2))+20%ofMin ((M1+Q1+A1),(M2+Q2+A2))	M=30

Cumulative Internal Examination(CIE):M	30
Semester End Examination(SEE)	70
TotalMarks =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
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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Nameof the Faculty	G.V.Rajya Lakshmi	Dr.Y.Vijay Bhaskar Reddy	Dr.Y.Vijay Bhaskar Reddy	Dr.D.Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

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

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

Textbooks:

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

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

Reference Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Basics of Civil Engineering

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction CO's & PO's, Subject	1	12-02-2024		**TLM2**	
2.	**Basics of Civil Engineering:** Role of Civil Engineers in Society	1	14-02-2024		**TLM2**	
3.	Various Disciplines of Civil Engineering- Structural Engineering-	1	15-02-2024		**TLM2**	
4.	Geo-technical Engineering-Transportation Engineering	1	16-02-2024		**TLM2**	
5.	Hydraulics and Water Resources Engineering	1	17-02-2024		**TLM2**	
6.	Environmental Engineering-Scope of each discipline - Building Construction and Planning-	1	19-02-2024		**TLM1**	
7.	Construction Materials-Cement -types	1	21-02-2024		**TLM4**	
8.	Aggregate types- Bricks-classifications- Steel-properties - types Cement concrete- Applications	1	22-02-2024		**TLM4**	
9.	Introduction to Prefabricated construction Techniques	1	23-02-2024		**TLM4**	
10.	Over view- Prefabricated construction		24-02-2024		**TLM4**	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: Surveying

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	Objectives of Surveying	1	26-02-2024		**TLM2**	
12.	Horizontal Measurements	1	28-02-2024		**TLM2**	
13.	Angular Measurements	1	29-02-2024		**TLM2**	
14.	Compass Surveying overview-	1	01-03-2024		**TLM2**	
15.	Introduction to Bearings	1	02-03-2024		**TLM2**	
16.	Levelling introduction-	1	04-03-2024		**TLM2**	

17.	Levelling instruments used for levelling	1	06-03-2024		**TLM3**	
18.	Simple problems on levelling and bearings- problems on levelling	1	07-03-2024		**TLM2**	
19.	Simple problems on and bearings	1	09-03-2024		**TLM3**	
20.	Simple problems on and bearings	1	11-03-2024		**TLM3**	
21.	Simple problems on Levelling	1	13-03-2024		**TLM2**	
22.	Rise and fall/ HI method	1	14-03-2024		**TLM3**	
23.	Problems -practice	1	15-03-2024		**TLM2**	
24.	Contour mapping	1	16-03-2024		**TLM3**	
No. of classes required to complete UNIT-II:14				**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
25.	**Transportation Engineering** Importance of Transportation in Nation's economic development	1	18-03-2024		**TLM2**	
26.	Types of Highway Pavements	1	20-03-2024		**TLM2**	
27.	Flexible Pavements - Basics of Harbour, Tunnel,- Rigid Pavements Simple Differences	1	21-03-2024		**TLM2**	
28.	Basics of Airport, and Railway Engineering	1	22-03-2024		**TLM2**	
29.	**Water Resources and Environmental Engineering** Introduction, Sources of water-	1	23-03-2024		**TLM2**	
30.	Quality of water- Specifications Introduction to Hydrology	1	27-03-2024		**TLM2**	
31.	Rainwater Harvesting-Water Storage and Conveyance Structures	1	28-03-2024		**TLM2**	
32.	(Simple introduction to Dams and Reservoirs).	1	30-03-2024		**TLM2**	
33.						
No. of classes required to complete UNIT-III:09				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

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**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Eeshwar Ram J**	**Eeshwar Ram J**	**B.Ramkrishna**	**Dr.J.V.Rao**
Signature				

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech.II-Sem, ECE(B/S)

ACADEMIC YEAR : 2023-24

COURSE NAME & CODE : Engineering Workshop, 23ME51

L-T-P STRUCTURE : 0-0-3

COURSE CREDITS : 1.5

COURSE INSTRUCTOR : A. Dhanunjay Kumar, Sr.Asst. Professor
K. Lakshmi Prasad, Sr.Asst. Professor

COURSE COORDINATOR : Seelam Srinivasa Reddy, Assoc. Professor

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

COURSE OBJECTIVE:

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

COURSE OUTCOMES (CO)

CO1	Identify workshop tools and their operational capabilities.**(Remember)**
CO2	Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry, and welding. **(Understand)**
CO3	Modal various basic prototypes in fitting trade.**(Apply)**
CO4	Apply basic electrical engineering knowledge for Housing Wiring Practice.**(Apply)**

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

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

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

REFERENCE:

R1	LabManual

COURSE DELIVERY PLAN (LESSON PLAN): Section-A (BATCH-A1)

S. No.	Experiment to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Reference	HOD Sign Weekly
1.	Demonstration	3	17-02-2024		TLM8	R1	
2.	Experiment-1	3	24-02-2024		TLM8	R1	
3.	Experiment-2	3	02-03-2024		TLM8	R1	
4.	Experiment-3	3	09-03-2024		TLM8	R1	
5.	Experiment-4	3	16-03-2024		TLM8	R1	
6.	Experiment-5	3	23-03-2024		TLM8	R1	
7.	Experiment-6	3	30-03-2024		TLM8	R1	
I-Mid Examinations (01.04.2024 to 06.04.2024)							
8.	Experiment-7	3	13-04-2024		TLM8	R1	
9.	Experiment-8	3	20-04-2024		TLM8	R1	
10.	Experiment-9	3	27-04-2024		TLM8	R1	
11.	Repetition lab	3	04-05-2024		TLM8	-	
12	Repetition lab	3	11-05-2024		TLM8	-	
12.	Lab Internal	3	18-05-2024		TLM6	-	

COURSE DELIVERY PLAN (LESSON PLAN): Section-A (BATCH-A2)

S. No.	Experiment to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Reference	HOD Sign Weekly
1.	Demonstration	3	17-02-2024		TLM8	R1	
2.	Experiment-1	3	24-02-2024		TLM8	R1	

3.	Experiment-2	3	02-03-2024		TLM8	R1	
4.	Experiment-3	3	09-03-2024		TLM8	R1	
5.	Experiment-4	3	16-03-2024		TLM8	R1	
6.	Experiment-5	3	23-03-2024		TLM8	R1	
7.	Experiment-6	3	30-03-2024		TLM8	R1	
I-Mid Examinations (01.04.2024 to 06.04.2024)							
8.	Experiment-7	3	13-04-2024		TLM8	R1	
9.	Experiment-8	3	20-04-2024		TLM8	R1	
10.	Experiment-9	3	27-04-2024		TLM8	R1	
11.	Repetition lab	3	04-05-2024		TLM8	-	
12	Repetition lab	3	11-05-2024		TLM8	-	
12.	Lab Internal	3	18-05-2024		TLM6	-	

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

ACADEMIC CALENDAR

Description	From	To	Weeks
I Phase of Instructions-1	12-02-2024	06-04-2024	8W
I Mid Examinations	01-04-2024	06-04-2024	1W
II Phase of Instructions	08-04-2024	01-06-2024	8W
II Mid Examinations	03-06-2024	08-06-2024	1W
Preparation and Practical's	10-06-2024	15-06-2024	1W
Semester End Examinations	17-06-2024	29-06-2024	2W

Part-C

EVALUATION PROCESS:

Parameter	Marks
Day–to–Day Work	A1=10 Marks
Record And Observation	B1= 05 Marks
Internal Test	C1 = 15 Marks
Cumulative Internal Examination (CIE = A1 + B1 + C1)	A1+B1+C1=30Marks
Semester End Examinations (SEE)	D1 = 70 Marks
Total Marks : A1+B1+C1+D1	100 Marks

Details of Batches: A-SEC

Batch No.	Reg.No.of Students	Number of Students	Batch No.	Reg.No.of Students	Number of Students
A11	23761A0467-474	08	A21	23761A04A0-4A7	08
A12	23761A0475-482	08	A22	23761A04A8-4B5	09
A13	23761A0483-490	08	A23	23761A04B6-4C3	08
A14	23761A0491-499	09	A24	23761A04C4-4D2	09

Batch No:	Exp. 01	Exp. 02	Exp. 03	Exp. 04	Exp. 05	Exp. 06	Exp. 07	Exp. 08	Exp. 09
A11	C1	C2	F1	F2	P1	P2	E1	E2	T1
A12	C2	C1	F2	F1	P2	P1	E2	E1	T1
A13	F1	F2	C1	C2	E1	E2	P1	P2	T1
A14	F2	F1	C2	C1	E2	E1	P2	P1	T1
A21	C1	C2	F1	F2	P1	P2	E1	E2	T1
A22	C2	C1	F2	F1	P2	P1	E2	E1	T1
A23	F1	F2	C1	C2	E1	E2	P1	P2	T1
A24	F2	F1	C2	C1	E2	E1	P2	P1	T1

LIST OF EXPERIMENTS:

Exp. No.	Name of the Experiment	Related CO
1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
2.	Carpentry-2(C2)-Dove Tail Joint	CO1
3.	Fitting-1(F1)-L-**J**oint	CO2
4.	Fitting-2(F2)-V-**J**oint	CO2
5.	Plumbing-1(P1)-Pipe Threading practice	CO3
6.	Plumbing-2(P2)-Pipe Layout	CO3
7.	House Wiring-1(E1)–Series and Parallel connection	CO4
8.	HouseWiring-2(E2)–Fluorescent Lamp and Calling Bell Circuit	CO4
9.	Tinsmity-1(T1)- Rectangular Tray	CO2
10.	Demonstration- Welding and Foundry	CO2

NOTIFICATION OF CYCLE:

cycle	Exp. No.	Name of the Experiment	Related CO
Cycle 1	1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
	2.	Carpentry-2(C2)-Dove tail Joint	CO1
	3.	Fitting-1(F1)-T-**J**oint	CO2
	4.	Fitting-2(F2)-V-**J**oint	CO2
	5.	Plumbing-1(P1)-Pipe Threading practice	CO3
Cycle 2	6.	Plumbing-2(P2)-PipeLayout	CO3
	7.	House Wiring-1(E1)–Series and Parallel Connection	CO4
	8.	House Wiring-2(E2)–Fluorescent Lamp and Calling bell Circuit	CO4
	9.	Tinsmity-1(T1)- Rectangular Tray	CO2
	10.	Demonstration- Welding and Foundry	CO2

PROGRAMME EDUCATIONAL OBJECTIVES:

PEO1: To build a professional career and pursue higher studies with sound knowledge in Mathematics, Science and Mechanical Engineering.

PEO2: To inculcate strong ethical values and leadership qualities for graduates to become successful in multi disciplinary activities.

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

PROGRAM OUT COMES (POs)

Engineering Graduates will be able to :

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

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. To apply the principles of thermal sciences to design and develop various thermal systems.
2. To apply the principles of manufacturing technology, scientific management towards Improvement of quality and optimization of engineering systems in the design, analysis and manufacture ability of products.
3. To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Course Instructors	**Course Coordinator**	**Module Coordinator**	**HOD**
A.Dhanunjay Kumar, K.Lakshmi Prasad	**S.Srinivasa Reddy**	**Mr. J.Subba Reddy**	**Dr. M. B. S Sreekara Reddy**

Department of Electronics & Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. K.V.Ashok

Course Name & Code : Network Analysis - 23EC01

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

Program/Sem/Sec : B.Tech., ECE., II-Sem., Section- B A.Y : 2023-24

Course Objectives:

- To introduce basic laws, mesh & nodal analysis techniques for solving electrical circuits.
- To impart knowledge on applying appropriate theorem for electrical circuit analysis.
- To explain transient behavior of circuits in time and frequency domains.
- To teach concepts of resonance.
- To introduce open circuit, short circuit, transmission, hybrid parameters and their interrelationship.

Course Outcomes (COs): At the end of the course, students are able to

CO1	Apply fundamental laws and theorems to compute electrical variables of DC circuits **(Apply)**
CO2	Analyze electrical networks during transients in the Laplace domain **(Apply)**
CO3	Apply fundamental laws and theorems to compute electrical variables of AC electrical circuits **(Apply)**
CO4	Analyse resonance circuits **(Analyse)**
CO5	Evaluate variables associated with magnetic circuits **(Apply)**
CO6	Compute the parameters of a two-port network **(Apply)**

Course Articulation Matrix (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	-	-	-	-	-	-	-	-	-	2	2	1	-
CO2	3	3	1	-	-	-	-	-	-	-	-	2	3	1	-
CO3	3	3	1	-	-	-	-	-	-	-	-	2	1	2	-
CO4	2	3	-	-	-	-	-	-	-	-	-	1	2	2	-
CO5	2	2	-	-	-	-	-	-	-	-	-	2	1	2	-
CO6	2	2	2	-	-	-	-	-	-	-	-	1	1	2	-

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

TEXT BOOK(S):

T1	Network Analysis – ME Van Valkenburg, Prentice Hall of India, revised 3rd Edition, 2019.
T2	Engineering Circuit Analysis by William H. Hayt, Jack Kemmerly, Jamie Phillips, Steven M. Durbin, 9 Edition 2020.
T3	Network lines and Fields by John. D. Ryder 2nd Edition, PHI

REFERENCE BOOK(S):

R1 D. Roy Choudhury, Networks and Systems, New Age International Publications, 2013.

R2 Joseph Edminister and Mahmood Nahvi, Electric Circuits, Schaum's Outline Series, 7th Edition, Tata McGraw Hill Publishing Company, New Delhi, 2017

R3 Fundamentals of Electric Circuits by Charles K. Alexander and Matthew N. O. Sadiku, McGraw-Hill Education.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN) - Section-B

UNIT-I:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	12-02-24			
2.	Introduction to Unit-I	1	15-02-24			
3.	Types of circuit components	1	15-02-24			
4.	Types of Sources and Source Transformations	1	16-02-24			
5.	Mesh analysis and Nodal analysis	1	17-02-24			
6.	Problem Solving with resistances including dependent sources also	1	19-02-24			
7.	Principal of Duality with examples	1	22-02-24			
8.	Thevenin's Theorem	1	22-02-24			
9.	Norton's Theorem	1	23-02-24			
10.	Milliman's Theorem	1	24-02-24			
11.	Reciprocity Theorem	1	26-02-24			
12.	Compensation, Substitution Theorems	1	29-02-24			
13.	Superposition Theorem	1	29-02-24			
14.	Max Power Transfer Theorem	1	01-03-24			
15.	Tellegens Theorem	1	02-03-24			
16.	Problem solving using Dependent sources also	1	04-03-24			
No. of classes required to complete UNIT-I		14	No. of classes taken			

UNIT-II: Transients & Laplace transform

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
17.	First order differential equations	1	07-03-24			
18.	Definition of time constants	1	07-03-24			
19.	R-L circuit	1	09-03-24			
20.	RC circuit with DC excitation	1	09-03-24			
21.	evaluating initial conditions procedure	1	11-03-24			
22.	Second order differential equations	1	14-03-24			
23.	homogeneous, non-homogenous DEs	1	14-03-24			
24.	Problem-solving using R-L-C elements with DC excitation and AC excitation	1	15-03-24			
25.	Response as related to s-plane rotation of roots	1	16-03-24			
26.	Laplace transform: introduction	1	18-03-24			

27.	Laplace transformation, basic theorems		21-03-24			
28.	Problem solving using Laplace transform		21-03-24			
29.	Partial fraction expansion		22-03-24			
30.	Heaviside's expansions		23-03-24			
31.	Problem solving using Laplace transform		28-03-24			
No. of classes required to complete UNIT-II		10	No. of classes taken			

UNIT-III : Steady State Analysis of A.C Circuits

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Impedance concept, phase angle	1	28-03-24			
33.	series R-L, R-C, R-LC circuits problem solving	1	30-03-24			
34.	Complex impedance and phasor notation for R-L, R-C, R-L-C	1	08-04-24			
35.	problem solving using mesh and nodal analysis	1	12-04-24			
36.	Star-Delta conversion	1	13-04-24			
37.	Problem solving using Laplace transforms	1	15-04-24			
38.	Problem solving	1	18-04-24			
39.	Problem solving	1	18-04-24			
40.	Problem solving	1	19-04-24			
41.	Problem solving	1	20-04-24			
No. of classes required to complete UNIT-III.		10	No. of classes taken			

UNIT-IV: Resonance & Coupled Circuits

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	Introduction, Definition of Q	1	22-04-24			
43.	Series resonance, Bandwidth of series resonance	1	25-04-24			
44.	Parallel resonance	1	25-04-24			
45.	General case-resistance present in both branches	1	26-04-24			
46.	Anti-resonance at all frequencies	1	27-04-24			
47.	Coupled Circuits: Self-inductance	1	29-04-24			
48.	Mutual inductance, Coefficient of coupling	1	02-05-24			
49.	Analysis of coupled circuits	1	02-05-24			
50.	Natural current, Dot rule of coupled circuits	1	03-05-24			
51.	conductively coupled equivalent circuits-problem solving	1	04-05-24			
52.	Problem Solving	1	06-05-24			
53.	Problem Solving	1	09-05-24			
54.	Problem Solving	1	09-05-24			
55.	Problem Solving	1	10-05-24			
No. of classes required to complete UNIT-IV		10	No. of classes taken			

UNIT-V: Two-port Network

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Relationship of two port networks	1	11-05-24			
57.	Z-parameters, Y-parameters	1	13-05-24			
58.	Transmission line parameters, h-parameters	1	16-05-24			
59.	Relationships Between parameter Sets	1	16-05-24			
60.	Parallel & series connection of two port networks	1	17-05-24			
61.	Cascading of two port networks	1	18-05-24			
62.	problem solving using dependent sources also	1	20-05-24			
63.	Image and iterative impedances	1	23-05-24			
64.	Image and iterative transfer constants	1	23-05-24			
65.	Insertion loss, Attenuators and pads.	1	24-05-24			
66.	Lattice network and its parameters	1	25-05-24			
67.	Impedance matching networks	1	27-05-24			
68.	Problem Solving	1	30-05-24			
69.	Problem Solving	1	30-05-24			
70.	Problem Solving	1	31-05-24			
No. of classes required to complete UNIT-V		**9**	No. of classes taken			

Contents beyond the Syllabus

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
71.	Filters,	1				
72.	Attenuators	1				

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:

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Date:

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada
Accredited by NAAC with "A" Grade and NBA
L B Reddy Nagar, Mylavaram-521 230, NTR District, Andhra Pradesh.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. K.V.Ashok

Course Name & Code : Network Analysis and Simulation Laboratory– 23EC51

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

Program/Sem/Sec : B.Tech., ECE., II-Sem., Section- B A.Y : 2023-24

PRE-REQUISITE: Basic Electrical Engineering Concepts

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To gain hands on experience in verifying Kirchoff's laws and network theorems
- To analyze transient behavior of circuits
- To study resonance characteristics
- To determine 2-port network parameters

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO1	Demonstrate fundamental circuit laws, network theorems, node and mesh analysis of electrical circuits **(Apply)**
CO2	Design resonance circuit for given specifications **(Analyze)**
CO3	Measure time constants of RL & RC circuits **(Apply)**
CO4	Analyze the 1st and 2nd order circuits with respect to parameter variation **(Analyze)**
CO5	Characterize and model the network in terms of all network parameters **(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	2	2	-	1	2	-	-	-	-	2	1	2	2	1	-
CO2	2	2	-	1	2	-	-	-	-	2	2	2	3	1	-
CO3	2	2	-	1	1	-	-	-	-	2	1	2	1	2	-
CO4	2	3	-	1	2	-	-	-	-	2	1	2	2	2	-
CO5	2	2	-	1	2	-	-	-	-	2	2	2	1	2	-

Correlation Levels: **1**-Slight (Low), **2**-Moderate (Medium), **3**-Substantial (High) and No correlation: **'-'**

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section – C

Expt. No	Experiment/s	COs	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
--	Introduction to NA Lab experiments, COs, POs and PSOs	--	3	15-02-24		TLM1	
Cycle – I							
1	Experiment – 1	CO1,CO4	3	22-02-24		TLM4	
2	Experiment – 2	CO1,CO4	3	29-02-24		TLM4	
3	Experiment – 3	CO1,CO4	3	07-03-24		TLM4	
4	Experiment – 4	CO1,CO4	3	14-03-24		TLM4	
5	Experiment – 5	CO1,CO4	3	21-03-24		TLM4	
6	Experiment – 6	CO2,CO4	3	28-03-24		TLM4	
Cycle – II							
7	Experiment – 7	CO1,CO4	3	18-04-24		TLM4	
8	Experiment – 8	CO1,CO4	3	25-04-24		TLM4	
9	Experiment – 9	CO2,CO4	3	02-05-24		TLM4	
10	Experiment – 10	CO3,CO4	3	09-05-24		TLM4	
11	Experiment – 11	CO3,CO4	3	16-05-24		TLM4	
12	Experiment – 12	CO3,CO4	3	23-05-24		TLM4	
13	Experiment beyond the syllabus		3	30-05-24		TLM4	
--	Internal Examination	--	3	30-05-24			

Experiments to be conducted:

Exp. No	CYCLE-1	Exp. No	CYCLE-2
1	Study of components of a circuit and Verification of KCL and KVL	7	To study the transient and steady state response of a 2nd order circuit by varying its various parameters and studying their effects on responses
2	Verification of mesh and nodal analysis for AC circuits	8	Find the Q Factor and Bandwidth of a Series and Parallel Resonance circuit
3	Verification of Superposition, Thevenin's & Norton theorems for AC circuits	9	Determination of open circuit (Z) and short circuit (Y) parameters
4	Verification of maximum power transfer theorem for AC circuits	10	Determination of hybrid (H) and transmission (ABCD) parameters
5	Study of DC transients in RL, RC and RLC circuits	11	Determination of hybrid (H) and transmission (ABCD) parameters
6	To study frequency response of various 1st order RL & RC networks	12	To measure two port parameters of a twin-T network and study its frequency response.

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:

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work = **A**	1,2,3,4,5,6,7,8…	A = 10
Record = **B**	1,2,3,4,5,6,7,8…	B = 05
Internal Test = **C**	1,2,3,4,5,6,7,8…	C = 15
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8…	**30**
Semester End Examinations = D	1,2,3,4,5,6,7,8…	**70**
Total Marks: A + B + C + D = 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.
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PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1:	**Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
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PSO 3:	**Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

.

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

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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

Date:15/02/2024

Association hour Schedule (A.Y. 2023-24)

(II Sem., ECE, Section-B)

All the **II Sem. ECE Section-B** students are informed to organize the association hour as per the following schedule.

S. No	Roll No	Tentative Date	Name of the Activity	Tentative Date	Name of the Activity
1	23761A0467	19.02.2024	Story Telling	08.04.2024	Debate on Global Warming – its impact
2	23761A0468				
3	23761A0469				
4	23761A0470				
5	23761A0471				
6	23761A0472				
7	23761A0473	19.02.2024	Debate on social media – A boom or bang	15.04.2024	Story Telling
8	23761A0474				
9	23761A0475				
10	23761A0476				
11	23761A0477				
12	23761A0478				
13	23761A0479	26.02.2024	Story Telling	15.04.2024	Debate on Space Technology
14	23761A0480				
15	23761A0481				
16	23761A0482				
17	23761A0483				
18	23761A0484				
19	23761A0485	26.02.2024	Debate on National Quantum Mission	22.04.2024	Story Telling
20	23761A0486				
21	23761A0487				
23	23761A0488				
23	23761A0489				
24	23761A0490				
25	23761A0491	04.03.2024	Story Telling	22.04.2024	Debate on 6G communication
26	23761A0492				
27	23761A0493				
28	23761A0494				
29	23761A0495				
30	23761A0496				

31	23761A0497	04.03.2024	Debate on AI and Its impact	29.04.2024	Story Telling
32	23761A0498				
33	23761A0499				
34	23761A04A0				
35	23761A04A1				
36	23761A04A2				
37	23761A04A3	11.03.2024	Story telling	29.04.2024	Debate on Adverse effects of Online Gaming
38	23761A04A4				
39	23761A04A5				
40	23761A04A6				
41	23761A04A7				
42	23761A04A8				
43	23761A04A9	11.03.2024	Debate on Smart Farming	06.05.2024	Story Telling
44	23761A04B0				
45	23761A04B1				
46	23761A04B2				
47	23761A04B3				
48	23761A04B4				
49	23761A04B5	18.03.2024	Story Telling	06.05.2024	Debate on Augmented and Virtual reality
50	23761A04B6				
51	23761A04B7				
52	23761A04B8				
53	23761A04B9				
54	23761A04C0				
55	23761A04C1	18.03.2024	Debate on Bio Sensors	13.06.2024	Story Telling
56	23761A04C2				
57	23761A04C3				
58	23761A04C4				
59	23761A04C5				
60	23761A04C6				
61	23761A04C7	08.04.2024	Story Telling	13.06.2024	Debate on Visible light Communication
62	23761A04C8				
63	23761A04C9				
64	23761A04D0				
65	23761A04D1				
66	23761A04D2				

Faculty In-charge **HOD ECE**

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

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.VijayaDasaradha
Course Name & Code **:** Chemistry&23FE02
L-T-P Structure **:3-0-0** **Credits:03**
Program/Sem/Sec : B.Tech/I-Sem/ECE-C **A.Y. :**2023-24

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

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

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

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

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

Textbooks:

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

Reference: Books:

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: STRUCTURE AND BONDING

MODELS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Fundamentals Of Quantum Mechanics	1	13-02-2024		TLM1	
2.	Fundamentals Of Quantum Mechanics	1	14-02-2024		TLM1	
3.	Schrodinger Wave Equation	1	16-02-2024		TLM1	
4.	Significance of Ψ and Ψ^2	1	17-02-2024		TLM2	
5.	Particle In one dimensional box	1	20-02-2024		TLM1	
6.	Molecular Orbital Theory – Bonding in Homo and Hetero nuclear Diatomic Molecules	1	21-02-2024		TLM1	
7.	Energy level diagrams of O_2 and N_2	1	23-02-2024		TLM2	
8.	Energy level diagrams of CO and NO	1	24-02-2024		TLM1	
9.	π-molecular orbitals of butadiene	1	27-02-2024		TLM1	
10.	π-molecular orbitals of benzene	1	28-02-2024		TLM1	
11.	Calculation of Bond order	1	01-03-2024		TLM2	
12.	Practice of Molecular orbital diagrams	1	02-03-2024		TLM1	
13.	Revision	1	05-03-2024		TLM1	
14.	Revision	1	06-03-2024		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	1	09-03-2024		TLM1	
2.	Semiconductors - Basic concept&applications	1	12-03-2024		TLM1	
3.	Super conductors - Introduction	1	13-03-2024		TLM2	
4.	Super conductors - Basic concept&applications	1	15-03-2024		TLM1	
5.	Supercapacitors - Introduction	1	16-03-2024		TLM1	
6.	Supercapacitors - Basic concept-classification&applications	1	19-03-2024		TLM1	
7.	Nano materials - Introduction	1	20-03-2024		TLM2	
8.	Nano materials - classification	1	22-03-2024		TLM2	
9.	Nano materials - properties and applications of fullerenes	1	23-03-2024&26-03-24		TLM2	
10.	Nano materials - carbon nano tubes and graphine nanoparticles	1	27-03-2024&30-03-24		TLM2	
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

UNIT-III: ELECTROCHEMISTRY AND APPLICATIONS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction Electrochemical cell	1	10-04-2024		TLM1	
2.	Nernst equation derivation	1	12-04-2024		TLM1	
3.	Applications of Nernst equation.	1	13-04-2024		TLM1	
4.	Cell potential calculations and numerical problems	1	16-04-2024		TLM1	
5.	Potentiometry-potentiometric titrations (redox titrations)	1	19-04-2024		TLM1	
6.	Concept of conductivity, conductivitycell, conductometric titrations (acid-base titrations)	1	20-04-2024		TLM2	
7.	Electrochemical sensors – potentiometric sensors with examples,	1	23-04-2024		TLM1	

	amperometric sensors with examples					
8.	Primary cells – Zinc-air battery, Secondary cells – lithium-ion batteries-working of the batteries including cell reactions	1	24-04-2024		TLM1	
9.	Fuel cells, hydrogen-oxygenfuel cell– working of the cells	1	26-04-2024		TLM2	
10.	PolymerElectrolyte Membrane Fuel cells (PEMFC)	1	27-04-2024		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	30-04-2024		TLM1	
2.	Chain growth and step growth polymerization, coordination polymerization, with specific examples	1	01-05-2024		TLM1	
3.	Mechanisms of polymer formation	1	03-05-2024		TLM2	
4.	Plastics –Thermo and Thermosetting plastics	1	04-05-2024		TLM1	
5.	Preparation, properties and applications of – PVC, Teflon, Bakelite, Nylon-6,6, carbon fibres	1	07-05-2024& 08-05-2024		TLM1	
6.	Elastomers–Buna-S, Buna-N–preparation, properties and applications	1	10-05-2024& 11-05-2024		TLM2	
7.	Conducting polymers – polyacetylene, polyaniline, – mechanism of conduction and applications	1	14-05-2024		TLM1	
8.	Bio-Degradable polymers - Poly Glycolic Acid (PGA), Polyl Lactic Acid (PLA)	1	15-05-2024& 17-05-24		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	18-05-2024		TLM1	

2.	Absorption of radiation: Beer-Lambert's law	1	21-05-2024		TLM1	
3.	UV-Visible Spectroscopy	1	22-05-2024		TLM1	
4.	electronic transition, Instrumentation	1	24-05-2024		TLM1	
5.	IR spectroscopies, fundamental modes	1	25-05-2024		TLM2	
6.	selection rules, Instrumentation	1	28-05-2024		TLM1	
7.	Chromatography-Basic Principle	1	29-05-2024		TLM2	
8.	Classification-HPLC: Principle, Instrumentation and Applications	1	31-05-2024		TLM1	
No. of classes required to complete UNIT-V: 08				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Applications of semiconductors, superconductors and nanomaterials in advanced technologies.	1	01-06-2024		TLM1	

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineeringproblems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineeringproblemsreachingsubstantiatedconclusionsusingfirstprinciplesofmathematics natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriateconsiderationforthepublichealthandsafety,andthecultural,societal,andenviron mentalconsiderations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of 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 forsustainable 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, beingable to comprehend andwriteeffectivereportsanddesigndocumentation,makeeffectivepresentations,andgivean dreceiveclear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of theengineeringandmanagementprinciplesandapplythesetoone'sownwork,asamemberandle aderinateam, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM	**:** I B. Tech., I-Sem., ECE - C
ACADEMIC YEAR	**:** 2023-24
COURSE NAME & CODE	**:** Differential Equations & Vector Calculus
L-T-P STRUCTURE	**:** 3-0-0
COURSE CREDITS	**:** 3
COURSE INSTRUCTOR	**:** Dr. Y.P.C.S. Anil Kumar
COURSE COORDINATOR	**:** Dr. K. R. Kavitha
PRE-REQUISITES	**:** Basics of Vectors**,** Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enlighten the learners in the concept of differential equations and multivariable calculus
- To furnish the learners with basic concepts and techniques at intermediate level to lead them into advanced level by handling various real-world applications.

COURSE OUTCOMES (COs)

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

CO1: Solve the differential equations related to various engineering fields – **L3**

CO2: Apply knowledge of partial differentiation in modeling and solving of Partial differential equations – **L3**

CO3: Interpret the physical meaning of different operators such as gradient, curl and divergence – **L3**

CO4: Evaluate the work done against a field, circulation and flux using Vector Calculus – **L3**

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

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

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

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

BOS APPROVED TEXT BOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 44nd Edition, Khanna Publishers, New Delhi, 2017.

T2 Erwin Kreyszig, *"Advanced Engineering Mathematics"*, 10th Edition, John Wiley & sons, New Delhi, 2018.

BOS APPROVED REFERENCE BOOKS:

R1 George B. Thomas, Maurice D. Weir and Joel Hass, "*Thomas Calculus*", 14th Edition, Pearson Publishers, 2018.

R2 Dennis G. Zill and Warren S. Jones and Bartlett, "*Advanced Engineering Mathematics*",2018.

R3 Glyn James, "*Advanced Modern Engineering Mathematics*", 5th Edition, Pearson Publishers, 2018.

R4 R.K. Jain and S.R.K. Iyengar, "*Advanced Engineering Mathematics*", 5th Edition (9th reprint), Alpha Science International Ltd., 2021.

R5 B. V. Ramana, "*Higher Engineering Mathematics*", 3rd Edition McGraw Hill Education, 2017.

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.	Introduction to the course	1	12-02-2024		TLM2			
2.	Course Outcomes, Program Outcomes	1	13-02-2024		TLM2			

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
3.	Introduction to UNIT I	1	14-02-2024		TLM1	CO1	T1,T2	
4.	Linear Differential equation	1	14-02-2024		TLM1	CO1	T1,T2	
5.	Bernoulli's DE	1	16-02-2024		TLM1	CO1	T1,T2	
6.	Exact DE	1	19-02-2024		TLM1	CO1	T1,T2	
7.	Exact DE	1	20-02-2024		TLM1	CO1	T1,T2	
8.	Non-exact DE Type I	1	21-02-2024		TLM1	CO1	T1,T2	
9.	Non-exact DE Type II	1	21-02-2024		TLM1	CO1	T1,T2	
10.	Non-exact DE Type III	1	23-02-2024		TLM1	CO1	T1,T2	
11.	Non-exact DE Type IV	1	26-02-2024		TLM1	CO1	T1,T2	
12.	Newton's Law of cooling	1	27-02-2024		TLM1	CO1	T1,T2	
13.	Newton's Law of cooling	1	28-02-2024		TLM1	CO1	T1,T2	
14.	Law of natural growth and decay	1	28-02-2024		TLM1	CO1	T1,T2	
15.	Law of natural growth and decay	1	01-03-2024		TLM1	CO1	T1,T2	
16.	Electrical circuits	1	04-03-2024		TLM1	CO1	T1,T2	
17.	TUTORIAL - I	1	05-03-2024		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		15			No. of classes taken:			

UNIT-II: Linear Differential equations of higher order (Constant Coefficients)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Introduction to UNIT II	1	06-03-2024		TLM1	CO1	T1,T2	
19.	Solving a homogeneous DE	1	06-03-2024		TLM1	CO1	T1,T2	
20.	Solving a homogeneous DE	1	11-03-2024		TLM1	CO1	T1,T2	
21.	Finding Particular Integral, P.I for e^{ax+b}	1	12-03-2024		TLM1	CO1	T1,T2	
22.	P.I for Cos bx, or sin bx	1	13-03-2024		TLM1	CO1	T1,T2	
23.	P.I for polynomial function	1	13-03-2024		TLM1	CO1	T1,T2	

24.	P.I for $e^{ax+b}v(x)$	1	15-03-2024		TLM1	CO1	T1,T2	
25.	P.I for $x^k v(x)$	1	18-03-2024		TLM1	CO1	T1,T2	
26.	Method of Variation of parameters	1	19-03-2024		TLM1	CO1	T1,T2	
27.	Method of Variation of parameters	1	20-03-2024		TLM1	CO1	T1,T2	
28.	Simultaneous linear equations	1	20-03-2024		TLM1	CO1	T1,T2	
29.	Simultaneous linear equations	1	22-03-2024		TLM1	CO1	T1,T2	
30.	L-C-R circuits	1	26-03-2024		TLM1	CO1	T1,T2	
31.	TUTORIAL - II	1	27-03-2024		TLM3	CO1	T1,T2	
32.	Simple Harmonic motion	1	27-03-2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

I MID EXAMINATIONS (01-04-2024 TO 06-04-2024)

UNIT-III: Partial Differential Equations

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
33.	Introduction to Unit III	1	08-04-2024		TLM1	CO2	T1,T2	
34.	Formation of PDE by elimination of arbitrary constants	1	10-04-2024		TLM1	CO2	T1,T2	
35.	Formation of PDE by elimination of arbitrary functions	1	10-04-2024		TLM1	CO2	T1,T2	
36.	Formation of PDE by elimination of arbitrary functions	1	12-04-2024		TLM1	CO2	T1,T2	
37.	Solving of PDE	1	15-04-2024		TLM1	CO2	T1,T2	
38.	Lagrange's Method	1	16-04-2024		TLM1	CO2	T1,T2	
39.	Lagrange's Method	1	19-04-2024		TLM1	CO2	T1,T2	
40.	Homogeneous Linear PDE with constant coefficients	1	22-04-2024		TLM1	CO2	T1,T2	
41.	TUTORIAL - III	1	23-04-2024		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-III		09			No. of classes taken:			

UNIT-IV: Vector Differentia

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
42.	Introduction to UNIT IV	1	24-04-2024		TLM1	CO3	T1,T2	
43.	Vector Differentiation	1	24-04-2024		TLM1	CO3	T1,T2	
44.	Gradient	1	26-04-2024		TLM1	CO3	T1,T2	
45.	Directional Derivative	1	29-04-2024		TLM1	CO3	T1,T2	

46.	Directional Derivative	1	30-04-2024		TLM1	CO3	T1,T2	
47.	Divergence	1	01-05-2024		TLM1	CO3	T1,T2	
48.	Curl	1	01-05-2024		TLM1	CO3	T1,T2	
49.	Problems	1	03-05-2024		TLM1	CO3	T1,T2	
50.	Solenoidal fields, Irrotational fields, potential surfaces	1	06-05-2024		TLM1	CO3	T1,T2	
51.	Solenoidal fields, Irrotational fields, potential surfaces	1	07-05-2024		TLM1	CO3	T1,T2	
52.	Laplacian, second order operators	1	08-05-2024		TLM1	CO3	T1,T2	
53.	Vector Identities	1	08-05-2024		TLM1	CO3	T1,T2	
54.	TUTORIAL IV	1	10-05-2024		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

UNIT-V: Vector Integration

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Introduction to Unit-V	1	13-05-2024		TLM1	CO4	T1,T2	
58.	Line Integral	1	14-05-2024		TLM1	CO4	T1,T2	
59.	Circulation	1	15-05-2024		TLM1	CO4	T1,T2	
60.	Work done	1	15-05-2024		TLM1	CO4	T1,T2	
61.	Surface Integral	1	17-05-2024		TLM1	CO4	T1,T2	
62.	Surface Integral	1	20-05-2024		TLM1	CO4	T1,T2	
63.	Flux	1	21-05-2024		TLM1	CO4	T1,T2	
64.	Green's Theorem	1	22-05-2024		TLM1	CO4	T1,T2	
65.	Green's Theorem	1	22-05-2024		TLM1	CO4	T1,T2	
66.	Stoke's Thoerem	2	24-05-2024 27-05-2024		TLM1	CO4	T1,T2	
67.	Divergence Theorem	2	28-05-2024 29-05-2024		TLM1	CO4	T1,T2	
68.	TUTORIAL - V	1	29-05-2024		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
69.	Non-homogeneous Linear PDE with constant coefficients	1	30-05-2024		TLM2	CO2	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (03-06-2024 TO 08-06-2024)								

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/SwayamPrabha/MOOCS)

TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-CEVALUATION PROCESS (R23 Regulation):

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

PART-D PROGRAMME OUTCOMES (POs):

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

Dr.Y.P.C.S. Anil Kumar	**Dr. K. R. Kavitha**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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Approved by AICTE, New Delhi. And Affiliated to JNTUK, Kakinada L.B.REDDY NAGAR, MYLAVARAM, KRISHNADIST, A.P.-521230.
Phone:08659-222933,Fax:08659-222931

DEPARTMENTOFCIVILENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : **Dr. K.V. Ramana**
Course Name & Code : 23CM01: Basic Civil & Mechanical Engineering
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., ECE, II-Sem., Section- C A.Y : 2023-24

PRE-REQUISITE: 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): On completion of the course, the student should 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															

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

TEXT BOOKS:

T1 Basic Civil Engineering, M.S. Palanisamy, Tata Mcgraw Hill publications (India) Pvt. Ltd. Fourth Edition.

T2 Introduction to Civil Engineering, S.S. Bhavikatti, New Age International Publishers. 2022. First Edition

T3 Basic Civil Engineering, Satheesh Gopi, Pearson Publications, 2009, First Edition.

REFERENCE BOOKS:

R1 Surveying, Vol- I and Vol-II, S.K. Duggal, Tata McGraw Hill Publishers 2019. Fifth Edition.

R2 Hydrology and Water Resources Engineering, Santosh Kumar Garg, Khanna Publishers, Delhi. 2016

R3 Irrigation Engineering and Hydraulic Structures - Santosh Kumar Garg, Khanna Publishers, Delhi 2023. 38th Edition.

R4 Highway Engineering, S.K.Khanna, C.E.G. Justo and Veeraraghavan, Nemchand and Brothers Publications 2019. 10th Edition.

R5 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	1	12-02-24		**TLM2**	
2.	Role of Civil Engineers in Society	1	13-02-24		**TLM2**	
3.	Various Disciplines of Civil Engineering	1	15-02-24		**TLM2**	
4.	Scope of each discipline	2	16-02-24 17-02-24		**TLM2**	
5.	Building construction and Planning	1	19-02-24		**TLM2**	
6.	Construction Materials-Cement-types-properties	1	20-02-24		**TLM2**	
7.	Aggregates-types-properties	1	22-02-24		**TLM2**	
8.	Bricks-types-properties	1	23-02-24		**TLM2**	
9.	Cement concrete	1	24-02-24		**TLM2**	
10.	Steel-types	1	26-02-24		**TLM2**	
11.	Prefabricated construction techniques-Introduction	1	27-02-24		**TLM2**	
No. of classes required to complete UNIT-I: 12				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	1	29-02-24		**TLM2**	
2.	Horizontal Measurements	1	01-03-24		**TLM2**	
3.	Angular Measurements	1	02-03-24		**TLM2**	
4.	Problems	1	04-03-24		**TLM1**	
5.	Introduction to Bearings	1	05-03-24		**TLM2**	
6.	Problems	1	07-03-24		**TLM1**	
7.	Levelling-Instruments used	1	09-03-24		**TLM2**	
8.	Problems	1	11-03-24		**TLM1**	
9.	Contour Mapping	1	12-03-24		**TLM2**	
No. of classes required to complete UNIT-II: 09				No. of classes taken:		

UNIT-III: Transportation, Water Resources & 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.	Importance of Transportation in Nations economic development	1	14-03-24		**TLM2**	
2.	Types of Highway pavements	1	15-03-24		**TLM2**	
3.	Difference between Flexible & Rigid pavements	1	16-03-24		**TLM2**	
4.	Basics of Harbour, Tunnels	1	18-03-24		**TLM2**	
5.	Basics of Airport, Railways	1	19-03-24		**TLM2**	
6.	Sources of water-Quality of water-Specifications	1	21-03-24		**TLM2**	
7.	Introduction to Hydrology-Hydrologic cycle	2	22-03-24 23-03-24		**TLM2**	
8.	Rainwater harvesting	1	26-03-24		**TLM2**	
9.	Water storage & conveyance structures	1	28-03-24		**TLM2**	
10.	Dams & Reservoirs-Introduction	1	30-03-24		**TLM2**	
11.	**Mid-1exams**		01-04-24 to 06-04-24			
No. of classes required to complete UNIT-III: 11				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 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I, II & III)	M1=15
I-Quiz Examination (Units-I, II & III)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=15
II-Quiz Examination (Units-III, IV & V)	Q2=10
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=15
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	Q=10
Cumulative Internal Examination (CIE) : A+M+Q	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Dr. K. V. Ramana)	(B. Ramakrishna)		(Dr. Y. Amar Babu)

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hodece@Lbrce.ac.in, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor : Mr. Shaik Johny Basha

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

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

Program/Sem/Sec : B.Tech. – ECE / II Sem. / C A.Y. : 2023 – 24

PRE-REQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVE (CEO):

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

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

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

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

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

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	13-02-24			
2.	Basic organization of a Computer: ALU, Input - Output Units	1	14-02-24			
3.	Memory, Program Counter	1	15-02-24			
4.	Introduction to Programming Languages	1	16-02-24			
5.	Basics of a Computer Program – Algorithms	1	17-02-24			
6.	Flowcharts (Using Dia Tool), Pseudo Code	1	20-02-24			
7.	Introduction to Compilation and Execution	1	21-02-24			
8.	Primitive Data Types	1	22-02-24			
9.	Variables and Constants	1	23-02-24			
10.	Basic Input and Output Operations	2	24-02-24 27-02-24			
11.	Type Conversion and Casting	1	28-02-24			
12.	**Problem Solving Techniques:** Algorithmic Approach, Characteristics of Algorithm	1	29-02-24			
13.	**Problem Solving Strategies:** Top-Down Approach, Bottom-Up Approach	1	01-03-24			
14.	Time and space complexities of Algorithms	1	02-03-24			
No. of classes required to complete UNIT – I: 15				**No. of classes taken:**		

UNIT – II: Control Structures

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	**Simple Sequential Programs:** Conditional Statements	1	05-03-24			
16.	if, if-else	1	06-03-24			
17.	switch	1	07-03-24			
18.	Example programs on Decision Making and Branching	1	12-03-24			

19.	**Loops:** while Loop with Examples	2	13-03-24 14-03-24			
20.	do-while Loop with Examples	2	15-03-24 16-03-24			
21.	for Loop with Examples	2	19-03-24 20-03-24			
22.	Break Statement	1	21-03-24			
23.	Continue Statement	1	22-03-24			
No. of classes required to complete UNIT – II: 12				**No. of classes taken:**		

UNIT – III: Arrays and Strings

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
24.	**Arrays:** Introduction to 1D-Arrays, Declaration, and Initialization	1	23-03-24			
25.	1D-Array Indexing, Accessing Elements of 1D-Array	1	26-03-24			
26.	Memory Model, Programs on 1D-Arrays	2	27-03-24 28-03-24			
27.	Introduction to 2D-Arrays, Declaration, and Initialization	1	30-03-24			
28.	2D-Array Indexing, Accessing Elements of 2D-Array	1	10-04-24			
29.	Programs on 2D-Arrays	2	12-04-24 16-04-24			
30.	Introduction to Strings	1	18-04-24			
31.	Reading and Writing Operations on Strings	1	19-04-24			
32.	String Handling Functions	1	20-04-24			
33.	Programs on Strings	2	23-04-24 24-04-24			
No. of classes required to complete UNIT – III: 13				**No. of classes taken:**		

UNIT – IV: Pointers & User-Defined Data Types

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
34.	**Pointers:** Introduction to Pointers	1	25-04-24			
35.	Dereferencing and Address Operators	1	26-04-24			
36.	Pointer and Address Arithmetic	1	27-04-24			
37.	Array Manipulation using Pointers	2	30-04-24 01-05-24			
38.	**User-defined Data Types:** Structure, Declaration, and Initialization	1	02-05-24			
39.	Concepts of Structures	2	03-05-24 04-05-24			
40.	Programs on Structures	1	07-05-24			
41.	Union, Declaration, and Initialization	1	08-05-24			
42.	Concepts of Union	2	09-05-24 10-05-24			
43.	Programs on Union	1	14-05-24			
No. of classes required to complete UNIT – IV: 13				**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
44.	**Functions:** Introduction, Function Declaration and Definition	1	15-05-24			

45.	Function Call – Return Types and Arguments	1	16-05-24			
46.	Modifying parameters inside functions using pointers	1	17-05-24			
47.	Arrays as parameters	1	18-05-24			
48.	Recursion and Example	1	21-05-24			
49.	Scope and Lifetime of Variables	1	22-05-24			
50.	**File Handling:** Introduction to Files, Basics of File Handling	1	23-05-24			
51.	File Operations	2	24-05-24 25-05-24			
52.	Example Programs on File Handling	2	28-05-24 29-05-24			
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
53.	Introduction to Linked Lists	1	30-05-24			
54.	Types of Linked Lists	1	31-05-24			
55.	Array vs Linked List	1	01-06-24			

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 on Cycle – I (Units-I, II)	A1 = 5
MID – I Descriptive Examination (Units-I, II)	M1 = 15
MID – I Objective / Quiz Examination (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
Continuous Internal 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.
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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.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. Shaik Johny Basha**	**Dr. Y.V. Bhaskar Reddy**	**Dr. Y.V. Bhaskar Reddy**	**Dr. Y. Amar Babu**
Signature				

Department of Electronics & Communication Engineering

COURSE HANDOUT

PART-A

Name of Course Instructor : M.Sambasiva Reddy

Course Name & Code : Network Analysis - 23EC01

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

Program/Sem/Sec : B.Tech., ECE., II-Sem., Section- C A.Y : 2023-24

Course Objectives:

- To introduce basic laws, mesh & nodal analysis techniques for solving electrical circuits.
- To impart knowledge on applying appropriate theorem for electrical circuit analysis.
- To explain transient behavior of circuits in time and frequency domains.
- To teach concepts of resonance.
- To introduce open circuit, short circuit, transmission, hybrid parameters and their interrelationship.

Course Outcomes (COs): At the end of the course, students are able to

CO1	Apply fundamental laws and theorems to compute electrical variables of DC circuits **(Apply)**
CO2	Analyze electrical networks during transients in the Laplace domain **(Apply)**
CO3	Apply fundamental laws and theorems to compute electrical variables of AC electrical circuits **(Apply)**
CO4	Analyse resonance circuits **(Analyse)**
CO5	Evaluate variables associated with magnetic circuits **(Apply)**
CO6	Compute the parameters of a two-port network **(Apply)**

Course Articulation Matrix (Correlation between COs&POs,PSOs):

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	3	-	-	-	-	-	-	-	-	-	2	2	1	-
CO2	3	3	1	-	-	-	-	-	-	-	-	2	3	1	-
CO3	3	3	1	-	-	-	-	-	-	-	-	2	1	2	-
CO4	2	3	-	-	-	-	-	-	-	-	-	1	2	2	-
CO5	2	2	-	-	-	-	-	-	-	-	-	2	1	2	-
CO6	2	2	2	-	-	-	-	-	-	-	-	1	1	2	-

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

TEXT BOOK(S):

T1	Network Analysis – ME Van Valkenburg, Prentice Hall of India, revised 3rd Edition, 2019.
T2	Engineering Circuit Analysis by William H. Hayt, Jack Kemmerly, Jamie Phillips, Steven M. Durbin, 9 Edition 2020.
T3	Network lines and Fields by John. D. Ryder 2nd Edition, PHI

REFERENCE BOOK(S):

R1 D. Roy Choudhury, Networks and Systems, New Age International Publications, 2013.

R2 Joseph Edminister and Mahmood Nahvi, Electric Circuits, Schaum's Outline Series, 7th Edition, Tata McGraw Hill Publishing Company, New Delhi, 2017

R3 Fundamentals of Electric Circuits by Charles K. Alexander and Matthew N. O. Sadiku, McGraw-Hill Education.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN) - Section-C

UNIT-I:

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	12-02-24			
2.	Introduction to Unit-I	1	13-02-24			
3.	Types of circuit components	1	14-02-24			
4.	Types of Sources and Source Transformations	1	15-02-24			
5.	Mesh analysis and Nodal analysis	1	17-02-24			
6.	Problem Solving with resistances including dependent sources also	1	19-02-24			
7.	Principal of Duality with examples	1	20-02-24			
8.	Thevenin's Theorem	1	21-02-24			
9.	Norton's Theorem	1	22-02-24			
10.	Milliman's Theorem	1	24-02-24			
11.	Reciprocity Theorem	1	26-02-24			
12.	Compensation, Substitution Theorems	1	27-02-24			
13.	Superposition Theorem	1	28-02-24			
14.	Max Power Transfer Theorem	1	29-02-24			
15.	Tellegens Theorem	1	02-03-24			
16.	Problem solving using Dependent sources also	1	04-03-24			
No. of classes required to complete UNIT-I		14	No. of classes taken			

UNIT-II: Transients & Laplace transform

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
17.	First order differential equations	1	05-03-24			
18.	Definition of time constants	1	06-03-24			
19.	R-L circuit	1	07-03-24			
20.	RC circuit with DC excitation	1	09-03-24			
21.	evaluating initial conditions procedure	1	11-03-24			
22.	Second order differential equations	1	12-03-24			
23.	homogeneous, non-homogenous DEs	1	13-03-24			
24.	Problem-solving using R-L-C elements with DC excitation and AC excitation	1	14-03-24			
25.	Response as related to s-plane rotation of roots	1	16-03-24			
26.	Laplace transform: introduction	1	18-03-24			

27.	Laplace transformation, basic theorems		19-03-24			
28.	Problem solving using Laplace transform		20-03-24			
29.	Partial fraction expansion		21-03-24			
30.	Heaviside's expansions		23-03-24			
31.	Problem solving using Laplace transform		26-03-24			
No. of classes required to complete UNIT-II		10	No. of classes taken			

UNIT-III : Steady State Analysis of A.C Circuits

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Impedance concept, phase angle	1	27-03-24			
33.	series R-L, R-C, R-LC circuits problem solving	1	28-03-24			
34.	Complex impedance and phasor notation for R-L, R-C, R-L-C	1	30-03-24			
35.	problem solving using mesh and nodal analysis	1	08-04-24			
36.	Star-Delta conversion	1	10-04-24			
37.	Problem solving using Laplace transforms	1	13-04-24			
38.	Problem solving	1	15-04-24			
39.	Problem solving	1	16-04-24			
40.	Problem solving	1	18-04-24			
41.	Problem solving	1	20-04-24			
No. of classes required to completeUNIT-III.		10	No. of classes taken			

UNIT-IV: Resonance & Coupled Circuits

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	Introduction, Definition of Q	1	22-04-24			
43.	Series resonance, Bandwidth of series resonance	1	23-04-24			
44.	Parallel resonance	1	24-04-24			
45.	General case-resistance present in both branches	1	25-04-24			
46.	Anti-resonance at all frequencies	1	27-04-24			
47.	Coupled Circuits: Self-inductance	1	29-04-24			
48.	Mutual inductance, Coefficient of coupling	1	30-04-24			
49.	Analysis of coupled circuits	1	01-05-24			
50.	Natural current, Dot rule of coupled circuits	1	02-05-24			
51.	conductively coupled equivalent circuits-problem solving	1	04-05-24			
52.	Problem Solving	1	06-05-24			
53.	Problem Solving	1	07-05-24			
54.	Problem Solving	1	08-05-24			
55.	Problem Solving	1	09-05-24			
No. of classes required to complete UNIT-IV		10	No. of classes taken			

UNIT-V: Two-port Network

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Relationship of two port networks	1	11-05-24			
57.	Z-parameters, Y-parameters	1	13-05-24			
58.	Transmission line parameters, h-parameters	1	14-05-24			
59.	Relationships Between parameter Sets	1	15-05-24			
60.	Parallel & series connection of two port networks	1	16-05-24			
61.	Cascading of two port networks	1	18-05-24			
62.	problem solving using dependent sources also	1	20-05-24			
63.	Image and iterative impedances	1	21-05-24			
64.	Image and iterative transfer constants	1	22-05-24			
65.	Insertion loss, Attenuators and pads.	1	23-05-24			
66.	Lattice network and its parameters	1	25-05-24			
67.	Impedance matching networks	1	27-05-24			
68.	Problem Solving	1	28-05-24			
69.	Problem Solving	1	29-05-24			
70.	Problem Solving	1	30-05-24			
No. of classes required to complete UNIT-V		**9**	No. of classes taken			

Contents beyond the Syllabus

S.No.	Topic/s	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
71.	Filters	1				
72.	Attenuators	1				

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:

Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	**A1=5**
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	**M1=15**
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	**Q1=10**
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	**A2=5**
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	**M2=15**
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	**Q2=10**
Cumulative Internal Examination (CIE) = 80% of Max((M1+Q1+A1) , (M2+Q2+A2)) + 20% of Min((M1+Q1+A1) , (M2+Q2+A2))	**30**
Semester End Examination (SEE)(Unit-I, Unit – II, Unit –III, Unit-IV and Unit-V)	**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 teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1: **Communication:** Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

PSO 2: **VLSI and Embedded Systems:** Design and Analyze Analog and Digital Electronic Circuits or systems and implement real time applications in the field of VLSI and Embedded Systems using relevant tools.

PSO 3: **Signal Processing:** Apply the Signal processing techniques to synthesize and realize the issues related to real time applications.

Date:

Course Instructor	Course Coordinator	Module Coordinator	HOD
M.Sambasiva Reddy	Mr.G.Venkata Rao	Dr.G.Srinivasulu	Dr.Y.Amar Babu

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DEPARTMENT OF FRESHMANENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.S.VijayaDasaradha
Course Name & Code **:** Chemistry Lab&23FE52
L-T-P Structure **:0-0-3** **Credits:1.5**
Program/Sem/Sec : B.Tech/I-sem/ECE-C **A.Y. :**2023-24

Pre requisites: Nil

Course Educational Objective:

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

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

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

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

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-C

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 Engineeringchemistry lab	3	12-02-2024		TLM1		
2.	Preparation of a Bakelite	3	19-02-2024		TLM4	CO1	
3.	Determination of amount of HCl using standard Na_2CO_3 solution	3	26-02-2024		TLM4	CO1	
4.	Determination of Strength of an acid in Pb-Acid battery	3	04-03-2024		TLM4	CO1	
5.	Estimation of Ferrous Iron by Dichrometry	3	11-03-2024		TLM4	CO1	
6.	Conductometric titration of strong acid vs. strong base	3	18-03-2024		TLM4	CO1	
7.	Conductometric titration of weak acid vs. strong base	3	08-04-2024		TLM4	CO1	
8.	Potentiometry - determination of redox potentials and emfs	3	15-04-2024		TLM4	CO1	
9.	Preparation of nanomaterials by precipitation method	3	22-04-2024		TLM4	CO2	
10.	Verify Lambert-Beer's law	3	29-04-2024		TLM4	CO4	
11.	Wavelength measurement of sample through UV-Visible Spectroscopy	3	06-05-2024		TLM4	CO4	
12.	Identification of simple organic compounds by IR	3	13-05-2024		TLM4	CO4	
13.	Revision	3	20-05-2024		TLM4	CO4	
14	Internal Exam	3	27-05-2024		TLM4	CO4	
	Total						

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

Part - C

EVALUATION PROCESS:

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

(a) Continuous Internal Evaluation(CIE):

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

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

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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

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

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

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

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor : Mr. Sk. Johny Basha / Mrs. P.M.K. Kumari / Mr. P. Nagababu

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

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

Program/Sem/Sec : B.Tech. – ECE / II Sem. / C A.Y. : 2023 – 24

PRE-REQUISITE: Fundamentals of Mathematics

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

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)	Apply – Level 3
CO2:	Select the right control structure for solving the problem. (Apply)	Apply – Level 3
CO3:	Develop C programs which utilize memory efficiently using programming constructs like pointers. (Apply)	Apply – Level 3
CO4:	Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (Apply).	Apply – Level 3
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
CO1	3	2	-	-	3	-	-	-	-	-	-	-
CO2	3	2	2	-	3	-	-	-	-	-	-	-
CO3	3	2	2	-	3	-	-	-	-	-	-	-
CO4	3	2	2	-	3	-	-	-	-	-	-	-
CO5	-	-	-	-	-	-	-	2	2	2	2	2

1 – Low **2 –** Medium **3 –** High

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Week – 1 and Week – 2	03			DM5
2.	Week – 3	03			DM5
3.	Week – 4 and Week – 5	03			DM5
4.	Week – 6	03			DM5
5.	Week – 7	03			DM5
6.	Week – 8	03			DM5
7.	Week – 9	03			DM5
8.	Week – 10	03			DM5
9.	Week – 11	03			DM5
10.	Week – 12	03			DM5
11.	Week – 13	03			DM5
12.	Week – 14	03			DM5
13.	Internal Lab Exam	03			DM4

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. Shaik Johny Basha	Dr. Y.V. Bhaskar Reddy	Dr. Y.V. Bhaskar Reddy	Dr. Y. Amar Babu
Signature				

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.
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.
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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.
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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.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr. Shaik Johny Basha**	**Dr. Y.V. Bhaskar Reddy**	**Dr. Y.V. Bhaskar Reddy**	**Dr. Y. Amar Babu**
Signature				

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. EESHWAR RAM J & Mr. P MOHANA G RAJU

Course Name &	**:** Engineering Workshop & 23ME51	**Regulation**	: R23
L-T-P Structure	**: 0-0-3**	**Credits**	: 1.5
Program/Sem/Sec	**: B. Tech/II/ECE**	**A.Y.**	: 2023-24

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): To familiarize students with wood working, sheet metal operations, fitting, electrical house wiring skills, and basic repairs of two-wheeler vehicles.

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

CO1	Identify workshop tools and their operational capabilities. **(Remember)**
CO2	Practice on manufacturing of components using workshop trades including fitting, carpentry, foundry and welding. **(Understand)**
CO3	Apply fitting operations in various applications. **(Apply)**
CO4	Apply basic electrical engineering knowledge for House Wiring Practice. **(Apply)**

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

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

Textbooks:

T1. Basic Workshop Technology: Manufacturing Process, Felix W.; Independently Published,2019. Workshop Processes, Practices and Materials; Bruce J. Black, Routledge publishers, 5th Edn. 2015.
T2. A Course in Workshop Technology Vol I. & II, B.S. Raghuwanshi, Dhanpath Rai & Co., 2015 & 2017.

Reference Books:

R1. LBRCE Workshop Lab Manual.
R2. Elements of Workshop Technology, Vol. I by S. K. Hajra Choudhury & Others, Media Promoters and Publishers, Mumbai. 2007, 14th edition.
R3. Workshop Practice by H. S. Bawa, Tata-McGraw Hill, 2004.
R4. Wiring Estimating, Costing and Contracting; Soni P.M. & Upadhyay P.A.; Atul Prakash an, 2021-22.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

Si.No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-I					
1.	Introduction to Lab	3	15-02-2024		TLM4	
2.	Dove Tail Joint	3	22-02-2024		TLM4	
3.	Corner Lap Joint	3	29-02-2024		TLM4	
4.	T-Fitting	3	07-03-2024		TLM4	
5.	V-Fitting	3	14-03-2024		TLM4	
6.	Two Laps in Series and Parallel Connection with One Way Switch	3	21-03-2024		TLM4	
7.	Florescent Lamp and Calling Bell Circuit	3	28-03-2024		TLM4	
	CYCLE-II					
8.	Preparation of Pipe Layout	3	04-04-2024		TLM4	
9.	Pipe Threading	3	18-04-2024		TLM4	
10.	Preparation of Rectangular Tray	3	25-04-2024		TLM4	
11.	Preparation of Open Scoop	3	02-05-2024		TLM4	
12.	Preparation Of S-Hook	3	09-05-2024		TLM4	
13.	Preparation of chisel,	3	16-05-2024		TLM4	
14.	Repetition	3	23-05-2024		TLM4	
15.	Internal Lab Exam	3	30-05-2024		-----	
No. of classes required to complete 13				**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	**Expt. no's**	**Marks**
Day to Day work = **A**	1,2,3,4,5,6,7,8…	A=10
Record/ Viva = **B**	1,2,3,4,5,6,7,8	B=05
Internal Test = **C**	1,2,3,4,5,6,7,8	C = 15
Cumulative Internal Examination: A+B+C = 30	1,2,3,4,5,6,7,8	**30**
Semester End Examinations = D	1,2,3,4,5,6,7,8	**70**
Total Marks: A+ B + C + D = 100	1,2,3,4,5,6,7,8	**100**

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To provide students with sound mathematical, engineering, and multidisciplinary knowledge to solve Aerospace and Allied Engineering
PEO 2	To prepare students to excel in higher education programs and to succeed in industry/academia profession.
PEO 3	To inculcate ethical attitude, leadership qualities, problem solving abilities and life-long learning for a successful professional career.

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
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
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

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 teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society 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	To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures, and Flight Dynamics in Aerospace vehicle design.
PSO 2	To prepare the students to work effectively in Aerospace and Allied Engineering organizations.

	Course Instructor		**Head of the Department**
Signature			
Name of the Faculty	Mr. EESHWAR RAM		Dr. J V RAO

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada
Accredited by NAAC with "A" Grade and NBA
L B Reddy Nagar, Mylavaram-521 230, NTR District, Andhra Pradesh.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. M.Sambasiva Reddy

Course Name & Code : Network Analysis and Simulation Laboratory– 23EC51

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

Program/Sem/Sec : B.Tech., ECE., II-Sem., Section- C A.Y : 2023-24

PRE-REQUISITE: Basic Electrical Engineering Concepts

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To gain hands on experience in verifying Kirchoff's laws and network theorems
- To analyze transient behavior of circuits
- To study resonance characteristics
- To determine 2-port network parameters

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO1	Demonstrate fundamental circuit laws, network theorems, node and mesh analysis of electrical circuits **(Apply)**
CO2	Design resonance circuit for given specifications **(Analyze)**
CO3	Measure time constants of RL & RC circuits **(Apply)**
CO4	Analyze the 1st and 2nd order circuits with respect to parameter variation **(Analyze)**
CO5	Characterize and model the network in terms of all network parameters **(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	2	2	-	1	2	-	-	-	-	2	1	2	2	1	-
CO2	2	2	-	1	2	-	-	-	-	2	2	2	3	1	-
CO3	2	2	-	1	1	-	-	-	-	2	1	2	1	2	-
CO4	2	3	-	1	2	-	-	-	-	2	1	2	2	2	-
CO5	2	2	-	1	2	-	-	-	-	2	2	2	1	2	-

Correlation Levels: **1**-Slight (Low), **2**-Moderate (Medium), **3**-Substantial (High) and No correlation: **'-'**

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section – C

Expt. No	Experiment/s	COs	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
--	Introduction to NA Lab experiments, COs, POs and PSOs	--	3	14-02-24		TLM1	
Cycle – I							
1	Experiment – 1	CO1,CO4	3	21-02-24		TLM4	
2	Experiment – 2	CO1,CO4	3	28-02-24		TLM4	
3	Experiment – 3	CO1,CO4	3	06-03-24		TLM4	
4	Experiment – 4	CO1,CO4	3	13-03-24		TLM4	
5	Experiment – 5	CO1,CO4	3	20-03-24		TLM4	
6	Experiment – 6	CO2,CO4	3	27-03-24		TLM4	
Cycle – II							
7	Experiment – 7	CO1,CO4	3	10-04-24		TLM4	
8	Experiment – 8	CO1,CO4	3	24-04-24		TLM4	
9	Experiment – 9	CO2,CO4	3	01-05-24		TLM4	
10	Experiment – 10	CO3,CO4	3	08-05-24		TLM4	
11	Experiment – 11	CO3,CO4	3	15-05-24		TLM4	
12	Experiment – 12	CO3,CO4	3	22-05-24		TLM4	
13	Experiment beyond the syllabus		3	22-05-24		TLM4	
--	Internal Examination	--	3	29-05-24			

Experiments to be conducted:

Exp. No	CYCLE-1	Exp. No	CYCLE-2
1	Study of components of a circuit and Verification of KCL and KVL	7	To study the transient and steady state response of a 2nd order circuit by varying its various parameters and studying their effects on responses
2	Verification of mesh and nodal analysis for AC circuits	8	Find the Q Factor and Bandwidth of a Series and Parallel Resonance circuit
3	Verification of Superposition, Thevenin's & Norton theorems for AC circuits	9	Determination of open circuit (Z) and short circuit (Y) parameters
4	Verification of maximum power transfer theorem for AC circuits	10	Determination of hybrid (H) and transmission (ABCD) parameters
5	Study of DC transients in RL, RC and RLC circuits	11	Determination of hybrid (H) and transmission (ABCD) parameters
6	To study frequency response of various 1st order RL & RC networks	12	To measure two port parameters of a twin-T network and study its frequency response.

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:

Evaluation Task	**Expt. no's**	**Marks**
Day to Day work = **A**	1,2,3,4,5,6,7,8…	A = 10
Record = **B**	1,2,3,4,5,6,7,8…	B = 05
Internal Test = **C**	1,2,3,4,5,6,7,8…	C = 15
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8…	**30**
Semester End Examinations = D	1,2,3,4,5,6,7,8…	**70**
Total Marks: A + B + C + D = 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.
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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.
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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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

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Date:15/02/2024

Association hour Schedule (A.Y. 2023-24)

(II Sem., ECE, Section-C)

All the **II Sem. ECE Section-C** students are informed to organize the association hour as per the following schedule.

S. No	Roll No	Tentative Date	Name of the Activity	Tentative Date	Name of the Activity
1	23761A04D3	17.02.2024	Story Telling	20.04.2024	Debate onGlobal Warming – its impact
2	23761A04D4				
3	23761A04D5				
4	23761A04D6				
5	23761A04D7				
6	23761A04D8				
7	23761A04D9	17.02.2024	Debate on social media – A boom or bang	27.04.2024	Story Telling
8	23761A04E0				
9	23761A04E1				
10	23761A04E2				
11	23761A04E3				
12	23761A04E4				
13	23761A04E5	02.03.2024	Story Telling	27.04.2024	Debate onSpace Technology
14	23761A04E6				
15	23761A04E7				
16	23761A04E8				
17	23761A04E9				
18	23761A04F0				
19	23761A04F1	02.03.2024	Debate on National Quantum Mission	04.05.2024	Story Telling
20	23761A04F2				
21	23761A04F3				
23	23761A04F4				
23	23761A04F5				
24	23761A04F6				
25	23761A04F7	16.03.2024	Story Telling	04.05.2024	Debate on 6G communication
26	23761A04F8				
27	23761A04F9				
28	23761A04G0				
29	23761A04G1				
30	23761A04G2				

31	23761A04G3	16.03.2024	Debate on AI and Its impact	18.05.2024	Story Telling
32	23761A04G4				
33	23761A04G5				
34	23761A04G6				
35	23761A04G7				
36	23761A04G8				
37	23761A04G9	23.03.2024	Story telling	18.05.2024	Debate on Adverse effects of Online Gaming
38	23761A04H0				
39	23761A04H1				
40	23761A04H2				
41	23761A04H3				
42	23761A04H4				
43	23761A04H5	23.03.2024	Debate on Smart Farming	25.05.2024	Story Telling
44	23761A04H6				
45	23761A04H7				
46	23761A04H8				
47	23761A04H9				
48	23761A04I0				
49	23761A04I1	30.03.2024	Story Telling	25.05.2024	Debate onAugmented and Virtual reality
50	23761A04I2				
51	23761A04I3				
52	23761A04I4				
53	23761A04I5				
54	23761A04I6				
55	23761A04I7	30.03.2024	Debate on Bio Sensors	01.06.2024	Story Telling
56	23761A04I8				
57	23761A04I9				
58	23761A04J0				
59	23761A04J1				
60	23761A04J2				
61	23761A04J3	20.04.2024	Story Telling	01.06.2024	Debate on Visible light Communication
62	23761A04J4				
63	23761A04J5				
64	23761A04J6				
65	23761A04J7				
66	23761A04J8				

Faculty In-charge **HOD ECE**