



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 ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. K. SRIDEVI

Course Name & Code : PC-II, 20FE02

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

Credits: 02

Program/Sem/Sec : EEE-A -II SEM

A.Y. : 2021-22

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To improve English language proficiency of the students on various aspects like vocabulary, grammar, communication skills, listening skills, Reading & Writing skills.

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

CO1	Produce a coherent paragraph interpreting a figure/graph/chart/table.	L2
CO2	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
CO3	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
CO4	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
CO5	Write well structured essays; Reports &Résumé.	L3

UNIT-I

Fabric of Change-‘H.G. Wells and the Uncertainties of Progress–Peter J. Bowler’; Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary: Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting; Degrees of Comparison; Writing: Information Transfer.

UNIT-II

Tools for Life - ‘Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far’;

Reading: Global Comprehension; Detailed Comprehension; Grammar & Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays using suitable claims and evidences.

UNIT-III

‘**Homi Jahangir Bhabha**’; Grammar & Vocabulary: Words often confused; Common Errors; Writing: Incident & Investigation Reports.

UNIT-IV

'Jagdish Chandra Bose'; Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.

UNIT-V

'Prafulla Chandra Ray'; Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

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

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

TEXTBOOKS:

- T1** Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
- T2** "The Great Indian Scientists" published by Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

- R1** Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2** Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- R4** Baradwaj Kumkum, "Professional Communication", I. K. International PublishingHousePvt.Lt.,NewDelhi,2008.
- R5** Wood, F. T., "Remedial English Grammar" , Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	01	04-05-2022		TLM2	
2.	Fabric of Change -‘H.G. Wells and the Uncertainties of Progress– Peter J. Bowler’	01	06-05-2022		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	11-05-2022		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	01	13-05-2022		TLM2	
5.	Adjectives and adverbs	01	18-05-2022		TLM2	
6.	Degrees of Comparison	01	20-05-2022		TLM2	
7.	Writing: Information Transfer.	01	25-05-2022		TLM2 TLM6	
No. of classes required to complete UNIT-I: 07				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - ‘Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far’;	01	27-05-2022		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	01-06-2022		TLM2	
10.	Active & Passive Voice	01	03-06-2022		TLM2	
11.	Idioms & Phrases	01	08-06-2022		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	10-06-2022		TLM2 TLM6	
No. of classes required to complete UNIT-II: 05				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	‘Homi Jahangir Bhabha’	02	15-06-2022 17-06-2022		TLM2 TLM6	
14.	Words often confused	01	29-06-2022		TLM2	
15.	Common Errors	01	01-07-2022		TLM2	
16.	Report Writing - Types & Formats	01	06-07-2022		TLM2	
17.	Incident and Investigation Reports	01	08-07-2022		TLM2 TLM6	
No. of classes required to complete UNIT-III: 06				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Jagadish Chandra Bose	01	13-07-2022		TLM2 TLM2	
19.	Use of antonyms	01	15-07-2022		TLM2	
20.	Correction of Sentences	01	20-07-2022		TLM2	
21.	Formal and Informal dialogues	01	22-07-2022		TLM2	
22.	Dialogue Writing.	01	27-07-2022		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 05				No. of classes taken:		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Prafulla Chandra Ray	01	29-07-2022		TLM2	
24.	Analogy	01	03-08-2022		TLM2	
25.	Sentence Completion	01	05-08-2022		TLM2	
26.	Resume - Formats	01	10-08-2022		TLM2	
27.	Writing a Résumé	01	12-08-2022		TLM2 TLM6	
No. of classes required to complete UNIT-V: 05				No. of classes taken:		

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

PART-C**EVALUATION PROCESS (R17 Regulation):**

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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



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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr B.SAGAR

Course Name & Code : PC-II, 20FE02

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

Credits: 02

Program/Sem/Sec :EEE-B-II SEM

A.Y. : 2021-22

PREREQUISITE : NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): To improve English language proficiency of the students on various aspects like vocabulary, grammar, communication skills, listening skills, Reading & Writing skills.

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

C01	Produce a coherent paragraph interpreting a figure/graph/chart/table.	L2
C02	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
C03	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
C04	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
C05	Write well structured essays; Reports &Résumé.	L3

UNIT-I

Fabric of Change-‘H.G. Wells and the Uncertainties of Progress–Peter J. Bowler’; Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary: Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting; Degrees of Comparison; Writing: Information Transfer.

UNIT-II

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Reading: Global Comprehension; Detailed Comprehension; Grammar & Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays using suitable claims and evidences.

UNIT-III

‘**Homi Jahangir Bhabha**’; Grammar & Vocabulary: Words often confused; Common Errors; Writing: Incident & Investigation Reports.

UNIT-IV

'Jagdish Chandra Bose'; Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.

UNIT-V

'Prafulla Chandra Ray'; Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

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

COs	PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1		1		1		1			3	3		2			
CO2		1		1		1			3	3		2			
CO3		1		1		1			3	3		2			
CO4		1		1		1			3	3		2			
CO5		1		1		1			3	3		2			
1 - Low			2 -Medium						3 - High						

TEXTBOOKS:

- T1** Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
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REFERENCE BOOKS:

- R1** Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2** Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- R4** Baradwaj Kumkum, "Professional Communication", I. K. International PublishingHousePvt.Lt.,NewDelhi,2008.
- R5** Wood, F. T., "Remedial English Grammar" , Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	01	7-5-2022		TLM2	
2.	Fabric of Change -‘H.G. Wells and the Uncertainties of Progress– Peter J. Bowler’	01	7-5-2022		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	10-5-2022		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	01	14-5-2022		TLM2	
5.	Adjectives and adverbs	01	17-5-2022		TLM2	
6.	Degrees of Comparison	01	21-5-2022		TLM2	
7.	Writing: Information Transfer.	01	24-5-2022		TLM2 TLM6	
No. of classes required to complete UNIT-I: 07				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - ‘Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far’;	01	28-5-2022		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	31-5-2022		TLM2	
10.	Active & Passive Voice	01	4-6-2022		TLM2	
11.	Idioms & Phrases	01	7-6-2022		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	11-6-2022		TLM2 TLM6	
No. of classes required to complete UNIT-II: 05				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	‘Homi Jahangir Bhabha’	02	14-06-2022		TLM2 TLM6	
14.	Words often confused	01	18-6-2022		TLM2	
15.	Common Errors	01	28-6-2022		TLM2	
16.	Report Writing - Types & Formats	01	2-7-2022		TLM2	
17.	Incident and Investigation Reports	01	5-7-2022		TLM2 TLM6	
No. of classes required to complete UNIT-III: 06				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Jagadish Chandra Bose	01	9-7-2022		TLM2 TLM2	
19.	Use of antonyms	01	12-7-2022		TLM2	
20.	Correction of Sentences	01	16-7-2022		TLM2	
21.	Formal and Informal dialogues	01	19-7-2022		TLM2	
22.	Dialogue Writing.	01	23-7-2022		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 05				No. of classes taken:		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Prafulla Chandra Ray	01	26-7-2022		TLM2	
24.	Analogy	01	30-7-2022		TLM2	
25.	Sentence Completion	01	2-8-2022		TLM2	
26.	Resume - Formats	01	6-8-2022		TLM2	
27.	Writing a Résumé	01	13-8-2022		TLM2 TLM6	
No. of classes required to complete UNIT-V: 05				No. of classes taken:		

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

PART-C**EVALUATION PROCESS (R17 Regulation):**

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: D. VIJAY KUMAR

Course Name & Code : Linear algebra & Transformation Techniques&20FE04

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

Credits:3

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

A.Y.: 2020 - 21

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the students learn Matrix algebra. also students introduced to integral transformation which includes Laplace transformation and Z – Transformations.

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

CO1	Investigate the consistency of the system of equations and solve them.
CO2	Determine the Eigen vectors and inverse, powers of a matrix by using Cayley – Hamilton theorem.
CO3	Use the concepts of Laplace transforms to various forms of functions.
CO4	Solve Ordinary differential equations by using Laplace Transformations.
CO5	Apply Z- Transformations to solve difference equations.

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

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

TEXTBOOKS:

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

T2 Dr. B. V. Ramana, “Higher Engineering Mathematics”, 1st Edition, TMH, New Delhi, 2010.

REFERENCE BOOKS:

R1 M. D. Greenberg, “Advanced Engineering Mathematics”, 2nd Edition, TMH Publications, New Delhi, 2011.

R2 Erwin Kreyszig, “Advanced Engineering Mathematics”, 8th Edition, John Wiley & sons, New Delhi, 2011.

R3 W.E. Boyce and R. C. Diprima, “Elementary Differential Equations”, 7th Edition, John Wiley & sons, New Delhi, 2011.

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Linear System of Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	02/05/22		TLM1	
2.	Introduction to UNIT I	1	06/05/22		TLM2	
3.	Echelon form of a matrix	1	07/05/22		TLM1	
4.	Echelon form of a matrix	1	09/05/22		TLM1	
5.	Normal form of a matrix	1	10/05/22		TLM1	
6.	Normal form of a matrix	1	13/05/22		TLM1	
7.	PAQ form	1	14/05/22		TLM1	
8.	Solution of Homogeneous linear system of equations	1	16/05/22		TLM1	
9.	Tutorial 1	1	17/05/22		TLM3	
10.	Solution of Non homogeneous Linear system of equations	1	20/05/22		TLM1	
11.	Solution of Non homogeneous Linear system of equations	1	21/05/22		TLM1	
12.	Solution of Non homogeneous Linear system of equations	1	23/05/22		TLM1	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: Eigen values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Introduction to UNIT II	1	24/05/22		TLM2	
14.	Eigen values of a matrix	1	27/05/22		TLM1	
15.	Eigen values and Eigen vectors of a matrix	1	28/05/22		TLM1	
16.	Eigen values and Eigen vectors of a matrix	1	30/05/22		TLM1	
17.	Properties	1	31/05/22		TLM1	
18.	Properties		03/06/22			
19.	Cayley – Hamilton Theorem	1	04/06/22		TLM1	
20.	TUTORIAL 2	1	06/06/22		TLM3	
21.	Inverse and powers of a matrix by using Caley – Hamilton Theorem	1	10/06/22		TLM1	
22.	Inverse and powers of a matrix by using Caley – Hamilton Theorem	1	11/06/22		TLM1	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: Laplace Transformation

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.	Introduction to Unit-III	1	13/06/22		TLM2	
24.	Standard forms of Laplace Transformations	1	14/06/22		TLM1	
25.	Linear Property, Shifting Theorem	1	17/06/22		TLM1	
26.	Change of scale property,	1	18/06/22		TLM1	

	Multiplication by t				
27.	Multiplication by t	1	27/06/22		TLM1
28.	Division by t	1	28/06/22		TLM3
29.	TUTORIAL 3	1	01/07/22		TLM 1
30.	Transformation derivatives and Integrals	1	02/07/22		TLM1
31.	Transformation integrals	1	04/07/22		TLM1
32.	Unit step function and Dirac's delta function	1	05/07/22		TLM1
No. of classes required to complete UNIT-III: 10				No. of classes taken:	

UNIT-IV: Inverse Laplace Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Introduction to UNIT IV	1	06/07/22		TLM1	
34.	Linear property	1	08/07/22		TLM1	
35.	Shifting properties	1	11/07/22		TLM1	
36.	Inverse Laplace transformation by using partial fractions	1	12/07/22		TLM1	
37.	Inverse Laplace transformation by using partial fractions	1	15/07/22		TLM1	
38.	Inverse Laplace Transformation by using Convolution theorem	1	16/07/22		TLM1	
39.	Inverse Laplace Transformation by using Convolution theorem	1	18/07/22		TLM3	
40.	TUTORIAL 4	1	19/07/22		TLM1	
41.	Solving of Ordinary differential equation by Laplace transform method	1	22/07/22		TLM1	
42.	Solving of Ordinary differential equation by Laplace transform method	1	23/07/22		TLM3	
No. of classes required to complete UNIT-IV: 10				No. of classes taken:		

UNIT-V: Z- Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
43.	Introduction to UNIT V	1	25/07/22		TLM1	
44.	Standard forms of Z-Transformation	1	26/07/22		TLM1	
45.	Damping rule	1	29/07/22		TLM1	
46.	Shifting Rule	1	30/07/22		TLM1	
47.	Initial and final value theorems	1	01/08/22		TLM1	
48.	Inverse Z – Transformations	1	02/08/22		TLM1	
49.	Inverse Z – Transforms by using partial fractions	1	05/08/22		TLM1	
50.	Inverse Z – Transformation by using convolution theorem	1	06/08/22		TLM1	
51.	Solving of Difference equations by using Z – Transformations	1	08/08/22		TLM1	
52.	Solving of Difference equations by using Z - Transformations	1	12/08/22		TLM1	
53.	TUTORIAL 5	1	13/08/22		TLM3	
54.	Content beyond the syllabus	1	13/08/22		TLM5	

No. of classes required to complete UNIT-V:12	No. of classes taken:
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Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	D. VIJAY KUMAR	Dr. K. Jhansi Rani	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM/SEM/SEC	: I B. Tech., II-Sem., EEE - B
ACADEMIC YEAR	: 2021-22
COURSE NAME & CODE	: Linear algebra & Transformation Techniques&20FE04
L-T-P STRUCTURE	: 3-1-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Dr. M. Srinivasa Reddy.
COURSE COORDINATOR	: Dr. K. Jhansi Rani
PRE-REQUISITES	: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course the students learn Matrix algebra and introduced with transformation techniques such as Laplace transformation and Z – Transformations.

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

CO1	Investigate the consistency of the system of equations and solve them. (Apply L3)
CO2	Determine the Eigen vectors and inverse, powers of a matrix by using Cayley – Hamilton theorem. (Apply L3)
CO3	Use the concepts of Laplace transforms to various forms of functions.(Understand L2)
CO4	Solve Ordinary differential equations by using Laplace Transformations. (Apply L3)
CO5	Apply Z- Transformations to solve difference equations. (Apply L3)

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

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

TEXTBOOKS:

- T1** Dr. B.S. Grewal, “Higher Engineering Mathematics”, 42nd Edition, Khanna Publishers, New Delhi, 2012.
- T2** Dr. B. V. Ramana, “Higher Engineering Mathematics”, 1st Edition, TMH, New Delhi, 2010.

REFERENCE BOOKS:

- R1** M. D. Greenberg, “Advanced Engineering Mathematics”, 2nd Edition, TMH Publications, New Delhi, 2011.
- R2** Erwin Kreyszig, “Advanced Engineering Mathematics”, 8th Edition, John Wiley & sons, New Delhi, 2011.
- R3** W.E. Boyce and R. C. Diprima, “Elementary Differential Equations”, 7th Edition, John Wiley & sons, New Delhi, 2011.

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	04/05/22		TLM1	

UNIT-I: Linear System of Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
2.	Introduction to the course, Course Outcomes	1	06/05/22		TLM1	
3.	Introduction to UNIT I	1	07/05/22		TLM2	
4.	Echelon form of a matrix	1	10/05/22		TLM1	
5.	Normal form of a matrix	1	11/05/22		TLM1	
6.	Normal form of a matrix	1	13/05/22		TLM1	
7.	PAQ form	1	14/05/22		TLM1	
8.	Solution of Homogeneous linear system of equations	1	17/05/22		TLM1	
9.	Solution of Non homogeneous Linear system of equations	1	18/05/22		TLM1	
10.	Solution of Non homogeneous Linear system of equations	1	20/05/22		TLM1	
11.	Tutorial 1	1	21/05/22		TLM3	
12.	Solution of homogeneous Linear system of equations	1	24/05/22		TLM1	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: Eigen values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Introduction to UNIT II	1	25/05/22		TLM2	
14.	Eigen values of a matrix	1	27/05/22		TLM1	
15.	Eigen values and Eigen vectors of a matrix.	1	28/05/22		TLM1	
16.	Eigen values and Eigen vectors of a matrix.	1	31/05/22		TLM1	
17.	Properties	1	01/06/22		TLM1	
18.	Properties		03/06/22			
19.	Cayley – Hamilton Theorem.	1	04/06/22		TLM1	
20.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	07/06/22		TLM1	
21.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	08/06/22		TLM1	
22.	Tutorial 2	1	11/06/22		TLM3	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: Laplace Transforms

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.	Introduction to Unit-III	1	10/06/22		TLM2	
24.	Standard forms of Laplace Transforms.	1	14/06/22		TLM1	
25.	Linear Property, Shifting Theorem.	1	15/06/22		TLM1	
26.	Change of scale property, Multiplication by t.	1	17/06/22		TLM1	
27.	Multiplication by t.	1	18/06/22		TLM1	

II MID EXAMINATIONS (20-06-2022 TO 25-06-2022)						
28.	Division by t	1	28/06/22			TLM1
29.	Laplace transforms of derivatives.	1	29/06/22			TLM 1
30.	Laplace transforms of Integrals.	1	01/07/22			TLM1
31.	Tutorial 3	1	02/07/22			TLM3
32.	Unit step function and Dirac's delta function.	1	05/07/22			TLM1
33.	Application of Laplace Transforms.	1	06/07/22			TLM1
No. of classes required to complete UNIT-III: 11				No. of classes taken:		

UNIT-IV: Inverse Laplace Transforms

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.	Introduction to UNIT IV.	1	08/07/22		TLM2	
35.	Linear property.	1	09/07/22		TLM1	
36.	Shifting properties.	1	12/07/22		TLM1	
37.	Inverse Laplace transform by using partial fractions.	1	13/07/22		TLM1	
38.	Inverse Laplace transform by using partial fractions.	1	15/07/22		TLM1	
39.	Inverse Laplace Transform by using Convolution theorem.	1	16/07/22		TLM1	
40.	Inverse Laplace Transform by using Convolution theorem.	1	19/07/22		TLM1	
41.	Solving of Ordinary differential equation by Laplace transform method.	1	20/07/22		TLM1	
42.	Solving of Ordinary differential equation by Laplace transform method.	1	22/07/22		TLM1	
43.	Tutorial 4	1	23/07/22		TLM3	
No. of classes required to complete UNIT-IV: 10				No. of classes taken:		

UNIT-V: Z- Transforms

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.	Introduction to UNIT V.	1	26/07/22		TLM1	
45.	Standard forms of Z- Transform.	1	27/07/22		TLM1	
46.	Damping rule	1	29/07/22		TLM1	
47.	Shifting Rule	1	30/07/22		TLM1	
48.	Initial and final value theorems	1	02/08/22		TLM1	
49.	Inverse Z – Transforms by using partial fractions.	1	03/08/22		TLM1	
50.	Inverse Z – Transforms by using convolution theorem.	1	05/08/22		TLM1	
51.	Solving of Difference equations by using Z – Transforms.	1	06/08/22		TLM1	
52.	Solving of Difference equations by using Z – Transforms.	1	10/08/22		TLM1	
53.	Tutorial 5	1	13/08/22		TLM3	
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
54.	Solving of PDE other methods	1	12/08/22		TLM3	

II MID EXAMINATIONS (15-08-2022 TO 20-08-2022)

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

PART-C

EVALUATION PROCESS (R17 Regulation):

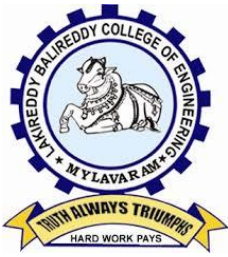
Evaluation Task	Marks
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV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

PART-D

PROGRAMME OUTCOMES (POs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. M.Srinivasa Reddy	Dr. K. Jhansi Rani	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Signature				



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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr.B.Pangedaiah
 Course Name & Code : Programming for ProblemSolving Using C (20CS01)
 L-T-P Structure : 3-0-0 Credits : 3
 Program/Sem/Sec : B.Tech. –EEE / IISem /A sec A.Y.: 2022-23

PRE-REQUISITE:NI:

COURSE EDUCATIONAL OBJECTIVE (CEO):The Objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, user defined structures, basics of files and its I/O operations.

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

CO1:	Familiar with syntax and semantics of the basic programming language constructs	Understand – Level 2
CO2:	Construct derived data types like arrays in solving problem	Apply – Level 3
CO3:	Decompose a problem into modules and reconstruct it using various ways of user-defined functions	Apply – Level 3
CO4:	Use user-defined data types like structures and unions and its applications to solve problems	Apply – Level 3
CO5:	Discuss various file I/O operations and its application	Understand – Level 2

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

REFERENCE BOOKS:

R1: Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers, 7th Edition, 2013

R2: E Balagurusamy, Computer Programming, McGraw Hill Education, 8th Edition

R3: C: The Complete Reference, McGraw Hall Education, 4th Edition.

R4: Pradeep Dey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011.

R5: Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2005.

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 Problem solving through CProgramming: Problem Specification, Algorithm, Pseudo Code	1	02-05-2022			
2.	Flowchart, Examples on Algorithm and Flowcharts	1	04-05-2022			
3.	C Programming: Structure of C Program, Identifiers, Basic Data Types and Sizes	1	06-05-2022			
4.	Constants, Variables, Input - Output Statements, A sample CProgram	1	09-05-2022			
5.	Operators Part - I	1	10-05-2022			
6.	Operators Part - II	1	11-05-2022			
7.	Expressions, Type Conversions, Conditional Expression	1	13-05-2022			
8.	Precedence of Operators,Order of Evaluation	1	16-05-2022			
9.	Control statements: if, if else	1	17-05-2022			
10.	else if ladder and nested if	1	18-05-2022			
11.	switch statement	1	20-05-2022			
12.	while loop, do-while loop	1	23-05-2022			
13.	for loop	1	24-05-2022			
14.	break, continue, go to and labels	1	25-05-2022			
No. of classes required to complete UNIT - I: 14				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
15.	Arrays: Definition, Types of Arrays	1	27-05-2022			
16.	1D-Array Syntax, Declaration, and Initialization	1	30-05-2022			
17.	Storing and Accessing Elements in 1D-Array	1	31-05-2022			
18.	Applications of 1D-Array: Linear Search and Binary Search, Bubble Sort Algorithm	1	01-06-2022			
19.	Two-Dimensional Array Syntax, Declaration, and Initialization	1	03-06-2022			
20.	Storing and Accessing Elements in 2D-Array	1	06-06-2022			
21.	Applications of 2D Arrays	1	07-06-2022			
22.	Multi-Dimensional Arrays	1	08-06-2022			
23.	Character Arrays: Declaration, Initialization, Reading and Writing Strings	1	10-06-2022			
24.	String Handling Functions Part - I	1	13-06-2022			
25.	String Handling Functions Part - II	1	14-06-2022			
26.	Pre-processor Directives Part - I	1	15-06-2022			

27.	Pre-processor Directives Part – II	1	17-06-2022		
No. of classes required to complete UNIT – II: 13				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
28.	Pointers: Definition, Declaration, Initialization of Pointer Variable	1	27-06-2022			
29.	Pointer Expressions	1	28-06-2022			
30.	Pointer Arithmetic, Pointers and Arrays	1	29-06-2022			
30	Pointers and Character Arrays, Pointers to Pointers	1	01-07-2022			
31	Functions: Basics, Category of Functions	1	04-07-2022			
32	Parameter Passing Techniques, Recursive Functions, Functions with Arrays	1	05-07-2022			
33	Standard Library Functions	1	06-07-2022			
34	Dynamic Memory Management Functions, Command Line Arguments	1	08-07-2022			
35	Storage Classes: auto, register, static and extern	1	11-07-2022			
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
36	Derived Types: Structure: Definition and Declaration	1	12-07-2022			
37	Initialization and Accessing Structures	1	13-07-2022			
38	Nested Structures	1	15-07-2022			
39	Arrays of Structures, Structures and Functions	1	18-07-2022			
40	Pointers to Structures Part – I	1	19-07-2022			
41	Self-Referential Structures	1	20-07-2022			
42	Union: Definition and Declaration	1	22-07-2022			
43	Initialization and Accessing Union Elements	1	25-07-2022			
44	Examples on Union	1	26-07-2022			
45	Structure vs Union, Typedef	1	27-07-2022			
No. of classes required to complete UNIT – IV: 10				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.	Files: Definition, Types of Files, Text files and Binary files	1	29-07-2022			
47.	Stream, Standard I/O and Formatted I/O	1	01-08-2022			

48.	Types of File I/O Operations	1	02-08-2022			
49.	Creation of a new file	1	03-08-2022			
50.	Opening an existing file, Reading from file	1	05-08-2022			
51.	Writing to a file	1	08-08-2022			
52.	Moving to a specific location in a file and closing a file	1	10-08-2022			
53.	Error Handling Basics, Error Handling Function Calls	1	12-08-2022			
No. of classes required to complete UNIT - V:12				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (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 OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	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	Mr.B.Pangedaiiah	Dr.J.Nageshwara Rao	Dr. Y.V. Bhaskar Reddy	Dr. D. Veeraiah
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

PART-A

Name of Course Instructor	: Mr. B.Pangedaiah	
Course Name & Code	: Programming for Problem Solving Using C Lab (20CS51)	
L-T-P Structure	: 0-0-3	Credits : 1.5
Program/Sem/Sec	: B.Tech. –EEE / II Sem /ASsec	A.Y.: 2022-23

PRE-REQUISITE: Programming and Problem-Solving Skills

COURSE EDUCATIONAL OBJECTIVE (CEO): The objective of the course is to learn the basic elements of C Programming Structures like Data Types, Expressions, Control Statements, and Various I/O Functions and to solve simple mathematical problems using control structures. Design and implementation of various software components, which solve real world problems.

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

CO1:	Apply control structures of C in solving computational problems.	Apply – Level 3
CO2:	Implement derived data types & use modular programming in problem solving	Apply – Level 3
CO3:	Implement user defined data types and perform file operations.	Apply – Level 3
CO4:	Improve individual / teamwork skills, communication & report writing skills with ethical values.	---

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Module 1: Introduction to Raptor Tool	03	7/05/2022 & 14/05/2022		DM5
2.	Module 2: Problem solving using Raptor Tool				DM5
3.	Module 3: Exercise Programs on Basics of C-Program	03	21/05/2022 & 28/05/2022		DM5
4.	Module 4: Exercise Programs on Control Structures	03	04/06/2022 & 11/06/2022		DM5
5.	Module 5: Exercise Programs on Loops & nesting of Loops	06	18/06/2022		DM5
6.	Module 6: Exercise Programs on Arrays & Strings	06	02/07/2022		DM5
7.	Module 7: Exercise Programs on Pointers	06	09/07/2022		DM5
8.	Module 8: Exercise Programs on Functions	06	16/07/2022 & 23/07/22		DM5
9.	Module 9: Exercise Programs on user defined data types	06	30/07/22		DM5
10.	Module 10: Exercise Programs on Files	06	06-08-2022		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

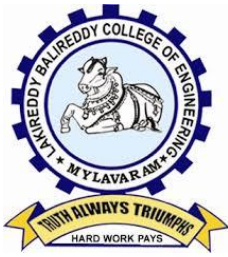
PROGRAMME OUTCOMES (POs):

P01	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
P03	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
P04	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
P05	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
P06	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
P07	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
P08	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
P09	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
P011	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
P012	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	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	Mr.B.Pangedaiah	Dr. M. Srinivasa Rao	Dr. Y.V. Bhaskar Reddy	Dr. D. Veeraiah
Signature				



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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.K.R.L.Prasad

Course Name & Code : Fundamentals of Electrical Engineering & 20EE04

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

Credits: 3

Program/Sem/Sec : B.TECH /II /A

A.Y.: 2021-22

PREREQUISITE: Applied Physics and Differential Equations

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of this course is to introduce the basic concepts of electrical circuits which is the foundation for all courses in Electrical and Electronics Engineering discipline. The emphasis of this course is laid on the basic analysis of circuits which includes single phase circuits, magnetic circuits and theorems.

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

CO1	Apply network reduction techniques to simplify electrical circuits .(Apply-L3)
CO2	Analyze the electrical circuits using fundamental laws(Apply-L3)
CO3	Analyze magnetic circuits.(Understand-L2)
CO4	Identify a suitable measuring instrument to measure electrical variables.(Understand-L2)
CO5	Determine the circuit parameters using AC and DC bridges.(Apply-L3)

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

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

TEXTBOOKS:

1. William Hayt and Jack E. Kemmerley, "Engineering Circuit Analysis" ,Mc Graw Hill Company, 9th edition, 2019.
2. "A. K. Sawhney", "Electrical & Electronic Measurement & Instruments", Dhanpat Rai & Co. Publications, 2005.

REFERENCE BOOKS:

1. Van Valkenburg, "Network Analysis and Synthesis", Pearson publication, 3rd edition, 2015.
2. A. Sudhakar, Shyammoan, S Palli, "Electrical Circuits Analysis-2" Tata McGraw- Hill, 5th edition, 2015.
3. N.C. Jagan, C. Lakshmi Narayana, "Network Analysis", BS publications 2nd edition, 2008.
4. Charles K Alexander, Mathew. N. O. Sadiku, "Fundamental of Electric Circuits", Tata McGraw- Hill, 6th edition, 2019.
5. Chakrabarti A, "Electric Circuits Analysis & Synthesis " Dhanpat Rai & Co (p) Ltd, 6th edition, 2014.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO ELECTRICAL CIRCUITS

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 COs		04-05-2022			
2.	Introduction to Electrical Circuits		05-05-2022			
3.	Basic Concepts of passive elements of R, L, C		06-05-2022			
4.	V-I relations, sources (dependent and independent)		07-05-2022			
5.	Tutorial1		11-05-2022			
6.	star-to-delta and delta-to-star transformation		12-05-2022			
7.	source transformation technique		13-05-2022			
8.	nodal analysis to DC networks with dependent sources		14-05-2022			
9.	Tutorial2		18-05-2022			
10.	mesh analysis to DC networks with dependent sources		19-05-2022			
11.	nodal analysis and mesh analysis to DC networks with independent sources		20-05-2022			
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: SINGLE PHASE AC CIRCUITS

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 to Single Phase AC Circuits		21-05-2022			
13.	R.M.S, average values and form factor for different periodic wave forms		25-05-2022			
14.	steady state analysis of R, L, C		26-05-2022			
15.	steady state analysis of R, L, C with sinusoidal excitation		27-05-2022			
16.	concept of reactance, impedance, susceptance and admittance		28-05-2022			
17.	Tutorial3		01-06-2022			
18.	phase and phase difference		02-06-2022			
19.	concept of complex power, real and reactive power and power factor		03-06-2022			
20.	Series and parallel resonance		04-06-2022			
21.	Tutorial4		08-06-2022			
22.	band width and quality factor		09-06-2022			
No. of classes required to complete UNIT-II: 11				No. of classes taken:		

UNIT-III: MAGNETIC CIRCUITS

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.	Introduction to Magnetic Circuits		10-06-2022				
24.	Basic terminology		11-06-2022				
25.	analogy between electrical and magnetic circuits		15-06-2022				
26.	Tutorial5		16-06-2022				
27.	Faraday's laws of electromagnetic induction		17-06-2022				
28.	concept of self and mutual inductance		18-06-2022				
29.	dot convention		29-06-2022				
30.	Tutorial6		30-06-2022				
31.	coefficient of coupling		01-07-2022				
32.	analysis of series magnetic circuits		02-07-2022				
33.	parallel magnetic circuits		06-07-2022				
No. of classes required to complete UNIT-III: 11				No. of classes taken:			

UNIT-IV: INTRODUCTION TO MEASURING INSTRUMENTS

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.	Introduction to Measuring Instruments		07-07-2022			
35.	Errors in measurement, Classification		08-07-2022			
36.	deflecting, control and damping torques		09-07-2022			
37.	Tutorial7		13-07-2022			
38.	ammeters and voltmeters		14-07-2022			
39.	PMMC, moving iron type instruments		15-07-2022			
40.	shunts and multipliers		16-07-2022			
41.	Tutorial8		20-07-2022			
42.	Construction and principle of operation of DC Potentiometer		21-07-2022			
43.	Current Transformer & Potential Transformer		22-07-2022			
44.	Singlephase dynamometer wattmeter & Single phase induction type energy meter		23-07-2022			
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V: DC & AC BRIDGES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
45.	Introduction to DC & AC Bridges		27-07-2022			
46.	Method of measuring low, medium and high resistance		28-07-2022			
47.	Wheat-stone's bridge		29-07-2022			
48.	Kelvin's double bridge		30-07-2022			
49.	Tutorial9		03-08-2022			
50.	loss of charge method		04-08-2022			
51.	Measurement of inductance		05-08-2022			
52.	Maxwell's bridge, Anderson's bridge		06-08-2022			
53.	Tutorial10		10-08-2022			
54.	Measurement of capacitance and loss angle		11-08-2022			
55.	Wien's bridge – Schering Bridge		12-08-2022			
56.	Revision		13-08-2022			
No. of classes required to complete UNIT-V: 12				No. of classes taken:		

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

PART-C**EVALUATION PROCESS (R17 Regulation):**

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO 2	Design and analyze electrical machines, modern drive and lighting systems
PSO 3	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO 4	Design controllers for electrical and electronic systems to improve their performance.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.K.R.L.Prasad	Dr.K.R.L.Prasad		Dr.J.Siva Vara Prasad
Signature				



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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF EEE

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.G.Nageswara Rao

Course Name & Code : Fundamentals of Electrical Engineering (20EE04)

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

Credits: 3

Program/Sem/Sec : B.Tech (II-Sem), B/S

A.Y.: 2021-22

PREREQUISITE: Applied Physics and Differential Equations

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of this course is to introduce the basic concepts of electrical circuits which is the foundation for all courses in Electrical and Electronics Engineering discipline. The emphasis of this course is laid on the basic analysis of circuits which includes single phase circuits, magnetic circuits and theorems.

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

CO1	Apply network reduction techniques to simplify electrical circuits. (Apply-L3)
CO2	Analyze the electrical circuits using fundamental laws. (Apply-L3)
CO3	Analyze magnetic circuits. (Understand-L2)
CO4	Identify a suitable measuring instrument to measure electrical variables. (Understand-L2)
CO5	Determine the circuit parameters using AC and DC bridges. (Apply-L3)

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	3	2	3									1	3	2		2
CO2	3	2	3									1	3	2		2
CO3	3	2										1	3	2		2
CO4	3	2										1	3	2		2
CO5	3	2										1	1			
	1 - Low			2 - Medium				3 - High								

TEXTBOOKS:

T1 William Hayt and Jack E.Kemmerley, "Engineering Circuit Analysis" ,Mc Graw Hill Company, 9th edition,2019.

T2 "A. K. Sawhney", "Electrical & Electronic Measurement & Instruments", Dhanpat Rai & Co. Publications, 2005.

REFERENCE BOOKS:

R1 Van Valkenburg, "Network Analysis and Synthesis", Pearson publication,3rd edition,2015.

R2 A. Sudhakar ,Shyammohan, S Palli, "Electrical Circuits Analysis-2" Tata McGraw- Hill, 5th edition,2015.

R3 N.C.Jagan, C.Lakshmi Narayana, "Network Analysis",BS publications 2nd edition,2008.

R4 Charles K Alexander, Mathew. N. O.Sadiku, "Fundamental of Electric Circuits", Tata McGraw- Hill ,6th edition,2019.

R5 ChakrabartiA,"Electric Circuits Analysis & Synthesis " Dhanpat Rai & Co (p) Ltd,6th edition,2014.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO ELECTRICAL CIRCUITS

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.	Course Educational Objectives & Course Outcomes	1			TLM2	
2.	Basic Concepts Of Passive Elements	1			TLM2	
3.	Kirchhoff's Laws	1			TLM2	
4.	Network Reduction Techniques	3			TLM2	
5.	Source Transformation Technique	1			TLM2	
6.	Nodal Analysis And Mesh Analysis	1			TLM2	
7.	Problems	2			TLM1	
No. of classes required to complete UNIT-I: 10				No. of classes taken:		

UNIT-II: SINGLE PHASE AC CIRCUITS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	R.M.S, average values and form factor	2			TLM2	
9.	steady state analysis of R, L, C	1			TLM2	
10.	concept of reactance, impedance, susceptance and admittance	1			TLM2	
11.	phase and phase difference, concept of complex power	1			TLM2	
12.	real and reactive power and power factor	1			TLM2	
13.	Series and parallel resonance, band width and quality factor	2			TLM2	
14.	Problems	2			TLM1	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: MAGNETIC CIRCUITS

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.	Basic terminology, analogy between electrical and magnetic circuits	1			TLM2	
16.	Faraday's laws of electromagnetic induction	1			TLM2	
17.	self and mutual inductance-dot convention-coefficient of coupling	1			TLM2	
18.	analysis of series and parallel magnetic circuits	2			TLM2	
19.	Problems	2			TLM1	
No. of classes required to complete UNIT-III: 7				No. of classes taken:		

UNIT-IV: INTRODUCTION TO MEASURING INSTRUMENTS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
20.	Errors in measurement, Classification	1			TLM2	
21.	ammeters and voltmeters – PMMC, moving iron type instruments	1			TLM2	
22.	shunts and multipliers	1			TLM2	
23.	DC Potentiometer, Current Transformer & Potential Transformer	1			TLM2	
24.	Single phase dynamometer wattmeter	1			TLM2	
25.	Single phase induction type energy meter	1			TLM2	
No. of classes required to complete UNIT-IV: 6				No. of classes taken:		

UNIT-V: DC & AC BRIDGES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Wheat-stone's bridge , Kelvin's double bridge , loss of charge method	2			TLM2	
27.	Maxwell's bridge, Anderson's bridge	2			TLM2	
28.	Wien's bridge – Schering Bridge	2			TLM2	
No. of classes required to complete UNIT-V: 6				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 ring 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	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power.
PSO 2	Design and analyze electrical machines, modern drive and lighting systems.
PSO 3	Specify, design, implement and test analog and embedded signal processing electronic systems.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.G.Nageswara Rao			Dr.J.Siva Vara Prasad
Signature				



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<http://cse.lbrce.ac.in>, cse.lbrce@gmail.com, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : **DR.A.V.G.A.Marthanda**
 Course Name & Code : CONSTITUTION OF INDIA (20MC01)
 L-T-P Structure : 2-0-0 Credits : 0
 Program/Sem/Sec : B.Tech., EEE., II-Sem., A A.Y: 2021-22

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive ,Legislature and Judiciary.
- To Understand Philosophy of fundamental rights and duties.
- To Understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commission of India
- To Understand the Central and State relation, financial and administrative.

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

CO 1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO 2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO 3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions.
CO 4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO 5	Learn about Election Commission and the process and about SC,ST,OBC and women.

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	PS 01	PS 02	PS 03
CO1	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	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).

TEXT BOOKS:

- T1** Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020., New Delhi
T2 Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

- R1** Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt.Ltd., New Delhi.
R2 Subash Kashyap, Indian Constitution, National Book Trust.
R3 J.A. Siwach, Dynamics of Indian Government and Politics.
R4 D.C. Gupta, Indian Government and Politics.
R5 H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication).
R6 J.C. Johari, Indian Government and Politics Hans.
R7 J.Raj, Indian Government and Politics.
R8 M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi.
R9Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I : Introduction to Indian Constitution**

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 and Co-Po and Syllabus	1	04-05-2022		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	10-05-2022		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	11-05-2022		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	17-05-2022		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	18-05-2022		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	24-05-2022		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	25-05-2022		TLM7	CO1	T1 / T2	
No. of classes required to complete UNIT-I		7			No. of classes taken:			

UNIT-II: Union Government and its Administration Structure of the Indian Union

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
8	Union Government structure in India	1	31-05-2022		TLM2	CO2	T1 / T2	
9	Federalism Centre	1	03-06-2022		TLM2	CO2	T1 / T2	
10	State Relationships to the Union	1	04-06-2022		TLM2	CO2	T1 / T2	
11	President Role, Power and Position	1	10-06-2022		TLM2	CO2	T1 / T2	
12	Prime Minister (PM) and Council of Ministers ,cabinet and Central Secretariat Powers and duties	1	11-06-2022		TLM2	CO2	T1 / T2	
13	Lok Sabha,Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	17-06-2022		TLM2	CO2	T1 / T2	
14	Assignment II	1	18-06-2022		TLM7	CO2	T1 / T2	
I MID EXAMINATIONS 20-06-2022 to 25-06-2022								

UNIT-III: State Government and its administration Governor

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
15	State Government and its Administration Governor and Role	1	28-06-2022		TLM2 / TLM4	CO3	T1 / T2	
16	Role of Chief Ministers and Council of Ministers	1	29-06-2022		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	05-07-2022		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	06-07-2022		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment -III	1	12-07-2022		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III					No. of classes taken:			

UNIT-IV: A Local Administration

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
20	A Local Administration	1	13-07-2022		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of	1	19-07-2022		TLM2 /	CO4	T1 / T2	

	local administration				TLM4			
22	Municipalities –Mayor and Role of Elected Representative	1	20-07-2022		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	26-07-2022		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment-IV	1	27-07-2022		TLM2/ TLM 7	CO4	T1 / T2	
No. of classes required to complete UNIT-IV					No. of classes taken:			

UNIT-V: Election Commission

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	Text Book followed	HOD Sign Weekly
25	Election Commission :Role of Chief Election Commissioner and Election Commisionerate	1	02-08-2022		TLM2 / TLM4	CO5	T1 / T2	
26	State Election Commission	1	03-08-2022		TLM2 / TLM4	CO5	T1 / T2	
27	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	10-08-2022		TLM2 / TLM4	CO5	T1 / T2	
No. of classes required to complete UNIT-V					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 Outcomes	Text Book followed	HOD Sign Weekly
29.	Consumer Rights	1	13.08.2022		TLM2/ TLM5		T2/R3	
	Industrial policies							

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
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I , Unit-II , Unit-III)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	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)	B=10
Cumulative Internal Examination (CIE) : A+B+M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
DR.A.V.G.A.Marthanda	: DR.A.V.G.A.Marthanda	DR.J.S.V.Prasad	DR.J.S.V.Prasad



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<http://cse.lbrce.ac.in>, cse.lbreddy@gmail.com, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : **DR.A.V.G.A.Marthanda**
 Course Name & Code : CONSTITUTION OF INDIA (20MC01)
 L-T-P Structure : 2-0-0 Credits : 0
 Program/Sem/Sec : B.Tech., EEE., II-Sem., B A.Y: 2021-22

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive ,Legislature and Judiciary.
- To Understand Philosophy of fundamental rights and duties.
- To Understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commission of India
- To Understand the Central and State relation, financial and administrative.

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

CO 1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO 2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO 3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions.
CO 4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO 5	Learn about Election Commission and the process and about SC,ST,OBC and women.

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	PS 01	PS 02	PS 03
CO1	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	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).

TEXT BOOKS:

- T1** Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020., New Delhi
T2 Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

- R1** Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt.Ltd., New Delhi.
- R2** Subash Kashyap, Indian Constitution, National Book Trust.
- R3** J.A. Siwach, Dynamics of Indian Government and Politics.
- R4** D.C. Gupta, Indian Government and Politics.
- R5** H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication).
- R6** J.C. Johari, Indian Government and Politics Hans.
- R7** J.Raj, Indian Government and Politics.
- R8** M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi.
- R9** Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E RESOURCES

1. npTEL.ac.in/courses/109104074/8.
2. npTEL.ac.in/courses/109104045.
3. npTEL.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B**COURSE DELIVERY PLAN (LESSON PLAN): Section C****UNIT-I : Introduction to Indian Constitution**

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 and Co-Po and Syllabus	1	04-05-2022		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	10-05-2022		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	11-05-2022		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	17-05-2022		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	18-05-2022		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	24-05-2022		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	25-05-2022		TLM7	CO1	T1 / T2	
No. of classes required to complete UNIT-I					No. of classes taken:			

UNIT-II: Union Government and its Administration Structure of the Indian Union

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
8	Union Government structure in India	1	31-05-2022		TLM2	CO2	T1 / T2	
9	Federalism Centre	1	03-06-2022		TLM2	CO2	T1 / T2	

10	State Relationships to the Union	1	04-06-2022		TLM2	CO2	T1 / T2	
11	President Role, Power and Position	1	10-06-2022		TLM2	CO2	T1 / T2	
12	Prime Minister (PM) and Council of Ministers ,cabinet and Central Secretariat Powers and duties	1	11-06-2022		TLM2	CO2	T1 / T2	
13	Lok Sabha,Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	17-06-2022		TLM2	CO2	T1 / T2	
14	Assignment II	1	18-06-2022		TLM7	CO2	T1 / T2	

I MID EXAMINATIONS 20-06-2022 to 25-06-2022

No. of classes taken:

UNIT-III: State Government and its administration Governor

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
15	State Government and its Administration Governor and Role	1	28-06-2022		TLM2 / TLM4	CO3	T1 / T2	
16	Role of Chief Ministers and Council of Ministers	1	29-06-2022		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	05-07-2022		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	06-07-2022		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment -III	1	12-07-2022		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III					No. of classes taken:			

UNIT-IV: A Local Administration

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
20	A Local Administration	1	13-07-2022		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of local administration	1	19-07-2022		TLM2 / TLM4	CO4	T1 / T2	
22	Municipalities –Mayor and Role of Elected Representative	1	20-07-2022		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	26-07-2022		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment-IV	1	27-07-2022		TLM2/ TLM 7	CO4	T1 / T2	
No. of classes required to					No. of classes taken:			

complete UNIT-IV				
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UNIT-V: Election Commission

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	Text Book followed	HOD Sign Weekly
25	Election Commission :Role of Chief Election Commissioner and Election Commisionerate	1	02-08-2022		TLM2 / TLM4	CO5	T1 / T2	
26	State Election Commission	1	03-08-2022		TLM2 / TLM4	CO5	T1 / T2	
27	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	10-08-2022		TLM2 / TLM4	CO5	T1 / T2	
No. of classes required to complete UNIT-V					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 Outcomes	Text Book followed	HOD Sign Weekly
29.	Consumer Rights	1	13.08.2022		TLM2/ TLM5		T2/R3	
	Industrial policies							

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
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I , Unit-II , Unit-III)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	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)	B=10
Cumulative Internal Examination (CIE) : A+B+M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
DR.A.V.G.A.Marthanda	: DR.A.V.G.A.Marthanda	DR.J.S.V.Prasad	DR.J.S.V.Prasad



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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT ELECTRICAL&ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr B.SAGAR

Course Name & Code : PCS LAB, 20FE51

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

Credits: 01

Program/Sem/Sec : EEE-B –II SEM

A.Y. : 2020-21

PREREQUISITE : NIL

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

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

C01	Introduce one-self and others using appropriate language and details.	L2
C02	Comprehend short talks and speak clearly on a specific topic using	L2
C03	Report effectively after participating in informal discussions ethically.	L1
C04	Interpret data aptly, ethically & make oral presentations without	L3

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

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

Exercise– I

CALL Lab: Understand- Sentence structure.

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

Exercise–II

CALL Lab: Understand- Framing questions.

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

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

Exercise–III

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

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

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

Exercise–IV

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

ICS Lab: Practice -Listening: making predictions while listening to conversations/transactional dialogues with/without video Speaking: Role – plays – formal & informal – asking for and giving information/directions/instructions/suggestions

Exercise– V

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

ICS Lab: Practice –Introduction to Group Discussions.

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

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

Lab Manual:

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

Suggested Software:

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

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

COs	PO1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO1					3					3	3				
CO2					3					3	3				

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to syllabus	02	6-5-2022		TLM4	
2.	Self Introduction & Introducing others	02	13-5-2022		TLM4	
3.	Self Introduction & Introducing others	02	20-5-2022		TLM4	
4.	JAM- I(Short and Structured Talks)	02	27-5-2022		TLM4	
5.	JAM-II(Short and Structured Talks)	02	3-6-2022		TLM4	
6.	Role Play-I(Formal and Informal)	02	10-6-2022		TLM4	
7.	Role Play-II (Formal and Informal)	02	17-6-2022		TLM4	
8.	Group Discussion-I (Reporting the discussion)	02	1-7-2022 8-7-2022		TLM4, TLM6	
9.	Group Discussion-II	02	15-7-2022		TLM4, TLM6	
10.	Oral & Poster Presentation	02	22-7-2022		TLM2, TLM4	
11.	Oral & Poster Presentation	02	29-7-2022		TLM2, TLM4	
12.	Oral & Poster Presentation	02	5-8-2022		TLM2, TLM4	
13.	Lab Internal Exam	02	12-8-2022			
No. of classes required to complete Syllabus: 26				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Marks
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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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.
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PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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



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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM : B.Tech., II-Sem., EEE-A/S
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : COMPUTER AIDED ENGINEERING GRAPHICS LAB
20ME53
L-T-P STRUCTURE : 1-0-2
COURSE CREDITS : 2
COURSE INSTRUCTOR : A.Nageswara Rao / A.Pratyush / A.J.S.A.V.VaraPrasad
COURSE COORDINATOR: KOTHARI VENKATA VISWANADH
PRE-REQUISITE : ENGINEERING GRAPHICS

COURSE EDUCATIONAL OBJECTIVE:

The main objectives of this course are to familiarize various commands used in Auto-CAD and to visualize the isometric and orthographic views of any solid object.

COURSE OUTCOMES:

After completion of the course students are the able to:

- CO1: Understand the Auto-CAD basics and apply to solve practical problems used in industries where the speed and accuracy can be achieved.
- CO2: Understand the principle of Orthographic projections of points, lines, planes and solids.
- CO3: Familiarize with the sectioning of solids and development of surfaces.
- CO4: Convert orthographic to isometric vice versa.

COURSE ARTICULATION MATRIX (Correlation between COs and POs and PSOs):

17ME62 CAEG Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1					3	3						2	1	3	3
CO2	3				3	2						2		2	2
CO3	3				3							2			
CO4	3				3							2		2	2

MATERIAL:

M1 Lab Manual

REFERENCES:

1. M. Kulkarni, A.P Rastogi, and A.K. Sarkar, Engineering Graphics with AutoCAD, PHI Learning Private Limited, New Delhi, 2009.
2. Bethune, Engineering Graphics with AutoCAD, PHI Learning Private Limited, New Delhi, 2009.
3. N. D. Bhatt, Engineering Drawing, 51th Revised and Enlarged Edition, Charotar Publishers, 2012.

COURSE DELIVERY PLAN (LESSON PLAN): PART-B Section-A

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	03	02/05/2022		TLM8	CO1	M1	
2.	Basic drawing commands	03	9/05/2022		TLM8	CO 1-4	M1	
3.	Edit commands	03	16/05/2022		TLM8	CO1	M1	
4.	Array commands	03	23/05/2022		TLM8	CO1	M1	
5.	Hatching & line Commands	03	30/05/2022		TLM8	CO1	M1	
6.	Mirror & Trim commands	03	6/06/2022		TLM8	CO2	M1	
7.	Dimensioning & Text commands	03	13/06/2022		TLM8	CO2	M1	
8.	Projection of points	03	20/07/2022		TLM8	CO2	M1	
9.	Projection of lines	03	27/06/2022		TLM8	CO2	M1	
10.	Orthographic projections: Conversion of plane figures	03	04/07/2022		TLM8	CO3	M1	
11.	Conversion of circular figures	03	11/07/2022		TLM8	CO3	M1	
12.	Conversion of both plane & circular figures	03	18/07/2022		TLM8	CO3	M1	
13.	Isometric projections: Conversion of plane figures	03	25/07/2022		TLM8	CO4	M1	
14.	Conversion of circular figures	03	1/08/2022		TLM8	CO4	M1	
15.	Repitition	03	01/08/2022		TLM8	CO1- CO4	M1	
No. of classes required to complete		45			No. of classes taken:			

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

PROGRAMME EDUCATIONAL OBJECTIVES:

PEO 1	To build a professional career and pursue higher studies with sound knowledge in Mathematics, Science and Mechanical Engineering.
PEO 2	To inculcate strong ethical values and leadership qualities for graduates to become successful in multidisciplinary activities.
PEO 3	To develop inquisitiveness towards good communication and lifelong learning.

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 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.
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PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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PO 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 principles of thermal sciences to design and develop various thermal systems.
PSO 2	To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
PSO 3	To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Course Instructor	Course Coordinator	Module Coordinator	HoD
Mr.A.Nageswara rao	Mr.K.V.Viswanadh	Mr. B. Sudheer Kumar	Dr.S.Pichi Reddy



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DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM : B.Tech., II-Sem., EEE-B/S
ACADEMIC YEAR : 2021-22
COURSE NAME & CODE : COMPUTER AIDED ENGINEERING GRAPHICS LAB
20ME53
L-T-P STRUCTURE : 1-0-2
COURSE CREDITS : 2
COURSE INSTRUCTOR : V.Venkatrmi Reddy/K.Karthik/M.Oliva
COURSE COORDINATOR: KOTHARI VENKATA VISWANADH
PRE-REQUISITE : ENGINEERING GRAPHICS

COURSE EDUCATIONAL OBJECTIVE:

The main objectives of this course are to familiarize various commands used in Auto-CAD and to visualize the isometric and orthographic views of any solid object.

COURSE OUTCOMES:

After completion of the course students are the able to:

- CO1: Understand the Auto-CAD basics and apply to solve practical problems used in industries where the speed and accuracy can be achieved.
- CO2: Understand the principle of Orthographic projections of points, lines, planes and solids.
- CO3: Familiarize with the sectioning of solids and development of surfaces.
- CO4: Convert orthographic to isometric vice versa.

COURSE ARTICULATION MATRIX (Correlation between COs and POs and PSOs):

17ME62 CAEG Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1					3	3						2	1	3	3
CO2	3				3	2						2		2	2
CO3	3				3							2			
CO4	3				3							2		2	2

MATERIAL:

M1 Lab Manual

REFERENCES:

1. M. Kulkarni, A.P Rastogi, and A.K. Sarkar, Engineering Graphics with AutoCAD, PHI Learning Private Limited, New Delhi, 2009.
2. Bethune, Engineering Graphics with AutoCAD, PHI Learning Private Limited, New Delhi, 2009.
3. N. D. Bhatt, Engineering Drawing, 51th Revised and Enlarged Edition, Charotar Publishers, 2012.

COURSE DELIVERY PLAN (LESSON PLAN): PART-B Section-A

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	03	05/05/2022		TLM8	CO1	M1	
2.	Basic drawing commands	03	12/05/2022		TLM8	CO 1-4	M1	
3.	Edit commands	03	19/05/2022		TLM8	CO1	M1	
4.	Array commands	03	26/05/2022		TLM8	CO1	M1	
5.	Hatching & line commands	03	02/06/2022		TLM8	CO1	M1	
6.	Mirror & Trim commands	03	09/06/2022		TLM8	CO2	M1	
7.	Dimensioning & Text commands	03	16/06/2022		TLM8	CO2	M1	
8.	Projection of points	03	23/06/2022		TLM8	CO2	M1	
9.	Projection of lines	03	30/06/2022		TLM8	CO2	M1	
10.	Orthographic projections: Conversion of plane figures	03	07/07/2022		TLM8	CO3	M1	
11.	Conversion of circular figures	03	14/07/2022		TLM8	CO3	M1	
12.	Conversion of both plane & circular figures	03	21/07/2022		TLM8	CO3	M1	
13.	Isometric projections: Conversion of plane figures	03	21/07/2022		TLM8	CO4	M1	
14.	Conversion of circular figures	03	28/07/2022		TLM8	CO4	M1	
15.	Repitition	03	04/08/2022		TLM8	CO1- CO4	M1	
No. of classes required to complete		45			No. of classes taken:			

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

PROGRAMME EDUCATIONAL OBJECTIVES:

PEO 1	To build a professional career and pursue higher studies with sound knowledge in Mathematics, Science and Mechanical Engineering.
PEO 2	To inculcate strong ethical values and leadership qualities for graduates to become successful in multidisciplinary activities.
PEO 3	To develop inquisitiveness towards good communication and lifelong learning.

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 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.
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PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To apply the principles of thermal sciences to design and develop various thermal systems.
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PSO 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 Instructor	Course Coordinator	Module Coordinator	HoD
Mr.V.Venkatrmi Reddy	Mr.K.V.Viswanadh	Mr. B. Sudheer Kumar	Dr.S.Pichi Reddy



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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

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

Course Name & Code : Applied Chemistry & 20FE05

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

Program/Sem/Sec : B.Tech/II-sem/EEE-A

Credits: 03

A.Y. : 2021-22

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to strengthen the basic concepts of water, fuel technologies, electrochemistry, corrosion and advanced materials used in technologies.

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

CO1	Identify the troubles due to hardness of water and its maintenance in industrial applications.
CO2	Identify issues related to conventional fuels, biofuels and photo-voltaic cells in e production.
CO3	Apply Nernst Equation for calculating electrode cell potentials and compare batteries for different applications
CO4	Apply principles of corrosion for design and effective maintenance of various equipments.
CO5	Analyse the suitability of engineering materials like polymers, lubricants, nano materials and composites in technological applications.

COURSE ARTICULATION MATRIX (Correlation between COs, POs):

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
COs												
CO1	3	2	1	2		2	1					2
CO2	3	2	2	1		2	2					2
CO3	3	2	2	1		2	1					2
CO4	3	3	2	1		2	1					2
CO5	3	2	2	1		1	1					2
<p style="text-align: center;">1 = Slight (Low) 2 = Moderate (Medium) 3 = Substantial (High)</p>												

BOS APPROVED TEXT BOOKS:

TEXT BOOKS

1. Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.

2. Jain, Jain, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 16th Edition, 2015.

REFERENCES

1. Shikha Agarwal, "A text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
2. S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S. Chand Publications, New Delhi, 12th Edition, 2010.
3. Y. Bharathi Kumari, Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Water Technology

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 Applied Chemistry, Sources of water & quality	1	04-05-2022		TLM1	
2.	Hardness & types of hardness, Units of hardness & interrelation	1	05-05-2022		TLM1	
3.	Scale and sludge formation	1	06-05-2022		TLM1	
4.	Caustic embrittlement and Bolier corrosion	1	07-05-2022		TLM1	
5.	priming and foaming	1	11-05-2022		TLM1	
6.	Problems on hardness-1	1	12-05-2022		TLM4	
7.	Problems on hardness-2	1	13-05-2022		TLM4	
8.	W.H.O standards of potable water, Ion exchange process	1	18-05-2022		TLM1	
9.	Reverse osmosis and electro-dialysis	1	19-05-2022		TLM1	
10.	Treatment of industrial waste water	1	20-05-2022		TLM1	
11.	Revision, Assignment & Quiz	1	21-05-2022		TLM1	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: Fuel Technology

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.	Characteristics of good fuel, comparative study of solid, liquid & gaseous fuels	1	25-05-2022		TLM1	
2.	GCV, LCV and coal origin	1	26-05-2022		TLM1	
3.	Proximate Analysis & significance	1	27-05-2022		TLM1	
4.	Petroleum-origin, types of crude oil and refining of petroleum	1	28-05-2022		TLM1	
5.	Cracking - moving bed	1	01-06-2022		TLM1	

	catalytic cracking				
6.	synthetic petrol –Fischer Tropsch’s process	1	02-06-2022		TLM1
7.	Natural gas composition and C.N.G - advantages	1	03-06-2022		TLM1
8.	Characteristics of bio fuels, sources of bio mass & advantages - Production of biodiesel from rape seed oil	1	04-06-2022		TLM1
9.	Photovoltaic cell design working, advantages and disadvantages	1	08-06-2022		TLM1
10.	Revision, Assignment and Quiz	1	09-06-2022		TLM1
No. of classes required to complete UNIT-II: 10				No. of classes taken:	

UNIT-III: Electrochemistry and batteries

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 electrochemistry	1	10-06-2022		TLM1	
2.	Types of electrodes, Calomel Electrode	1	15-06-2022		TLM1	
3.	Glass Electrode	1	16-06-2022		TLM1	
4.	Calculation of EMF of Cell; Applications of Electro chemical Series	1	17-06-2022		TLM1	
5.	Applications of Nernst Equation	1	18-06-2022		TLM1	
6.	Lead-acid Battery	1	29-06-2022		TLM2	
7.	Lithium ion Battery	1	30-06-2022		TLM2	
8.	H ₂ – O ₂ Fuel Cell, Mg-Cu reserve battery	1	01-07-2022		TLM2	
9.	Revision, Assignment & Quiz	1	02-07-2022		TLM1	
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV: IV Science of corrosion

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.	Types of dry corrosion-oxidative corrosion, Pilling Bed worth rule	1	06-07-2022		TLM1	
2.	corrosion by other gases and liquid metal corrosion	1	07-07-2022		TLM1	
3.	Wet corrosion, mechanism	1	08-07-2022		TLM1	
4.	Concentration Cell Corrosion	1	13-07-2022		TLM1	
5.	Passivity and Galvanic series	1	14-07-2022		TLM1	
6.	Nature of metal that influences rate of corrosion	1	15-07-2022		TLM10	
7.	Nature of environment	1	16-07-2022		TLM1	
8.	Cathodic Protection	1	20-07-2022		TLM1	
9.	electro plating and metal	1	21-07-2022		TLM1	

	cladding				
10.	Revision, Assignment & Quiz	1	22-07-2022		TLM1
No. of classes required to complete UNIT-IV: 10				No. of classes taken:	

UNIT-V: Chemistry of 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.	Differences between thermoplasts and thermosets, Types of polymerization with examples	1	23-07-2022		TLM1	
2.	Preparation properties and engineering applications of PVC, Teflon, BUNA-S and Polyurethane.	1	27-07-2022		TLM1	
3.	Preparation properties and engineering applications of BUNA-S and Polyurethane	1	28-07-2022		TLM1	
4.	Characteristics of a good lubricant and properties of lubricants	1	29-07-2022		TLM1	
5.	Application of properties of lubricants	1	30-07-2022		TLM1	
6.	Nano Materials Introduction, definition, extraordinary changes observed at nano size of materials and reasons	1	03-08-2022		TLM1	
7.	Types of nano-materials, Gas-Phase synthesis & Applications	1	04-07-2022		TLM1	
8.	Composites, advantageous characteristics of composites, Constituents	1	05-08-2022		TLM1	
9.	Fibre reinforced composites (GFRP, CFRP), Reasons for failure of composites	1	06-08-2022		TLM1	
10.	Revision	1	10-08-2022		TLM1	
11.	Assignment , Quiz	1	11-08-2022		TLM1	
12.	Additional topics	1	12-08-2022			
No. of classes required to complete UNIT-V: 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 (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 OUTCOMES (POs):

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

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



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

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

Course Name & Code : Applied Chemistry & 20FE05

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

Program/Sem/Sec : B.Tech/II-sem/EEE-B

Credits: 03

A.Y. : 2021-22

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to strengthen the basic concepts of water, fuel technologies, electrochemistry, corrosion and advanced materials used in technologies.

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

CO1	Identify the troubles due to hardness of water and its maintenance in industrial applications.
CO2	Identify issues related to conventional fuels, biofuels and photo-voltaic cells in energy production.
CO3	Apply Nernst Equation for calculating electrode cell potentials and compare batteries for different applications.
CO4	Apply principles of corrosion for design and effective maintenance of various equipments.
CO5	Analyse the suitability of engineering materials like polymers, lubricants, nano materials and composites in technological applications.

COURSE ARTICULATION MATRIX (Correlation between COs, POs):

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

BOS APPROVED TEXT BOOKS:

TEXT BOOKS

3. Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.
4. Jain, Jain, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 16th Edition, 2015.

REFERENCES

4. Shikha Agarwal, "A text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
5. S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S. Chand Publications, New Delhi, 12th Edition, 2010.
6. Y. Bharathi Kumari, Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Water Technology

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 Applied Chemistry, Sources of water & quality	1	02-05-2022		TLM1	
2.	Hardness & types of hardness, Units of hardness & interrelation	1	04-05-2022		TLM1	
3.	Scale and sludge formation	1	05-05-2022		TLM1	
4.	Caustic embrittlement and Bolier corrosion	1	07-05-2022		TLM1	
5.	priming and foaming	1	09-05-2022		TLM1	
6.	Problems on hardness-1	1	11-05-2022		TLM4	
7.	Problems on hardness-2	1	12-05-2022		TLM4	
8.	W.H.O standards of potable water, Ion exchange process	1	16-05-2022		TLM1	
9.	Reverse osmosis and electro-dialysis	1	18-05-2022		TLM1	
10.	Treatment of industrial waste water	1	19-05-2022		TLM1	
11.	Revision, Assignment & Quiz	1	21-05-2022		TLM1	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: Fuel Technology

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.	Characteristics of good fuel, comparative study of solid, liquid & gaseous fuels	1	23-05-2022		TLM1	
13.	GCV, LCV and coal origin	1	25-05-2022		TLM1	
14.	Proximate Analysis & significance	1	26-05-2022		TLM1	
15.	Petroleum-origin, types of crude oil and refining of petroleum	1	28-05-2022		TLM1	
16.	Cracking - moving bed catalytic cracking	1	30-05-2022		TLM1	
17.	synthetic petrol –Fischer Tropsch's process	1	01-06-2022		TLM1	

18.	Natural gas composition and C.N.G - advantages	1	02-06-2022		TLM1
19.	Characteristics of bio fuels, sources of bio mass & advantages - Production of biodiesel from rape seed oil	1	04-06-2022		TLM1
20.	Photovoltaic cell design working, advantages and disadvantages	1	06-06-2022		TLM1
21.	Revision, Assignment and Quiz	1	08-06-2022		TLM1
No. of classes required to complete UNIT-II: 10				No. of classes taken:	

UNIT-III: Electrochemistry and batteries

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.	Introduction to electrochemistry	1	09-06-2022		TLM1	
23.	Types of electrodes, Calomel Electrode	1	13-06-2022		TLM1	
24.	Glass Electrode	1	15-06-2022		TLM1	
25.	Calculation of EMF of Cell; Applications of Electro chemical Series	1	16-06-2022		TLM1	
26.	Applications of Nernst Equation	1	18-06-2022		TLM1	
27.	Lead-acid Battery	1	27-06-2022		TLM2	
28.	Lithium ion Battery	1	29-06-2022		TLM2	
29.	H ₂ - O ₂ Fuel Cell, Mg-Cu reserve battery	1	30-06-2022		TLM2	
30.	Revision, Assignment & Quiz	1	02-07-2022		TLM1	
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV: IV Science of corrosion

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.	Types of dry corrosion-oxidative corrosion, Pilling Bed worth rule	1	04-07-2022		TLM1	
32.	corrosion by other gases and liquid metal corrosion	1	06-07-2022		TLM1	
33.	Wet corrosion, mechanism	1	07-07-2022		TLM1	
34.	Concentration Cell Corrosion	1	11-07-2022		TLM1	
35.	Passivity and Galvanic series	1	13-07-2022		TLM1	
36.	Nature of metal that influences rate of corrosion	1	14-07-2022		TLM10	
37.	Nature of environment	1	16-07-2022		TLM1	
38.	Cathodic Protection	1	18-07-2022		TLM1	
39.	electro plating and metal cladding	1	20-07-2022		TLM1	
40.	Revision, Assignment & Quiz	1	21-07-2022		TLM1	

No. of classes required to complete UNIT-IV: 10	No. of classes taken:
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UNIT-V: Chemistry of 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
41.	Differences between thermoplasts and thermosets, Types of polymerization with examples	1	23-07-2022		TLM1	
42.	Preparation properties and engineering applications of PVC, Teflon, BUNA-S and Polyurethane.	1	25-07-2022		TLM1	
43.	Preparation properties and engineering applications of BUNA-S and Polyurethane	1	27-07-2022		TLM1	
44.	Characteristics of a good lubricant and properties of lubricants	1	28-07-2022		TLM1	
45.	Application of properties of lubricants	1	30-07-2022		TLM1	
46.	Nano Materials Introduction, definition, extraordinary changes observed at nano size of materials and reasons	1	01-08-2022		TLM1	
47.	Types of nano-materials, Gas-Phase synthesis & Applications	1	03-08-2022		TLM1	
48.	Composites, advantageous characteristics of composites, Constituents	1	04-08-2022		TLM1	
49.	Fibre reinforced composites (GFRP, CFRP), Reasons for failure of composites	1	06-08-2022		TLM1	
50.	Revision	1	08-08-2022		TLM1	
51.	Assignment , Quiz	1	10-08-2022		TLM1	
52.	Additional topics	3	11,13-08-2022			
No. of classes required to complete UNIT-V: 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 (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 OUTCOMES (POs):

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

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



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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

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

Course Name & Code : Applied Chemistry Lab & 20FE52

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

Program/Sem/Sec : B.Tech/II-sem/EEE-A

Credits: 1.5

A.Y. : 2021-22

Pre requisites: Nil

Course Educational Objective: This course enables the students to analyze water samples and perform different types of volumetric titrations. It provides them with an overview of preparation of polymers and properties of fuels.

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

CO1: Assess quality of water based on the given procedures

CO2: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus

CO3: Acquire practical knowledge related to preparation of polymers

CO4: Exhibit skills in performing experiments based on theoretical fundamentals.

COURSE ARTICULATION MATRIX (Correlation between COs, POs):

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

POs \ COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		1		2	2					
CO2	2	1										
CO3	2		1									
CO4	3	2	1									
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 Applied chemistry lab; Preparation of Bakelite	3	10-05-2022		TLM2	CO4	
2.	Introduction and Glassware explanation; Determination of pH of the given sample solution/soil using pH meter	3	17-05-2022		TLM2	CO4	
3.	Determination of amount of Na ₂ CO ₃ using standard HCl solution	3	24-05-2022		TLM4	CO2,CO4	
4.	Estimation of Mohr's salt using standard KMnO ₄	3	31-06-2022		TLM4	CO3,CO4	
5.	Estimation of Mohr's salt using standard K ₂ Cr ₂ O ₇	3	07-06-2022		TLM4	CO4	
6.	Determination of total Hardness of water using EDTA method	3	14-06-2022		TLM4	CO3,CO4	
7.	Determination of permanent hardness of using EDTA method	3	28-06-2022		TLM4	CO1,CO4	
8.	Determination of alkalinity of water sample	3	05-07-2022		TLM4	CO1,CO4	
9.	Preparation of nylon fibres	3	12-07-2022		TLM4	CO1,CO4	
10.	Nephelometry	3	19-07-2022		TLM4	CO2,CO4	
11.	Additional expt.1	3	26-07-2022		TLM4	CO2,CO4	
12.	Internal exam	3	02-08-2022		TLM4	CO2,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 are followed as given below.

(a) Continuous Internal Evaluation (CIE):

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

Parameter		Marks
Day – to – Day Work	Observation	05 Marks
	Record	05 Marks
Internal Test		05 Marks
Total		15 Marks

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

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



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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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 FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

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

Course Name & Code : Applied Chemistry Lab & 20FE52

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

Program/Sem/Sec : B.Tech/II-sem/EEE-B

Credits: 1.5

A.Y. : 2021-22

Pre requisites: Nil

Course Educational Objective: This course enables the students to analyze water samples and perform different types of volumetric titrations. It provides them with an overview of preparation of polymers and properties of fuels.

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

CO1: Assess quality of water based on the given procedures

CO2: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus

CO3: Acquire practical knowledge related to preparation of polymers

CO4: Exhibit skills in performing experiments based on theoretical fundamentals.

COURSE ARTICULATION MATRIX (Correlation between COs, POs):

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

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

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

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S. No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction to Applied chemistry lab; Preparation of Bakelite	3	02-05-2022		TLM2	CO4	
2.	Introduction and Glassware explanation; Determination of pH of the given sample solution/soil using pH meter	3	09-05-2022		TLM2	CO4	
3.	Determination of amount of Na ₂ CO ₃ using standard HCl solution	3	16-05-2022		TLM4	CO2,CO4	
4.	Estimation of Mohr's salt using standard KMnO ₄	3	23-05-2022		TLM4	CO3,CO4	
5.	Estimation of Mohr's salt using standard K ₂ Cr ₂ O ₇	3	30-05-2022		TLM4	CO4	
6.	Determination of total Hardness of water using EDTA method	3	06-06-2022		TLM4	CO3,CO4	
7.	Determination of permanent hardness of using EDTA method	3	13-06-2022		TLM4	CO1,CO4	
8.	Determination of alkalinity of water sample	3	27-06-2022		TLM4	CO1,CO4	
9.	Preparation of nylon fibres	3	04-07-2022		TLM4	CO1,CO4	
10.	Nephelometry	3	11-07-2022		TLM4	CO2,CO4	
11.	Additional expt.1	3	18-07-2022		TLM4	CO2,CO4	
12.	Additional expt.2	3	25-07-2022		TLM4	CO2, CO4	
13.	Internal exam	3	01-08-2022		TLM4	CO2,CO4	
14.	Additional expt.3	3	08-08-2022		TLM4	CO2,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 are followed as given below.

(a) Continuous Internal Evaluation (CIE):

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

Parameter		Marks
Day – to – Day Work	Observation	05 Marks
	Record	05 Marks
Internal Test		05 Marks
Total		15 Marks

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamental, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
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Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. Lakshmi V R Babu Syamala	Dr. V. Parvathi	Dr. V. Parvathi	Dr. A. Rami Reddy
Signature				



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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr.O.Venkata Siva
Course Name & Code : Programming for Problem Solving Using C (20CS01)
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech. -EEE / IISem / B sec A.Y.: 2022-23

PRE-REQUISITE:NI:

COURSE EDUCATIONAL OBJECTIVE (CEO):The Objective of the course is to make learn the basic elements of C programming, control structures, derived data types, Modular programming, user defined structures, basics of files and its I/O operations.

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

CO1:	Familiar with syntax and semantics of the basic programming language constructs	Understand – Level 2
CO2:	Construct derived data types like arrays in solving problem	Apply – Level 3
CO3:	Decompose a problem into modules and reconstruct it using various ways of user-defined functions	Apply – Level 3
CO4:	Use user-defined data types like structures and unions and its applications to solve problems	Apply – Level 3
CO5:	Discuss various file I/O operations and its application	Understand – Level 2

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

REFERENCE BOOKS:

R1: Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers, 7th Edition, 2013

R2: E Balagurusamy, Computer Programming, McGraw Hill Education, 8th Edition

R3: C: The Complete Reference, McGraw Hill Education, 4th Edition.

R4: Pradeep Dey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011.

R5: Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2005.

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 Problem solving through C Programming: Problem Specification, Algorithm, Pseudo Code	1	02/05/2022			
2.	Flowchart, Examples on Algorithm and Flowcharts	1	05/05/2022			
3.	C Programming: Structure of C Program, Identifiers, Basic Data Types and Sizes	1	06/05/2022			
4.	Constants, Variables, Input - Output Statements, A sample C Program	1	07/05/2022			
5.	Operators Part - I	1	09/05/2022			
6.	Operators Part - II	1	10/05/2022			
7.	Expressions, Type Conversions, Conditional Expression	1	12/05/2022			
8.	Precedence of Operators, Order of Evaluation	1	14/05/2022			
9.	Control statements: if, if else	1	30/05/2022			
10.	else if ladder and nested if	1	31/05/2022			
11.	switch statement	1	02/06/2022			
12.	while loop, do-while loop	1	04/06/2022			
13.	for loop	1	06/06/2022			
14.	break, continue, go to and labels	1	07/06/2022			
No. of classes required to complete UNIT – I: 14				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
15.	Arrays: Definition, Types of Arrays	1	09/06/2022			
16.	1D-Array Syntax, Declaration, and Initialization	1	11/06/2022			
17.	Storing and Accessing Elements in 1D-Array	1	13/06/2022			
18.	Applications of 1D-Array: Linear Search and Binary Search, Bubble Sort Algorithm	1	14/06/2022			
19.	Two-Dimensional Array Syntax, Declaration, and Initialization	1	16/06/2022			
20.	Storing and Accessing Elements in 2D-Array	1	18/06/2022			
21.	Applications of 2D Arrays	1	27/06/2022			
22.	Multi-Dimensional Arrays	1	28/06/2022			
23.	Character Arrays: Declaration, Initialization, Reading and Writing Strings	1	30/06/2022			
24.	String Handling Functions Part - I	1	02/07/2022			
25.	String Handling Functions Part - II	1	04/07/2022			
26.	Pre-processor Directives Part - I	1	04/07/2022			
27.	Pre-processor Directives Part - II	1	04/07/2022			
No. of classes required to complete UNIT – II: 13				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
28.	Pointers: Definition, Declaration, Initialization of Pointer Variable	1	05/07/2022			
29.	Pointer Expressions	1	05/07/2022			
30.	Pointer Arithmetic	1	07/07/2022			
31.	Pointers and Arrays	1	09/07/2022			
32.	Pointers and Character Arrays	1	11/07/2022			
33.	Pointers to Pointers	1	12/07/2022			
34.	Functions: Basics, Category of Functions	1	14/07/2022			
35.	Parameter Passing Techniques	1	14/07/2022			
36.	Recursive Functions	1	16/07/2022			
37.	Functions with Arrays	1	16/07/2022			
38.	Standard Library Functions	1	18/07/2022			
39.	Dynamic Memory Management Functions	1	19/07/2022			
40.	Command Line Arguments	1	19/07/2022			
41.	Storage Classes: auto, register, static and extern	1	19/07/2022			
No. of classes required to complete UNIT - III: 14				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
42.	Derived Types: Structure: Definition and Declaration	1	21/07/2022			
43.	Initialization and Accessing Structures	1	22/07/2022			
44.	Nested Structures	1	23/07/2022			
45.	Arrays of Structures	1	25/07/2022			
46.	Structures and Functions	1	25/07/2022			
47.	Pointers to Structures Part - I	1	26/07/2022			
48.	Pointers to Structures Part - II	1	28/07/2022			
49.	Self-Referential Structures	1	28/07/2022			
50.	Union: Definition and Declaration	1	30/07/2022			
51.	Initialization and Accessing Union Elements	1	30/07/2022			
52.	Examples on Union	1	01/08/2022			
53.	Structure vs Union	1	01/08/2022			
54.	Typedef	1	02/08/2022			
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
55.	Files: Definition, Types of Files	1	04/08/2022			
56.	Text files and Binary files	1	06/08/2022			
57.	Stream	1	08/08/2022			
58.	Standard I/O and Formatted I/O	1	08/08/2022			

59.	Types of File I/O Operations	1	09/08/2022		
60.	Creation of a new file	1	11/08/2022		
61.	Opening an existing file	1	11/08/2022		
62.	Reading from file	1	11/08/2022		
63.	Writing to a file	1	13/08/2022		
64.	Moving to a specific location in a file and closing a file	1	13/08/2022		
65.	Error Handling Basics	1	13/03/2022		
66.	Error Handling Function Calls	1	13/03/2022		
No. of classes required to complete UNIT - V:12				No. of classes taken:	

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

PART-C

EVALUATION PROCESS (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 OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	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	Mr.O.Venkata siva	Dr.J.Nageshwara Rao	Dr. Y.V. Bhaskar Reddy	Dr. D. Veeraiah
Signature				



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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. O.Venkata Siva

Course Name & Code : Programming for Problem Solving Using C Lab (20CS51)

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

Program/Sem/Sec : B.Tech. -EEE / II Sem /Bsec A.Y.: 2022-23

PRE-REQUISITE: Programming and Problem-Solving Skills

COURSE EDUCATIONAL OBJECTIVE (CEO):The objective of the course is to learn the basic elements of C Programming Structures like Data Types, Expressions, Control Statements, and Various I/O Functions and to solve simple mathematical problems using control structures. Design and implementation of various software components, which solve real world problems.

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

CO1:	Apply control structures of C in solving computational problems.	Apply – Level 3
CO2:	Implement derived data types & use modular programming in problem solving	Apply – Level 3
CO3:	Implement user defined data types and perform file operations.	Apply – Level 3
CO4:	Improve individual / teamwork skills, communication & report writing skills with ethical values.	---

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

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

sPART-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.	Module 1: Introduction to Raptor Tool	03	4/05/2022		DM5
2.	Module 2: Problem solving using Raptor Tool		11/05/2022		DM5
3.	Module 3: Exercise Programs on Basics of C-Program	03	1/06/2022		DM5
4.	Module 4: Exercise Programs on Control Structures	03	8/06/2022		DM5
5.	Module 5: Exercise Programs on Loops & nesting of Loops	06	15/06/2022		DM5
6.	Module 6: Exercise Programs on Arrays & Strings	06	29/06/2022		DM5
7.	Module 7: Exercise Programs on Pointers	06	6/07/2022 & 13/07/2022		DM5
8.	Module 8: Exercise Programs on Functions	06	20/07/2022		DM5
9.	Module 9: Exercise Programs on user defined data types	06	27/07/2022 & 3/08/2022		DM5
10.	Module 10: Exercise Programs on Files	06	10/08/2022		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):

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.
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PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	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	Mr. O.Venkata Siva	Dr. M. Srinivasa Rao	Dr. Y.V. Bhaskar Reddy	Dr. D. Veeraiah
Signature				