LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	**:**	**Mr. B. Sreenivasa Reddy**	
Course Name & Code	**:**	PC-II, 20FE02	
L-T-P Structure	**:**	**2-0-0**	**Credits:** 02
Program/Sem/Sec	:	CIVIL - II SEM	
A.Y.	**:**	2022-23	

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

'Jagadish 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	13-03-2023		TLM2	
2.	**Fabric of Change-**'H.G. Wells and the Uncertainties of Progress– Peter J. Bowler'	03	15-03-2023 17-03-2023 20-03-2023		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	24-03-2023		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	01	27-03-2023		TLM2	
5.	Adjectives and adverbs	01	29-03-2023		TLM2	
6.	Degrees of Comparison	01	31-03-2023		TLM2	
7.	Writing: Information Transfer.	01	03-04-2023		TLM2 TLM6	
No. of classes required to complete UNIT-I: 09				**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	**Tools for Life -** 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far';	03	10-04-2023 12-04-2023 17-04-2023		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	19-04-2023		TLM2	
10.	Active & Passive Voice	02	21-04-2023 24-04-2023		TLM2	
11.	Idioms & Phrases	02	26-04-2023 28-04-2023		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	01-05-2023		TLM2 TLM6	
No. of classes required to complete UNIT-II: 09				**No. of classes taken:**		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	**'Homi Jahangir Bhabha'**	03	03-05-2023 05-05-2023 15-05-2023		TLM2 TLM6	
14.	Words often confused	01	17-05-2023		TLM2	
15.	Common Errors	02	19-05-2023 22-05-2023		TLM2	
16.	Report Writing – Types & Formats	02	24-05-2023 26-05-2023		TLM2	
17.	Incident and Investigation Reports	01	29-05-2023		TLM2 TLM6	
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
18.	**Jagadish Chandra Bose**	03	31-05-2023 02-06-2023 05-06-2023		TLM2 TLM2	

19.	Use of antonyms	02	07-06-2023 09-06-2023		TLM2	
20.	Correction of Sentences	01	12-06-2023		TLM2	
21.	Formal and Informal dialogues	01	14-06-2023		TLM2	
22.	Dialogue Writing.	02	16-06-2023 19-06-2023		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 09				**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Prafulla Chandra Ray	02	21-06-2023 23-06-2023		TLM2	
24.	Analogy	03	26-06-2023 28-06-2023 30-06-2023		TLM2	
25.	Sentence Completion	01	03-07-2023		TLM2	
26.	Resume - Formats	01	05-07-2023		TLM2	
27.	Writing a Résumé	01	07-07-2023		TLM2 TLM6	
No. of classes required to complete UNIT-V: 08				**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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering.
PSO 2	Possesses ability to plan, examine and analyses 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	**B. Sreenivasa Reddy**			**Dr. A. Ramireddy**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM/SEM/SEC : I B. Tech., II-Sem., CE
ACADEMIC YEAR : 2022-23
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	14/03/23		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 UNIT I	1	15/03/23		TLM1	
3.	Matrices and rank of a matrix	1	16/03/23		TLM1	
4.	Echelon form of a matrix	1	17/03/23		TLM1	
5.	Normal form of a matrix	1	21/03/23		TLM1	
6.	Normal form of a matrix	1	23/03/23		TLM1	
7.	PAQ form	1	24/03/23		TLM1	
8.	Solution of Non-homogeneous linear system of equations	1	28/03/23		TLM1	
9.	Solution of Non-homogeneous Linear system of equations	1	29/03/23		TLM1	
10.	Solution of Homogeneous Linear system of equations	1	31/03/23		TLM1	
11.	**Tutorial 1**	1	04/04/23		TLM3	
12.	Solution of Homogeneous Linear system of equations	1	06/04/23		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	11/04/23		TLM1	
14.	Eigen values of a matrix	1	12/04/23		TLM1	
15.	Eigen values and Eigen vectors of a matrix.	1	13/04/23		TLM1	
16.	Eigen values and Eigen vectors of a matrix.	1	18/04/23		TLM1	
17.	Eigen values and Eigen vectors of a matrix.	1	19/04/23		TLM1	
18.	Properties	1	20/04/23		TLM1	
19.	Properties		21/04/23			
20.	Cayley – Hamilton Theorem.	1	25/04/23		TLM1	
21.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	26/04/23		TLM1	
22.	**Tutorial 2**	1	27/04/23		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	28/04/23		TLM1	
24.	Standard forms of Laplace Transforms.	1	02/05/23		TLM1	
25.	Linear Property, Shifting Theorem.	1	04/05/23		TLM1	
26.	Change of scale property, Multiplication by t.	1	03/05/23		TLM1	
27.	Multiplication by t.	1	05/05/23		TLM1	
II MID EXAMINATIONS (08-05-2023 TO 13-05-2023)						

28.	Division by t	1	16/05/23		TLM1	
29.	Laplace transforms of derivatives.	1	17/05/23		TLM 1	
30.	Laplace transforms of Integrals.	1	18/05/23		TLM1	
31.	**Tutorial 3**	1	19/05/23		TLM3	
32.	Unit step function and Dirac's delta function.	1	23/05/23		TLM1	
33.	Application of Laplace Transforms.	1	24/05/23		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	25/05/23		TLM1	
35.	Linear property.	1	26/05/23		TLM1	
36.	First Shifting properties.	1	30/05/23		TLM1	
37.	Inverse transforms properties	1	31/05/23		TLM1	
38.	Problems	1	01/06/23		TLM1	
39.	Inverse Laplace transform by using partial fractions.	1	02/06/23		TLM1	
40.	Inverse Laplace transform by using partial fractions.	1	06/06/23		TLM1	
41.	Inverse Laplace Transform by using Convolution	1	07/06/23		TLM1	
42.	Inverse Laplace Transform by using Convolution	1	08/06/23		TLM1	
43.	Solving of Ordinary differential equation by Laplace	1	09/06/23		TLM1	
44.	Solving of Ordinary differential equation by Laplace	1	13/06/23		TLM1	
45.	**Tutorial 4**	1	14/06/23		TLM3	
No. of classes required to complete UNIT-IV: 12				**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
46.	Introduction to UNIT V.	1	15/06/23		TLM1	
47.	Standard forms of Z- Transform.	1	16/06/23		TLM1	
48.	Damping rule	1	20/06/23		TLM1	
49.	Shifting Rule	1	21/06/23		TLM1	
50.	Initial and final value theorems.	1	22/06/23		TLM1	
51.	Other properties	1	23/06/23		TLM1	
52.	Inverse Z – Transforms by using	1	27/06/23		TLM1	
53.	Inverse Z – Transform by using	1	28/06/23		TLM1	
54.	Solving of Difference equations by	1	30/06/23		TLM1	
55.	Solving of Difference equations by	1	04/07/23		TLM1	
56.	Revision	1	05/07/23		TLM1	
57.	**Tutorial 5**	1	06/07/23		TLM3	
No. of classes required to complete UNIT-V: 12				**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
59.	Solving Simultaneous equations using Laplace Transforms	1	07/07/23		TLM2	

II MID EXAMINATIONS (10-07-2023 TO 15-07-2023)

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM : **B.Tech., II-Sem., ME**

ACADEMIC YEAR : **2022-23**

COURSE NAME & CODE : **ENGINEERING PHYSICS & 20FE08**

L-T-P STRUCTURE : **3-1-0**

COURSE CREDITS : **3**

COURSE INSTRUCTOR : **P V SIRISHA**

COURSE CO-ORDINATOR : **Dr. P.V.N. Kishore**

PRE-REQUISITE : **Nil**

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts ofoptics, quantum mechanics, free electron theory of metals, semiconductors, dielectrics, and their applications.

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

CO 1	**Analyse** the different mechanical properties of materials.
CO 2	**Apply** the Lasers and Optical Fibers in different fields.
CO 3	**Summarize** the properties of sound waves.
CO 4	**Classify** the different types of magnetic and dielectric materials.
CO5	**Identify** the properties of superconducting and nano materials.

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

ENGINEERING PHYSICS												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes	**Programme Outcomes**											
PO's →	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**1**	**1**	1	1	1					**1**
CO2.	**3**	**3**	2	**1**	1	1	1					**1**
CO3.	**3**	**3**	**1**	**1**	1	1						**1**
CO4.	**3**	**3**	**1**	**1**	1	1	1					**1**
CO5.	**3**	**3**	**1**	**1**	1	1						**1**
1 = slight (Low) **2 = Moderate (Medium)** **3 = Substantial (High)**												

BOS APPROVED TEXT BOOKS:

T1 : V. Rajendran, "*Engineering Physics*", TMH, New Delhi, 6th Edition, 2014.
T2 :M.N. Avadhanulu, P.G. Kshirsagar, "Engineering *Physics*", S. Chand &Co., 2nd Edition, 2014.

BOS APPROVED REFERENCE BOOKS:

R1: M.N. Avadhanulu, TVS Arun Murthy, "Applied *Physics*", S. Chand & Co., 2nd Edition, 2007.
R2 : P.K. Palani Samy, "*Applied Physics*", Sci. Publ. Chennai, 4th Edition, 2016.
R3 : P. Sreenivasa Rao, K Muralidhar, "*Applied Physics*", Him. Publi. Mumbai,1st Edition, 2016.
R4 : Hitendra K Mallik , AK Singh " *Engineering Physics*", TMH, New Delhi, 1st Edition, 2009.

WEB REFERENCES AND E-TEXT BOOKS

1. http://www.freebookcentre.net/Physics/Solid-State-Physics-Books.html
2. http://physicsdatabase.com/free-physics-books/
3. http://www.e-booksdirectory.com
4. http://www.thphys.physics.ox.ac.uk

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-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: ELASTICITY

Course Outcome:- CO 1; Text Book :- T1, R4

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction to the Subject, Course Outcomes	1	13/03/2023		**TLM2**		
2.	General Properties of matter	1	14/03/2023		**TLM5**		
3.	Introduction to Elasticity /Plasticity	1	16/03/2023		**TLM6**		
4.	Introduction on Stress, strain and	1	18/03/2023		**TLM1**		

	their classification						
5.	Hook's law, Elastic behavior of a material, Factors affecting elasticity	1	20/03/2023		**TLM4**		
6.	TUTORIAL-1	1	21/03/2023		**TLM3**		
7.	Classification of Elastic modulii	1	23/03/2023		**TLM2**		
8.	Relation between Y, K, n and σ	1	25/03/2023		**TLM1**		
9.	Problems &Assignment/Quiz	1	27/03/2023		**TLM4**		
10.	TUTORIAL-2	1	28/03/2023		**TLM4**		
11.	Bending of beams expression, Cantilever	1	01/04/2023		**TLM3**		
No. of classes required to complete UNIT-I: 11				No. of classes taken:			

UNIT-II: LASERS & OPTICAL FIBERS

Course Outcome: - CO 2; Text Book: - T1, R4

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Principle of laser, Absorption, Spontaneous and Stimulated emission	1	03/04/2023		**TLM2**		
2.	Einstein Coefficients	1	04/04/2023		**TLM1**		
3.	TUTORIAL-3	1	06/04/2023		**TLM3**		
4.	Nd-YAG Laser, He-Ne gas Laser	1	08/04/2023		**TLM2**		
5.	Applications of LASERS	1	10/04/2023		**TLM5**		
6.	Optical Fiber principle, Structure of optical fiber	1	11/04/2023		**TLM2**		
7.	Numerical aperture and Acceptance angle	1	13/04/2023		**TLM4**		
8.	TUTORIAL-4	1	15/04/2023		**TLM3**		

9.	Types of optical fibers, Applications	1	17/04/2023		**TLM2**		
10.	Problems &Assignment/Quiz	1	18/04/2023		**TLM5**		
No. of classes required to complete UNIT-II: 10				No. of classes taken:			

UNIT-III: ACOUSTICS & ULTRASONICS

Course Outcome: - CO 3; Text Book: - T1, R4

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction to Acoustics	1	24/04/2023		**TLM5**		
2.	TUTORIAL-5	1	25/04/2023		**TLM3**		
3.	Reverberation-reverberation time, Sabine's formula	1	27/04/2023		**TLM2**		
4.	Absorption co-efficient and its determination		29/04/2023		**TLM1**		
5.	,Problems & Assignment /Quiz	1	01/05/2023		**TLM1**		
6.	Introduction to Ultrasonics	1	02/05/2023		**TLM2**		
7.	Production & detection of Ultrasonics	1	04/05/2023		**TLM3**		
8.	REVISION	1	06/05/2023		**TLM1**		
9.	**MID-1 Exams**		08/05/2023				
10.	Non-destructive testing through transmission method & pulse-echo method	1	09/05/2023		**TLM2**		
11.	Discussion on various applications of Ultrasonics	1	11/05/2023		**TLM1**		
12.	Problems &Assignment/Quiz	1	15/05/2023		**TLM1**		
No. of classes required to complete UNIT-III: 10				No. of classes taken:			

UNIT-V : MAGNETIC & DIELECTRIC MATERIALS

Course Outcome:- CO 4; Text Book :- T2, R4

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction,Magnetic parameters	1	16/05/2023		**TLM2**		
2.	Classification of magnetic materials – Dia, para & Ferro	1	18/05/2023		**TLM6**		
3.	TUTORIAL-6	1	20/05/2023		**TLM3**		
4.	Hysteresis loop, Soft and hard magnetic materials	1	22/05/2023		**TLM2**		
5.	Applications of magnetic materials	1	23/05/2023		**TLM1**		
7.	Basic Definitions, Electronic polarization	1	24/05/2023		**TLM1**		
8.	Ionic & Orientation polarization	1	25/05/2023		**TLM1**		
9.	TUTORIAL-7	1	27/05/2023		**TLM3**		
10.	Local field,Clausius Mosotti equation	1	29/05/2023		**TLM1**		
12.	Applications of dielectricmaterials	1	30/05/2023		**TLM2**		
13.	Problems & Assignment/Quiz	1	01/06/2023		**TLM1**		
No. of classes required to complete UNIT-V: 13				No. of classes taken:			

UNIT-V: SUPERCONDUCTORS & NANO-MATERIALS

Course Outcome:- CO 5; Text Book :- T2, R4

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
1.	Introduction - Superconductivity	1	03/06/2023		**TLM6**		
2.	TUTORIAL-8	1	05/06/2023		**TLM3**		
3.	Meissner effect, Type-I &II conductors	1	06/06/2023		**TLM1**		
4.	London equations	1	08/06/2023		**TLM1**		
5.	Penetration depth	1	10/06/2023		**TLM1**		
6.	Josephson effect,	1	12/06/2023		**TLM1**		

7.	Applications of Superconductors	1	13/06/2023		**TLM1**		
8.	Problems &Assignment/Quiz	1	15/06/2023		**TLM1**		
9.	TUTORIAL-9	1	17/06/2023		**TLM1**		
10.	Introduction to Nano-materials	1	19/06/2023		**TLM5**		
11.	Classification and properties of Nano-materials	1	20/06/2023		**TLM1**		
12.	Discussion on different methods of preparation	1	22/06/2023		**TLM2**		
13.	Applications of Nano-materials	1	24/06/2023		**TLM1**		
14.	Assignment/Quiz	1	26/06/2023		**TLM3**		
15.	Problems		27/06/2023		**TLM3**		
16.	TUTORIAL-10		03/07/2023		**TLM3**		
No. of classes required to complete UNIT-V: 1				No. of classes taken:			

S.No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**HOD Sign**	**Remarks**
1	Revision	1	04/07/2023				
2.	Revision	1	06/07/2023				
3.	**Advanced Topics: SEM and other Spectroscopic tools**	1	08/07/2023				
4.	**Advanced Topics: Magnetic Levitation**	1	06/07/2023				

PART-C

EVALUATION PROCESS (R-20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
Assignment-III (Unit-III (A))	A3=5
I-Mid Examination (Units-I, II& III (A))	M-1=18
I-Quiz Examination (Units-I, II& III (A))	Q1=07
Assignment-III (Unit-III (B))	A3=5
Assignment-IV (Unit-IV)	A4=5

Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III (B), IV & V)	M-2=18
II-Quiz Examination (Units-III (B), IV & V)	Q2=07
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M-1,M-2)+25% of Min(M-1,M-2)	M=18
Quiz Marks =75% of Max(Q-1,Q-2)+25% of Min(Q-1,Q-2)	Q=07
Cumulative Internal Examination (CIE): A+M+Q	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMME OUTCOMES (POs):

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

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
P Vijaya Sirisha	Dr. P.V.N. Kishore	Dr. S. Yusub	Dr. A. Rami Reddy

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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: RAJASEKHAR KOMMARAJU **Reg**: R20
Course Name & Code **:** PROGRAMMING FOR PROBLEM SOLVING USING C & 20CS01
L-T-P Structure **:** 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech.–CE/II Sem/Sec-A **A.Y.:** 2022-23

PREREQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): 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, student will be able to

CO1	Familiar with syntax and semantics of the basic programming language constructs. **(Understand - L2)**
CO2	Construct derived data types like arrays in solving problem. **(Apply - L3)**
CO3	Decompose a problem into modules and reconstruct it using various ways of user-defined functions. **(Apply - L3)**
CO4	Use user-defined data types like structures and unions and its applications to solve problems. **(Apply- L3)**
CO5	Discuss various file I/O operations and its application. **(Understand - L2)**

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	1	-	-	-	-	-	-	-	-	1	-	-	-
CO2	3	1	1	-	-	-	-	-	-	-	-	1	-	-	-
CO3	3	2	1	-	-	-	-	-	-	-	-	1	-	-	-
CO4	3	2	3	-	-	-	-	-	-	-	-	1	2	-	-
CO5	3	2	3	-	-	-	-	-	-	-	-	1	2	-	-
1 - Low				**2** –Medium								**3** - High			

SYLLABUS

UNIT – I: - Introduction to Problem solving through C-Programming: Problem Specification, Algorithm / pseudo code, flowchart, examples.

C-Programming: Structure of C program, identifiers, basic data types and sizes, Constants, variables, Input-output statements, A sample c program, operators, expressions, type conversions, conditional expressions, precedence of operators and order of evaluation.

Control statements: if, if else, else if ladder and switch statements, while, do-while and for statements, break, continue, goto and labels.

UNIT – II: - Arrays: concept, declaration, definition, accessing elements, storing elements, two dimensional and multi-dimensional arrays.

Character Arrays: declaration, initialization, reading, writing strings, string handling functions, Pre-processor Directives, and macros.

Applications of Arrays: Linear search, Binary search, Bubble Sort.

UNIT – III: - Pointers- concepts, declaring & initialization of pointer variables, pointer expressions, pointer arithmetic, pointers and arrays, pointers and character arrays, pointers to pointers.

Functions: basics, category of functions, parameter passing techniques, recursive functions-comparison with Iteration, Functions with arrays, Standard library functions, dynamic memory management functions, command line arguments.

Storage classes - auto, register, static and extern,

UNIT – IV: - Derived types- structures- declaration, definition, and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self-referential structures, unions, typedef.

UNIT – V: - Files – concept of a file, text files and binary files, streams, standard I/O, Formatted I/O, file I/O operations, error handling.

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 PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011.

R5 Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2000.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION TO PROBLEM SOLVING THROUGH C-PROGRAMMING

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 Introduction, Introduction to Computers	1	13-03-2023		**TLM2**	
2.	History of Computers, Computer Software	1	15-03-2023		**TLM2**	
3.	Program Execution Scenario, Generations of Computers.	1	17-03-2023		**TLM2**	
4.	Problem solving Techniques, Algorithms, Flowcharts, Examples	2	18-03-2023 20-03-2023		**TLM2**	
5.	Structure of C program, identifiers, basic data types and sizes	1	22-03-2023		**TLM2**	
6.	Constants, variables, Input-output statements	1	24-03-2023		**TLM2**	
7.	A sample c program, operators, expressions	1	25-03-2023		**TLM2**	
8.	Precedence of operators and order of evaluation.	1	27-03-2023		**TLM2**	
9.	Control statements: if, if else	1	29-03-2023		**TLM2**	
10.	else if ladder and switch statements	1	01-04-2022		**TLM2**	
11.	while, do-while	2	03-04-2023 05-04-2023		**TLM2**	
12.	for statements, break, continue	2	07-04-2023 08-04-2023		**TLM2**	
13.	goto and labels	1	10-04-2023		**TLM2**	
No. of classes required to complete UNIT-I: 16				**No. of classes taken:**		

UNIT-II: ARRAYS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	**Arrays:** concept, declaration, definition, accessing elements of Single Dimensional Arrays	3	12-04-2023 14-04-2023 15-04-2023		**TLM2**	
15.	Two dimensional and multi-dimensional arrays	3	17-04-2023 19-04-2023 21-04-2023		**TLM2**	
16.	**Character Arrays:** declaration, initialization, reading, writing strings, string handling functions	3	22-04-2023 24-04-2023 26-04-2023		**TLM2**	
17.	Pre-processor Directives, and macros	3	28-04-2023 29-04-2023 01-05-2023		**TLM2**	
18.	**Applications of Arrays:** Linear search, Binary search, Bubble Sort	4	03-05-2023 05-05-2023 06-05-2023 08-05-2022		**TLM2**	
No. of classes required to complete UNIT-II: 16				**No. of classes taken:**		

UNIT-III: POINTERS AND FUNCTIONS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
19.	Pointer Concepts, declaring & initialization of pointer variables	1	10-05-2023		**TLM2**	
20.	Pointer expressions, pointer arithmetic	1	10-05-2023		**TLM2**	
21.	Pointers and Arrays	1	10-05-2023		**TLM2**	
22.	Pointers and character arrays	1	10-05-2023		**TLM2**	
23.	Pointers to pointers	1	10-05-2023		**TLM2**	
24.	Function's basics, category of functions	1	12-05-2023		**TLM2**	
25.	Parameter passing techniques in Functions	1	12-05-2023		**TLM2**	
26.	Recursive functions-comparison with Iteration	2	12-05-2023 12-05-2023		**TLM2**	
27.	Functions with arrays	1	12-05-2023		**TLM2**	
28.	Standard library functions, dynamic memory management functions, command line arguments.	2	13-05-2023 13-05-2023		**TLM2**	
29.	**Storage classes** - auto, register, static and extern	1	13-05-2023		**TLM2**	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: STRUCTURES AND UNIONS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30.	Derived types- structures-declaration, definition, and accessing structures	1	22-05-2023		**TLM2**	
31.	Nested structures, arrays of structures	1	24-05-2023		**TLM2**	
32.	Structures and functions	2	26-05-2023 27-05-2023		**TLM2**	
33.	Pointers to structures, self-referential structures	2	29-05-2023 31-05-2023		**TLM2**	
34.	Unions, typedef.	1	02-06-2023		**TLM2**	
No. of classes required to complete UNIT-IV: 07				**No. of classes taken:**		

UNIT-V: IOT PHYSICAL SERVERS AND CLOUD OFFERINGS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
35.	Files – concept of a file	1	03-06-2023		**TLM2**	
36.	Text files and binary files	1	05-06-2023		**TLM2**	
37.	Streams, standard I/O, Formatted I/O	2	07-06-2023 09-06-2023		**TLM2**	
38.	File I/O operations	2	10-06-2023 12-06-2023		**TLM2**	
39.	Error handling	1	14-06-2023		**TLM2**	
No. of classes required to complete UNIT-V: 07				**No. of classes taken:**		

Content Beyond the Syllabus:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to C++, Object Programming	1	19-06-2023 21-06-2023 23-06-2023		**TLM2**	
2.	I/O Operations in C++.	1	26-06-2023 28-06-2023 30-06-2023		**TLM2**	

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

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=18
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=07
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=18
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=07
Assignment Marks = Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max ((M1+Q1), (M2+Q2)) + 25% of Min ((M1+Q1), (M2+Q2))	M=25
Cumulative Internal Examination (CIE): A+M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Programming Paradigms:** To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	**Data Engineering:** To inculcate ability to Analyze, Design and implement data driven applications into the students.
PSO 3	**Software Engineering:** Develop an ability to implement various processes/methodologies /practices employed in design, validation, testing, and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. K. Rajasekhar**	**Dr. J. Nageswara Rao**	**Dr. S. Naganjaneyulu**	**Dr. B. Srinivasa Rao**
Signature				

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

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr.J.Venkateswara Rao
Course Name & Code : APPLIED MECHANICS & 20CE03
L-T-P Structure : 2-1-0 Credits : 3
Program/Sem/Sec : B.Tech., CE., II-Sem., A.Y : 2022-23
PRE-REQUISITE : Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course comprises the basic knowledge on equilibrium of planar force systems, determination of sectional properties of various cross sections / composite sections. It describes motion of bodies under frictional forces. In this course the process of finding the internal forces in members aroused from the applied loads using equilibrium conditions is also expounded.

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

CO 1	Determine the resultant force and moment for a given system of forces.
CO 2	Calculate the unknown forces in members of planar systems by constructing free body diagrams and applying static equilibrium conditions.
CO 3	Examine the motion/ impeding the motion of bodies on horizontal/inclined planes associated with frictional forces.
CO 4	Analyze for the internal forces in the members of a pin jointed perfect frames subjected to horizontal, vertical and inclined loads.
CO5	Determine the centroid and second moment of area of simple and composite areas.

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	1		2
CO2	3											1	1		2
CO3	3											1	1		2
CO4	3											1	1		2
CO5	3											1	1		2

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

TEXT BOOKS

T1 RK Rajput "Engineering. Mechanics" Dhanpat Rai and Sons, New Delhi
T2 Ferdinand L. Singer, "Engineering Mechanics" Published by Harper Collins Publishers, Singapore
T3 S.S. Bhavikatti and K.G. Rajashekarappa "Engineering Mechanics", New Age International Publishers, New Delhi.

REFERENCES

R1 RK Bansal "Engineering. Mechanics" Laxmi Publishers, New Delhi.
R2 S. Timoshenko, D.H. Young and J.V. Rao "Engineering Mechanics" TATA McGraw Hill, New Delhi, Revised Fourth Edition.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: RESULTANT OF SYSTEMS OF FORCES

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.	Interaction	1	13-03-2023		TLM 1	
2.	Introduction to Mechanics	1	15-03-2023		TLM 1	
3.	Force and force systems	1	16-03-2023		TLM 1	
4.	Laws of forces and proofs	1	17-03-2023		TLM 1	
5.	Components and resolution of forces	1	20-03-2023		TLM 1	
6.	Resultant of coplanar and concurrent force systems	1	23-03-2023		TLM 1	
7.	Resultant of Coplanar Concurrent Forces	1	24-03-2023		TLM 1	
8.	Resultant of Coplanar Concurrent Forces	1	27-03-2023		TLM 1	
9.	Resultant of Coplanar Concurrent Forces	1	29-03-2023		TLM 1	
10.	Moment of Force- principle of moments	1	30-03-2023		TLM 1	
11.	Varignons theorem-Application	1	03-04-2023		TLM 1	
12.	Varignons theorem-Application	1	06-04-2023		TLM 1	
13.	Couples and Resultant of Force Systems	1	10-04-2023		TLM 1	
No. of classes required to complete UNIT-I: 13				**No. of classes taken:**		

UNIT-II: EQUILIBRIUM OF SYSTEMS OF FORCES

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 equilibrium of	1	12-04-2023		TLM 1	
2.	Free Body Diagrams and Equations of Equilibrium	1	13-04-2023		TLM 1,2	
3.	Lami's Theorem and equilibrium of planar systems	1	17-04-2023		TLM 1,2	
4.	Application of Lami's theorem	1	19-04-2023		TLM 1,2	
5.	Equilibrium of planar systems	1	20-04-2023		TLM 1,2	
6.	Problems on equilibrium of planar systems	1	21-04-2023		TLM 1	
7.	Problems on equilibrium of planar systems	1	24-04-2023		TLM 1	
8.	Problems on equilibrium of planar systems	1	26-04-2023		TLM 1	
9.	Problems on equilibrium of planar systems	1	27-04-2023		TLM 1	
10.	Tutorial on equilibrium of force systems	1	28-04-2023		TLM3	
11.	Tutorial on equilibrium of force systems	1	01-05-2023		TLM3	
No. of classes required to complete UNIT-II: 11				**No. of classes taken:**		

UNIT-III: FRICTION

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-Theory of Friction	1	03-05-2023		TLM 1	

2.	Impending motion of connected bodies	1	04-05-2023		TLM 1	
3.	Problems on Impending motion of connected bodies	1	05-05-2023		TLM 1	
4.	Ladder friction and applications	1	08-05-2023		TLM 1	
5.	Ladder friction and applications	1	10-05-2023		TLM 1	
6.	Wedge friction	1	11-05-2023		TLM 1	
7.	Problems on Wedge friction	1	12-05-2023		TLM 1	
8.	I mid examination	1	15-05-2023			
9.	I mid examination	1	17-05-2023			
10.	I mid examination	1	18-05-2023			
11.	I mid examination	1	19-05-2023			
12.	Tutorial on friction	1	22-05-2023		TLM3	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

UNIT-IV: ANALYSIS OF PERFECT FRAMES

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.	Method of joints	1	24-05-2023		TLM 1,2	
2.	Analysis of Cantilever Trusses	1	25-05-2023		TLM 1	
3.	Analysis of Cantilever Trusses	1	26-05-2023		TLM 1	
4.	Analysis of Cantilever Trusses	1	29-05-2023		TLM 1	
5.	Analysis of simple trusses	1	31-05-2023		TLM 1	
6.	Analysis of simple trusses	1	02-06-2023		TLM 1	
7.	Analysis of simple trusses	1	05-06-2023		TLM 1	
8.	Tutorial on method of section	1	07-06-2023		TLM3	
9.	Method of sections	1	08-06-2023		TLM 1,2	
10.	Method of sections	1	09-06-2023		TLM 1,2	
11.	Tutorial on method of section	1	12-06-2023		TLM3	
No. of classes required to complete UNIT-IV: 11				**No. of classes taken:**		

UNIT-V: CENTROID AND MOMENT OF INERTIA

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.	Centroid introduction	1	14-06-2023		TLM 1,2	
2.	Centroids of plane geometrical figures	1	15-06-2023		TLM 1,2	
3.	Centroids of plane geometrical figures	1	16-06-2023		TLM 1	
4.	Centroids of Composite areas	1	18-06-2023		TLM 1	
5.	Centroids of Composite areas	1	19-06-2023		TLM 1	
6.	Centroids of Composite areas	1	21-06-2023		TLM 1	
7.	Centre of gravity of simple bodies	1	22-06-2023		TLM 1	
8.	Centre of gravity of simple bodies and Pappus theorem	1	23-06-2023		TLM 1	
9.	Tutorial on centroids	1	26-06-2023		TLM3	
10.	Moment of Inertia of simple geometrical figures	1	28-06-2023		TLM 1	
11.	Moment of Inertia of simple areas	1	30-06-2023		TLM 1	
12.	Moment of Inertia of composite areas	1	03-07-2023		TLM 1	
13.	Mass moment of Inertia of simple figures	1	05-07-2023		TLM 1	
14.	Tutorial on MI	1	06-07-2023		TLM3	
15.	Tutorial on MI	1	07-07-2023		TLM3	
No. of classes required to complete UNIT-V: 15				**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 (R20Regulations):

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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. J.Venkateswara Rao**	**Dr. J.Venkateswara Rao**	**Mr.B.Rama Krishna**	**Dr. V.Rama Krishna**
Signature				

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	: **J.RANGAIAH**	
Course Name & Code	: CONSTITUTION OF INDIA (20MC01)	
L-T-P Structure	: 2-0-0	Credits : 0
Program/Sem/Sec	: B.Tech., CIVIL, II-Sem.,	A.Y: 2022-23

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 Commision 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	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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.

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 A

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	16-03-2023		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	18-03-2023		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	23-03-2023		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	25-03-2023		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	01-04-2023		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	06-04-2023		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	08-04-2023		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	13-04-2023		TLM2	CO2	T1 / T2	
9	Federalism Centre State Relationships to the Union	1	15-04-2023		TLM2	CO2	T1 / T2	
10	President Role, Power and Position	1	20-04-2023		TLM2	CO2	T1 / T2	
11	Prime Minister (PM) and Council of Ministers ,cabinet and Central Secretariat Powers and duties	1	27-04-2023		TLM2	CO2	T1 / T2	
12	Lok Sabha,Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	29-04-2023		TLM2	CO2	T1 / T2	
13	Assignment II	1	04-05-2023		TLM2	CO2	T1 / T2	
No. of classes required to complete UNIT-II		**6**			**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	06-05-2023		TLM2 / TLM4	CO3	T1 / T2	
I MID EXAMINATIONS 08-05-2023 To 13-05-2023								
16	Role of Chief Ministers and Council of Ministers	1	18-05-2023		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	20-05-2023		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	25-05-2023		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment –III	1	27-05-2023		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III		**5**			**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	01-06-2023		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of local administration	1	03-06-2023		TLM2 / TLM4	CO4	T1 / T2	
22	Municipalities – Mayor and Role of Elected Representative	1	08-06-2023		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	10-06-2023		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment -IV	1	15-06-2023		TLM2/ TLM 7	CO4	T1 / T2	
25	Assignment –IV	1	17-06-2023					
No. of classes required to complete UNIT-IV		**05**			**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 Outcome COs	Text Book followed	HOD Sign Weekly
25	Election Commission	1	22-06-2023		TLM2 / TLM4	CO5	T1 / T2	
26	Role of Chief Election Commissioner and Election Commisionerate	1	24-06-2023		TLM2 / TLM4	CO5	T1 / T2	
27	State Election Commission	1	01-07-2023		TLM2 / TLM4	CO5	T1 / T2	
28	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	06-07-2023		TLM2 / TLM4	CO5	T1 / T2	
29	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	08-07-2023		TLM2 / TLM4	CO5	T1 / T2	
II MID EXAMINATIONS 10-07-2023 To 15-07-2023								
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
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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**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
J.RANGAIAH	K.Ravi Kiran Yasaswi	Dr.D.Veeraiah	Dr.V.Ramakrishna

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. B. Sreenivasa Reddy
Course Name & Code : PCS LAB, 20FE51
L-T-P Structure : **0-0-2** **Credits:** 01
Program/Sem/Sec : CIVIL LAB –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

CO1	Introduce one-self and others using appropriate language and details.	L2
CO2	Comprehend short talks and speak clearly on a specific topic using	L2
CO3	Report effectively after participating in informal discussions ethically.	L1
CO4	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 questionsaboutmainideaandsupportingideasafterlisteningtoaudiotext.

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	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
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	03	17-03-2023		TLM4	
2.	Self Introduction & Introducing others	03	24-03-2023		TLM4	
3.	Self Introduction & Introducing others	03	31-03-2023		TLM4	
4.	JAM- I(Short and Structured Talks)	03	21-04-2023		TLM4	
5.	JAM-II(Short and Structured Talks)	03	28-04-2023		TLM4	
6.	Role Play-I(Formal and Informal)	03	05-05-2023		TLM4	
7.	Role Play-II (Formal and Informal)	03	19-05-2023		TLM4	
8.	Group Discussion-I (Reporting the discussion)	03	26-05-2023		TLM4, TLM6	
9.	Group Discussion-II	03	02-06-2023		TLM4, TLM6	
10.	Oral & Poster Presentation	03	09-06-2023		TLM2, TLM4	
11.	Oral & Poster Presentation	03	16-06-2023		TLM2, TLM4	
12.	Oral & Poster Presentation	03	23-06-2023		TLM2, TLM4	
13.	Oral & Poster Presentation	03	30-06-2023		TLM2, TLM4	
14.	Lab Internal Exam	03	07-07-2023			
No. of classes required to complete Syllabus: 42				**No. of classes taken:**		

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

COURSE HANDOUT

Part-A

PROGRAM	**:**	B.Tech., II-Sem.,(CE)
ACADEMIC YEAR	**:**	2022-2023
COURSE NAME & CODE	**:**	APPLIED PHYSICS LAB & 20 FE 53
L-T-P STRUCTURE	**:**	0-0-3
COURSE CREDITS	**:**	1
COURSE INSTRUCTOR	**:**	**P.Vijaya Sirisha/ N Aruna**
COURSE COORDINATOR	**:**	**P.Vijaya Sirisha**

Course Educational Objective:

The theoretical ideas, Analytical techniques, graphical analysis and concepts covered in the lecture by completing a host of experiments with the procedures and observational skills for appropriate use of simple and complex apparatus.

Course Outcomes: At the end of the course, the student will be able to:
CO1: Analyze the wave characteristics of light.
CO2: Estimate the magnetic field using Stewart's and Gee's apparatus.
CO3: Verify the characteristics of semi conductor diodes.
CO4: Determine the acceptance angle and numerical aperture of optical fiber.
CO5: Improve report writing skills and individual team work with ethical values.

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

Engineering Physics Lab												
COURSE DESIGNED BY	**FRESHMAN ENGINEERING DEPARTMENT**											
Course Outcomes	**Programme Outcomes**											
PO's →	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1.	**3**	**3**	**1**	**1**								**1**
CO2.	**3**	**3**	**1**	**1**								**1**

CO3.	**3**	**3**	**1**	**1**								**1**
CO4.	**3**	**3**	**1**	**1**								**1**
CO5.								**2**	2	**2**		
1 = slight (Low)		**2 = Moderate (Medium)**						**3 = Substantial (High)**				

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

BOS APPROVED TEXT BOOKS:
1. Lab Manual Prepared by the LBRCE.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section- AI&DS

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	3	17-03-2023		**TLM4**	
2.	Demonstration	3	24-03-2023		**TLM4**	
3.	Experiment 1	3	31-03-2023		**TLM4**	
4.	Experiment 2	3	21-04-2023		**TLM4**	
5.	Experiment 3	3	28-04-2023		**TLM4**	
6.	Experiment 4	3	05-05-2023		**TLM4**	
7.	Experiment 5	3	19-05-2023		**TLM4**	
8.	Experiment 6	3	26-05-2023		**TLM4**	
9.	Demonstration	3	02-06-2023		**TLM4**	
10.	Experiment 7	3	09-06-2023		**TLM4**	
11.	Experiment 8	3	16-06-2023		**TLM4**	
12.	Experiment 9	3	23-06-2023		**TLM4**	
13.	Experiment 10	3	30-06-2023		**TLM4**	
14.	**Internal Exam**	3	07-07-2023			
	No. of classes required to complete Syllabus:			39		

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

EVALUATION PROCESS:

Evaluation Task	Marks
Cumulative Internal Examination (CIE): M	15
Semester End Examination (SEE)	35
Total Marks = CIE + SEE	50

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

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

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

(1). **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

(2). **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

(3). **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

(4). **Conduct investigations of complex problems**: Use research-based knowledge and 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 modelling 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). **Ethic**s: 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.

PROGRAM SPECIFIC OUTCOMES (PSOs):

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

P VIJAYA SIRISHA / N Aruna	Dr P V N Kishore	Dr. S. YUSUB	Dr A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Rajasekhar Kommaraju
Course Name & Code : Programming for Problem SolvingUsing C Lab
L-T-P Structure : 0-0-3 Credits : 1.5
Program/Sem/Sec : B.Tech., CE., II-Sem A.Y : 2022-23

PRE-REQUISITE: NIL

COURSE EDUCATIONAL OBJECTIVES (CEOs): 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, students are able to

CO 1	Apply control structures of C in solving computational problems.
CO 2	Implement derived data types & use modular programming in problem solving
CO 3	Implement user defined data types and perform file operations.
CO 4	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	1	-	-	-	-	-		-	-	-	-	1	-	-
CO2	3	1	-	-	-	-	-		-	-	-	-	1	-	-
CO3	3	1	-	-	-	-	-		-	-	-	-	1	-	-
CO4	-	-	-	-	-	-	-	3	3	3	-	-	-	-	-

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 ReemaThareja, 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 PradeepDey, 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):

Module NO	Date (Tentative)	Actual Date	Topics to be covered
1	16-03-2023		Introduction to Raptor Tool. draw flow charts for a) Find the distance travelled b) Find the total people attended the show c) Express the expenses in percentages d) Find different category of tickets sold e) Find average show rating
2	23-03-2023		Problem solving using Raptor Tool a) Celsius to Fahrenheit conversion b) Arithmetic operations c) Area and perimeter of circle d) Area of a triangle e) Converting Decimal No to Different Forms
3	06-04-2023		Exercise Programs on selection statements a) Biggest of three numbers b) Grade of a student c) Roots of quadratic equation d) Leap year e) Current Bill Calculation
4	13-04-2023		Exercise Programs on Loops a) Count No of Digits b) Multiplication Table c) Prime or not d) Reverse the given no e) Factorial
5	20-04-2023		Exercise Programs on Loops & nesting of Loops. a) Fibonacci series b) Palindrome c) Factors d) Armstrong or not e) f) Write a C program to print the following format 1 * 2 2 * * 3 3 3 * * * 4 4 4 4 * * * * 5 5 5 5 5 * * * * *
6	27-04-2023		Exercise Programs on Arrays & Strings. a) Sum and average of n numbers b) Maximum and minimum in a list c) Linear search d) Binary search e) Bubble Sort

7	04-05-2023		Exercise Programs on Arrays & Strings. a) Addition and subtraction of two matrices b) Multiplication of matrices c) Transpose of a matrix d) Sorting city names in alphabetical order e) Demonstration of built-in string functions
8	11-05-2023		Exercise Programs on String functions Write a C program to perform the following using and without using built in functions a) find the string length b) copy one string into another c) concatenate two strings d) check whether two strings are equal or not e) convert the given string into upper and lower case
9	01-06-2023		Exercise Programs on Functions &Recursive Functions. a) Arithmetic operations using functions b) LCM and GCD of two numbers c) evaluate the expression $2.5\log x+\cos 32^0+\|x^2-y^2\|+\sqrt{2}xy$ d) Factorial of a number with and without recursive function e) Sum of the series 1+2+3+…+n f) Fibonacci series recursion g) Towers of Hanoi recursion h) Binary Search using recursion
10	08-06-2023		Exercise Programs on & pointers a) program to swap two numbers using pointers b) perform arithmetic operations using dynamic allocation c) program to display array elements using pointers d) program to demonstrate call-by value & call-by reference e) program to display the city names using pointers
11	15-06-2023		Exercise Programs on user defined data types. a) program to print the electricity bill b) program to display the students marks memo c) program to display the employee information d) program to display the bank customers information e) program to display the total marks of each student & subject
12	22-06-2023		Exercise Programs on Files. a) Create and display a text file using getc, putc b) Create and display a text file using fgets, fputs c) Create a bank binary file using fwrite d) Reading bank file using fread e) Modify the bank of a file (deposit/withdraw) f) Count no of records in a bank file

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 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
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=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
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=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Organize, Analyze and interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs
PSO 3	Develop IT application services with the help of different current engineering tools.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Mr. K. Rajasekhar	**K. Phaneendra**	**K. Phaneendra**	**Dr. B. Srinivasa Rao**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)
L.B.REDDY NAGAR, MYLAVARAM-521 230, A.P, INDIA
DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PROGRAM	**:**	B.Tech, II-Sem., CIVIL
ACADEMIC YEAR	**:**	2022-23
COURSE NAME & CODE	**:**	Computer Aided Engineering Graphics (20ME54)
L-T-P STRUCTURE	**:**	0-0-3
COURSE CREDITS	**:**	1.5
COURSE INSTRUCTOR	**:**	Dr. V.Ramakrishna/ Mr.M.Karthik Kumar
COURSE COORDINATOR	**:**	Dr. V.Ramakrishna
PRE-REQUISITE	**:**	Engineering Graphics, Mathematics

COURSE EDUCATIONAL OBJECTIVE:

The course aims to teach developing and drawing of engineering objects using AutoCAD. The student will be taught the fundamentals of AutoCAD and then asked to develop the projections of objects related to straight lines, planes, solids, orthographic and isometric views, development of surfaces using principles of engineering drawing.

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

CO1 : Draw simple objects using functional tools in AutoCAD. (**Understand-L2**)
CO2 : Develop and draw the positions and views of points, lines, planes and solids using AutoCAD. (**Understand-L2**)
CO3 : Develop and draw the orthographic and isometric projections of simple objects using AutoCAD. (**Understand-L2**)
CO4 : Develop and draw the projections of the solids by developing the surfaces using AutoCAD. (**Understand-L2**)

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

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

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

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DEPARTMENT OF CIVIL ENGINEERING

COMPUTER AIDED ENGINEERINGGRAPHICS (20ME54)

LIST OF EXPERIMENTS

COURSE: II SEMESTER **A.Y: 2022-2023**

1. Basic drawing commands
2. Projection of points (I, II, III, & IV quadrants).
3. Projection of lines parallel to both reference planes.
4. Projection of lines parallel to one reference plane & inclined to other reference plane.
5. Projection of planes: Single stage projections.
6. Projection of solids in simple position and transfer of points.
7. Projection of solids with axes inclined to one reference plane & parallel to other.
8. Section of Solids
9. Orthographic Projections
10. Orthographic Projections
11. Isometric Project
12. Development of Surfaces.
13. Revision of exercises.

Lab-In charge

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)
L.B.REDDY NAGAR, MYLAVARAM-521 230, A.P, INDIA
DEPARTMENT OF CIVIL ENGINEERING
COMPUTER AIDED ENGINEERINGGRAPHICS (20ME54)

COURSE: II SEMESTER **A.Y: 2022-23**

Tentative Date of Completion	**Actual Date of Completion**	List of Experiments
14/3/2023		Demo on Computer Aided Engineering Graphics
21/3/2023		Basic drawing commands
28/3/2023		Projection of points (I, II, III, & IV quadrants)
04/4/2023		Projection of lines parallel to both reference planes
11/4/2023		Projection of lines parallel to one reference plane & inclined to other reference plane.
18/4/2023		Projection of planes: Single stage projections
25/4/2023		Projection of solids in simple position and transfer of points
2/5/2023		Projection of solids with axes inclined to one reference plane & parallel to other
16/5/2023		Section of Solids
23/5/2023		Orthographic Projections
30/5/2023		Orthographic Projections
6/6/2023		Isometric Project
13/6/2023		Development of Surfaces.
20/6/2023		Revision of exercises
27/6/2023		Revision of exercises
4/7/2023		Internal exam

Lab-In charge

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (Autonomous)
L.B.REDDY NAGAR, MYLAVARAM-521 230, A.P, INDIA
DEPARTMENT OF CIVIL ENGINEERING

COMPUTER AIDED ENGINEERINGGRAPHICS (20ME54)

COURSE: II SEMESTER **A.Y: 2022-23**

LAB TIMETABLE

DAY / TIME	1 9.00 a.m to 9.50 a.m	2 9.50 a.m to 10.40 a.m	 10.40 a.m to 10.50 a.m	3 10.50 a.m to 11.40 a.m	4 11.40 a.m to 12.30 p.m	 12.30 p.m to 01.30 p.m	5 1.30 p.m to 2.20 p.m	6 2.20 p.m to 3.10 p.m	7 3.10 p.m to 4.00 p.m
MON						LUNCH BREAK			
TUE		CAEG							
WED									
THU									
FRI									
SAT									

Lab-In charge

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineeringfundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complexengineering 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 anddesign 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 researchmethods 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 modernengineering 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 assesssocietal, 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 solutionsin 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 ofthe engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader indiverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineeringcommunity 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 theengineering 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 inindependent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Dr. V. Ramakrishna	Dr. V. Ramakrishna	B.Ramakrishna	**Dr. V. Ramakrishna**
Signature				