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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr Pawel Veliventi
Course Name & Code   : Professional Communication-II (20FE02)
L-T-P Structure   : 2-0-0   **Credits:** 2
Program/Sem/Sec   : ME/II   **A.Y.:** 2021-22
PREREQUISITE: Nil

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

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

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

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

TEXTBOOKS:

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

REFERENCE BOOKS:

R1 Swan,M., "Practical English Usage", Oxford University Press, 2016
R2 Kumar,S and Latha, P, "Communication Skills", Oxford University Press, 2018
R3 Rizvi Ashraf M.,"EffectiveTechnical Communication",TataMcGrawHill, NewDelhi, 2008
R4 Baradwaj Kumkum, "Professional Communication" ,I.K.International Publishing House Pvt. Lt.d, NewDelhi, 2008
R5 Wood,F.T., "Remedial English Grammar", Macmillan, 2007

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Fabric of Change

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.	H.G. Wells and the Uncertainties of Progress	1	5-5-22		TLM1	
2.	Studying the use of Graphic elements in texts	1	7-5-22		TLM1	
3.	Quantifying Expressions	1	12-5-22		TLM2	
4.	Adjectives and Adverbs	1	14-5-22		TLM2	
5.	Comparing and Contrasting	1	19-5-22		TLM3	
6.	Degrees of Comparison	1	21-5-22		TLM1	
7.	Information Transfer	1	26-5-22		TLM2	
No. of classes required to complete UNIT-I: 7				**No. of classes taken:**		

UNIT-II: Tools for Life

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.	Leaves from the Mental Portfolio of a Eurasian	1	28-5-22		TLM1	
9.	Global Comprehension & Detailed Comprehension	1	2-6-22		TLM1	
10.	Active & Passive Voice	1	4-6-22		TLM2	
11.	Idioms & Phrases	1	9-6-22		TLM1	
12.	Structured Essays using suitable claims and evidences	1	11-6-22		TLM2	
No. of classes required to complete UNIT-II: 5				**No. of classes taken:**		

UNIT-III: Homi Jahangir Bhabha

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	1	16-6-22		TLM1	
14.	Words Often Confused	1	18-6-22		TLM1	
15.	Common Errors	1	30-6-22		TLM2	
16.	Incident & Investigation Reports	1	2-7-22		TLM2	
No. of classes required to complete UNIT-III: 4				**No. of classes taken:**		

UNIT-IV: Jagadish Chandra Bose

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
17.	Jagadish Chandra Bose	2	7-7-22 & 14-7-22		TLM1	
18.	Use of Antonyms	1	16-7-22		TLM1	
19.	Correction of Sentences	1	21-7-22		TLM3	
20.	Dialogue Writing	1	23-7-22		TLM1	
No. of classes required to complete UNIT-IV:5				**No. of classes taken:**		

UNIT-V: Prafulla Chandra Ray

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	Prafulla Chandra Ray	2	28-7-22 & 30-7-22		TLM2	
22.	Analogy	1	4-8-22		TLM1	
23.	Sentence Completion	1	6-8-22		TLM2	
24.	Writing Résumé	1	11-8-22		TLM2	
No. of classes required to complete UNIT-V: 5				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr Pawel Veliventi	Dr B Samrajya Lakshmi	Dr B Samrajya Lakshmi	Dr A Ramireddy
Signature				

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DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. K. Jhansi Rani
Course Name & Code : Linear algebra & Transformation Techniques&20FE04
L-T-P Structure : 2-1 -0   **Credits:3**
Program/Sem/Sec : I B.Tech/II sem   **A.Y.:** 2020 - 21

PREREQUISITE: Nil

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

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

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

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

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

TEXTBOOKS:
T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 42ndEdition, Khanna Publishers, New Delhi, 2012.
T2 Dr. B. V. Ramana, "Higher Engineering Mathematics", 1stEdition, TMH, New Delhi, 2010.

REFERENCE BOOKS:
R1 M. D. Greenberg, "Advanced Engineering Mathematics", 2nd Edition, TMH Publications, New Delhi, 2011.

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

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

R4 S. S. Sastry, " Introductory Methods of Numerical Analysis" 5th Edition, PHI Learning Private

Limited, New Delhi, 2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Linear System of Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	04/05/22		TLM1	
2.	Introduction to UNIT I	1	06/05/22		TLM2	
3.	Echelon form of a matrix	1	07/05/22		TLM1	
4.	Echelon form of a matrix	1	10/05/22		TLM1	
5.	Normal form of a matrix	1	11/05/22		TLM1	
6.	Normal form of a matrix	1	13/05/22		TLM1	
7.	PAQ form	1	17/05/22		TLM1	
8.	Solution of Homogeneous linear system of equations	1	18/05/22		TLM1	
9.	**Tutorial 1**	1	21/05/22		TLM3	
10.	Solution of Non homogeneous Linear system of equations	1	20/05/22		TLM1	
11.	Solution of Non homogeneous Linear system of equations	1	24/05/22		TLM1	
12.	Solution of Non homogeneous Linear system of equations	1	25/05/22		TLM1	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Eigen values and Eigen Vectors

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

UNIT-III: Laplace Transformation

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Introduction to Unit-III	1	14/06/22		TLM2	
24.	Standard forms of Laplace Transformations	1	15/06/22		TLM1	
25.	Linear Property, Shifting Theorem	1	17/06/22		TLM1	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Change of scale property, Multiplication by t	1	18/06/22		TLM1	
27.	Multiplication by t	1	28/06/22		TLM1	
28.	Division by t	1	29/06/22		TLM3	
29.	**TUTORIAL 3**	1	02/07/22		TLM 1	
30.	Transformation derivatives and Integrals	1	01/07/22		TLM1	
31.	Transformation integrals	1	05/07/22		TLM1	
32.	Unit step function and Dirac's delta function	1	06/07/22		TLM1	
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

UNIT-IV: Inverse Laplace Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Introduction to UNIT IV	1	08/07/22		TLM1	
34.	Linear property	1	09/07/22		TLM1	
35.	Shifting properties	1	12/07/22		TLM1	
36.	Inverse Laplace transformation by using partial fractions	1	13/07/22		TLM1	
37.	Inverse Laplace transformation by using partial fractions	1	15/07/22		TLM1	
38.	Inverse Laplace Transformation by using Convolution theorem	1	16/07/22		TLM1	
39.	Inverse Laplace Transformation by using Convolution theorem	1	19/07/22		TLM3	
40.	Solving of Ordinary differential equation by Laplace transform method	1	20/07/22		TLM1	
41.	Solving of Ordinary differential equation by Laplace transform method	1	22/07/22		TLM1	
42.	**TUTORIAL 4**	1	23/07/22		TLM3	
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: Z- Transformations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
43.	Introduction to UNIT V	1	26/07/22		TLM1	
44.	Standard forms of Z-Transformation	1	27/07/22		TLM1	
45.	Damping rule	1	29/07/22		TLM1	
46.	Shifting Rule	1	30/07/22		TLM1	
47.	Initial and final value theorems	1	02/08/22		TLM1	
48.	Inverse Z – Transformations	1	03/08/22		TLM1	
49.	Inverse Z – Transfroms by using partial fractions	1	05/08/22		TLM1	
50.	Inverse Z – Transformation by using convolution theorem	1	06/08/22		TLM1	
51.	Solving of Difference equations by using Z – Transformations	1	10/08/22		TLM1	
52.	Solving of Difference equations by using Z - Transformations	1	12/08/22		TLM1	
53.	**TUTORIAL 5**	1	13/08/22		TLM3	
54.	Content beyond the syllabus	1	13/08/22		TLM5	

No. of classes required to complete UNIT-V:12	No. of classes taken:

Teaching Learning Methods

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM	: B.Tech., II-Sem., ME
ACADEMIC YEAR	: 2021-22
COURSE NAME & CODE	: ENGINEERING PHYSICS & 20FE08
L-T-P STRUCTURE	: 3-1-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Dr. P.V.N. Kishore
PRE-REQUISITE	: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of optics, 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.

<u>**WEB REFERENCES AND E-TEXT BOOKS**</u>

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

<u>**PART-B**</u>

COURSE DELIVERY PLAN (LESSON PLAN):

<u>**UNIT-I: ELASTICITY**</u>

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	05/05/2022		TLM2		
2.	General Properties of matter	1	06/05/2022		TLM5		
3.	Introduction to Elasticity /Plasticity	1	07/05/2022		TLM6		
4.	Introduction on Stress, strain and their classification	1	10/05/2022		TLM1		
5.	Hook's law, Elastic behavior of a material, Factors affecting elasticity	1	12/05/2022		TLM4		
6.	TUTORIAL-1	1	13/05/2022		TLM3		
7.	Classification of Elastic modulii	1	14/05/2022		TLM2		
8.	Relation between Y, K, n and σ	1	17/05/2022		TLM1		
9.	Problems & Assignment/Quiz	1	19/05/2022		TLM4		
10.	TUTORIAL-2	1	20/05/2022		TLM4		
11.	Bending of beams expression, Cantilever	1	21/05/2022		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	24/05/2022		TLM2		
2.	Einstein Coefficients	1	26/05/2022		TLM1		
3.	TUTORIAL-3	1	27/05/2022		TLM3		

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
4.	Nd-YAG Laser, He-Ne gas Laser	1	28/05/2022		**TLM2**		
5.	Applications of LASERS	1	31/05/2022		**TLM5**		
6.	Optical Fiber principle, Structure of optical fiber	1	02/06/2022		**TLM2**		
7.	Numerical aperture and Acceptance angle	1	03/06/2022		**TLM4**		
8.	TUTORIAL-4	1	04/06/2022		**TLM3**		
9.	Types of optical fibers, Applications	1	07/06/2022		**TLM2**		
10.	Problems & Assignment/Quiz	1	09/06/2022		**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	10/06/2022		**TLM5**		
2.	TUTORIAL-5	1	11/06/2022		**TLM3**		
3.	Reverberation-reverberation time, Sabine's formula	1	14/06/2022		**TLM2**		
4.	Absorption co-efficient and its determination, Problems & Assignment /Quiz	1	16/06/2022		**TLM1**		
5.	Introduction to Ultrasonics	1	17/06/2022		**TLM2**		
6.	Production & detection of Ultrasonics	1	18/06/2022		**TLM3**		
7.	**MID-1 Exams**		20/06/22 to 25/06/22				
8.	Non-destructive testing through transmission method & pulse-echo method	1	28/06/2022		**TLM2**		
9.	Discussion on various	1	30/06/2022				

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
	applications of Ultrasonics						
10.	Problems & Assignment/Quiz	1	01/07/2022		**TLM1**		
No. of classes required to complete UNIT-III: 10				No. of classes taken:			

UNIT-V : <u>MAGNETIC & DIELECTRIC MATERIALS</u>

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	02/07/2022		**TLM2**		
2.	Classification of magnetic materials – Dia, para & Ferro	1	05/07/2022		**TLM6**		
3.	TUTORIAL-6	1	07/07/2022		**TLM3**		
4.	Hysteresis loop, Soft and hard magnetic materials	1	08/07/2022		**TLM2**		
5.	Applications of magnetic materials	1	09/07/2022		**TLM1**		
7.	Basic Definitions, Electronic polarization	1	12/07/2022		**TLM1**		
8.	Ionic & Orientation polarization	1	14/07/2022		**TLM1**		
9.	TUTORIAL-7	1	15/07/2022		**TLM3**		
10.	Local field, Clausius Mosotti equation	1	16/07/2022		**TLM1**		
12.	Applications of dielectric materials	1	19/07/2022		**TLM2**		
13.	Problems & Assignment/Quiz	1	21/07/2022		**TLM1**		
No. of classes required to complete UNIT-V: 13				No. of classes taken:			

UNIT-V: <u>SUPERCONDUCTORS & NANO-MATERIALS</u>

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	22/07/2022		**TLM6**		
2.	TUTORIAL-8	1	23/07/2022		**TLM3**		

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign	Remarks
3.	Meissner effect, Type-I &II conductors	1	26/07/2022		**TLM1**		
4.	Josephson effect, Applications of Superconductors	1	28/07/2022		**TLM1**		
5.	Problems & Assignment/Quiz	1	29/07/2022		**TLM1**		
6.	TUTORIAL-9	1	30/07/2022		**TLM1**		
7.	Introduction to Nano-materials	1	02/08/2022		**TLM5**		
8.	Classification and properties of Nano-materials	1	04/08/2022		**TLM1**		
9.	Discussion on different methods of preparation, applications	1	05/08/2022		**TLM2**		
10.	Assignment/Quiz	1	06/08/2022		**TLM3**		
No. of classes required to complete UNIT-IV: 10			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	11-08-2022				
2.	Revision	1	12/08/2022				
3.	**Advanced Topics: SEM and other Spectroscopic tools**	1	13/08/2022				
4.	**Advanced Topics: Magnetic Levitation**	1	16/08/2022				

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	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a

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

Course Instructor   Course Coordinator   Module Coordinator   HOD

Dr. P.V.N. Kishore   Dr. P.V.N. Kishore   Dr. S. Yusub   Dr. A. Rami Reddy

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

DEPARTMENT OF MACHANICAL ENGINEERING

COURSE HANDOUT
PART-A

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

PRE-REQUISITE:NI:

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

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

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

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
CO3	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO4	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
CO5	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
1 – Low2 –Medium3 – High															

TEXTBOOKS:

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, PearsonPublishers, 7thEdition, 2013

R2: E Balagurusamy, Computer Programming, McGraw Hill Education, 8thEdition

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

R4: PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2ndEdition,2011.

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Introduction to Problem solving through CProgramming:**Problem Specification, Algorithm, Pseudo Code	1	02/05/2022			
2.	Flowchart, Examples on Algorithm and Flowcharts	1	04/05/2022			
3.	**C Programming:**Structure of C Program, Identifiers, Basic Data Types and Sizes	1	05/05/2022			
4.	Constants, Variables, Input – Output Statements, A sample CProgram	1	07/05/2022			
5.	Operators Part – I	1	09/05/2022			
6.	Operators Part – II	1	11/05/2022			
7.	Expressions, Type Conversions, Conditional Expression	1	12/05/2022			
8.	Precedence of Operators,Order of Evaluation	1	14/05/2022			
9.	**Control statements:**if, if else	1	16/05/2022			
10.	else if ladder and nested if	1	18/05/2022			
11.	switch statement	1	19/05/2022			
12.	while loop, do-while loop	1	21/05/2022			
13.	for loop	1	23/05/2022			
14.	break, continue, go to and labels	1	25/05/2022			

No. of classes required to complete UNIT – I: 14　　**No. of classes taken:**

UNIT – II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	**Arrays:** Definition, Types of Arrays	1	26/05/2022			
16.	1D-Array Syntax, Declaration, and Initialization	1	28/05/2022			
17.	Storing and Accessing Elements in 1D-Array	1	30/05/2022			
18.	**Applications of 1D-Array:**Linear Search and Binary Search, Bubble Sort Algorithm	1	1/06/2022			
19.	Two-Dimensional Array Syntax, Declaration, and Initialization	1	2/06/2022			
20.	Storing and Accessing Elements in 2D-Array	1	4/06/2022			
21.	Applications of 2D Arrays	1	6/06/2022			
22.	Multi-Dimensional Arrays	1	8/06/2022			
23.	**Character Arrays:** Declaration, Initialization, Reading and Writing Strings	1	9/06/2022			
24.	String Handling Functions Part – I	1	11/06/2022			
25.	String Handling Functions Part – II	1	13/06/2022			
26.	Pre-processor Directives Part – I	1	15/06/2022			
27.	Pre-processor Directives Part – II	1	16/06/2022			

No. of classes required to complete UNIT – II: 13　　**No. of classes taken:**

UNIT – III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28.	**Pointers:** Definition, Declaration, Initialization of Pointer Variable	1	18/06/2022			
29.	Pointer Expressions	1	20/06/2022			
30.	Pointer Arithmetic	1	22/06/2022			
31.	Pointers and Arrays	1	23/06/2022			
32.	Pointers and Character Arrays	1	25/06/2022			
33.	Pointers to Pointers	1	27/06/2022			
34.	**Functions:** Basics, Category of Functions	1	29/06/2022			
35.	Parameter Passing Techniques	1	30/06/2022			
36.	Recursive Functions	1	02/07/2022			
37.	Functions with Arrays	1	06/07/2022			
38.	Standard Library Functions	1	07/07/2022			
39.	Dynamic Memory Management Functions	1	11/07/2022			
40.	Command Line Arguments	1	13/07/2022			
41.	**Storage Classes:** auto, register, static and extern	1	14/07/2022			

No. of classes required to complete UNIT – III: 14 **No. of classes taken:**

UNIT – IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	**Derived Types:** **Structure:** Definition andDeclaration	1	16/07/2022			
43.	Initialization andAccessing Structures	1	18/07/2022			
44.	Nested Structures	1	20/07/2022			
45.	Arrays of Structures	1	21/07/2022			
46.	Structures and Functions	1	23/07/2022			
47.	Pointers to Structures Part – I	1	25/07/2022			
48.	Pointers to Structures Part – II	1	27/07/2022			
49.	Self-Referential Structures	1	28/07/2022			
50.	**Union:** Definition and Declaration	1	30/07/2022			
51.	Initialization and Accessing Union Elements	1	01/08/2022			
52.	Examples on Union	1	01/08/2022			
53.	Structure vs Union	1	03/08/2022			
54.	Typedef	1	04/08/2022			

No. of classes required to complete UNIT – IV: 13 **No. of classes taken:**

UNIT – V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
55.	Files: Definition, Types of Files	1	04/08/2022			
56.	Text files and Binary files	1	05/08/2022			
57.	Stream	1	06/08/2022			
58.	Standard I/O and Formatted I/O	1	08/08/2022			

59.	Types of File I/O Operations	1	10/08/2022			
60.	Creation of a new file	1	11/08/2022			
61.	Opening an existing file	1	11/08/2022			
62.	Reading from file	1	11/08/2022			
63.	Writing to a file	1	12/08/2022			
64.	Moving to a specific location in a file and closing a file	1	12/08/2022			
65.	Error Handling Basics	1	12/03/2022			
66.	Error Handling Function Calls	1	13/03/2022			

No. of classes required to complete UNIT – V:12 | **No. of classes taken:**

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.J.Nageswara Rao	Dr.J.Nageshwara Rao	Dr. Y.V. Bhaskar Reddy	Dr. D. Veeraiah
Signature				

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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr M B S Sreekara Reddy
Course Name & Code : Engineering Mechanics & 20ME02
L-T-P Structure : 3-1-0 **Credits:** 3
Program/Sem/Sec : B. Tech / II-Sem / A Section **A.Y.:** 2021-22

PREREQUISITE: Engineering Physics, Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to develop the ability to predict the behavior of rigid solid bodies under the action of external forces in real world scenario.

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

CO1	Apply free body diagram concepts to analyze rigid bodies in static conditions. (**Apply-L3**).
CO2	Apply the equilibrium Equations of rigid bodies associated with frictional forces. (**Apply-L3**).
CO3	Identify the location of centroid / centre of gravity and evaluate the moment of inertia of plane sections/solids (**Apply-L3**).
CO4	Understand the behavior of moving bodies in rectilinear motion using kinematic equations or motion curves. (**Understand-L2**).
CO5	Examine the behavior of moving bodies using dynamic equilibrium conditions. (**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	3	1												3
CO2	3	3	2	1											3
CO3	3	2		2											3
CO4	2	3		2											3
CO5	3	3		1											3
	1 - Low				**2 –**Medium				**3 -** High						

TEXTBOOKS:

T1 S. S. Bhavikatti and K.G.Rajasekharappa, Engineering Mechanics, 4thedition, New Age International (P) Ltd, 2012.

T2 N. H. Dubey, Engineering Mechanics, McGraw Hill, 2013

REFERENCE BOOKS:

R1 Ferdinand. L. Singer, Engineering Mechanics, 3rd edition, Harper – Collins, 1994

R2 B.Bhattacharya, Engineering Mechanics, 1stedition, Oxford University Press, 2008

R3 A.K.Tayal, Engineering Mechanics, 14thedition, 2ndreprint, Umesh Publications, 2012

R4 R.K.Bansal, Engineering Mechanics, 3rd edition, Laxmi Publications, 2016

R5 R.K.Rajput, A Text book of Applied Mechanics, Laxmi Publications, 2011.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: SYSTEM OF FORCES AND EQUILIBRIUM OF SYSTEM 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.	Course Outcomes, CEOs, POs, PEOs, Introduction to Engineering Mechanics	1	02-05-2022		TLM2	
2.	Basic terminology in Mechanics, laws of Mechanics	1	05-05-2022		TLM1	
3.	Force, Characteristics of Forces, Force Systems, Resolution and Composition of forces	1	07-05-2022		TLM1	
4.	Problems on composition of forces	1	09-05-2022		TLM 3	
5.	Resultant of Coplanar Concurrent Force System	1	10-05-2022		TLM1	
6.	Equilibrium of system of concurrent forces: Freebody diagram, Lami's theorem	1	12-05-2022		TLM1	
7.	Problems on coplanar concurrent forces-connected bodies	1	16-05-2022		TLM1	
8.	Problems on coplanar concurrent forces-connected bodies	1	17-05-2022		TLM3	
9.	Resultant and equilibrium of system of coplanar non-concurrent forces: Moment of a force, Varignon's theorem ,couple	1	19-05-2022		TLM1	
10.	**Tutorial 1**	1	**21-05-2022**		TLM1	
11.	Resolution of a force into force and couple	1	23-05-2022		TLM1	
12.	Equilibrium of non-concurrent system of forces, parallel forces in a plane	1	24-05-2022		TLM3	
13.	Problems on parallel forces	1	26-05-2022		TLM1	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: 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
14.	**FRICTION** : Introduction to Friction, Types of Friction, limiting friction	1	**28-05-2022**		TLM1	
15.	Laws of Friction, Angle of Friction – Angle of Repose	1	30-05-2022		TLM1	
16.	Blocks resting on horizontal plane	1	31-05-2022		TLM1	
17.	Blocks resting on inclined plane	1	02-06-2022		TLM3	
18.	**Tutorial 2**	1	**04-06-2022**		TLM1	
19.	Blocks resting on inclined plane	1	06-06-2022		TLM1	
20.	Problems on wedges	1	07-06-2022		TLM1	
No. of classes required to complete UNIT-II: 7				**No. of classes taken**		

UNIT-III: CENTROID AND AREA MOMENT OF INERTIA; CENTRE OF GRAVITY AND MASS 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
21.	**CENTROID:** Introduction, Concept, Applications, axis of symmetry	1	09-06-2022		TLM1	
22.	Centroid of simple figures from basic principles	1	13-06-2022		TLM1	
23.	Centroid of simple composite sections	1	14-06-2022		TLM1	

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
24.	**AREA MOMENT OF INERTIA:** Moment of inertia, Theorems of Moment of Inertia	1	16-06-2022		TLM3	
25.	**Tutorial 3**	1	**18-06-2022**		TLM1	
26.	Determination of Moment of Inertia of Rectangle, Circle, Hollow Circle, Semi Circle, Triangle from basic principles	1	27-06-2022		TLM1	
27.	**CENTRE OF GRAVITY**: Centre of gravity of solid cylinder	1	28-06-2022		TLM1	
28.	Centre of gravity of right circular cone, hemi sphere	1	30-06-2022		TLM3	
29.	**Tutorial 4**	1	**02-07-2022**		TLM1	
30.	Centre of gravity of composite bodies	1	04-07-2022		TLM1	
31.	**MASS MOMENT OF INERTIA:** Introduction**,** Radius of gyration, Determination of Mass Moment of Inertia of Uniform Rod, Rectangular Plate, Circular Plate	1	05-07-2022		TLM1	
32.	Problems on mass moment of Inertia	1	07-07-2022		TLM3	
33.	Determination of Mass Moment of Inertia of Solid Sphere, Solid Cylinder--problems	1	11-07-2022		TLM1	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: KINEMATICS

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 Kinematics, **g**eneral principles in dynamics, types of motion, rectilinear motion	1	12-07-2022		TLM1	
35.	Motion Curves, Motion with Uniform Velocity - Problems	1	14-07-2022		TLM1	
36.	**Tutorial 5**	1	**16-07-2022**		TLM1	
37.	Motion with Uniform Acceleration	1	18-07-2022		TLM3	
38.	Motion with varying acceleration - Problems	1	19-07-2022		TLM1	
39.	Angular motion, relationship between linear and angular motions-- problems	1	21-07-2022		TLM1	
40.	**Tutorial 6**	1	**23-07-2022**		TLM3	
41.	Uniformly accelerated rotation-problems	1	25-07-2022		TLM1	
No. of classes required to complete UNIT-IV: 09				**No. of classes taken:**		

UNIT-V: KINETICS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	Introduction to Kinetics, Newton's second law of motion-inertia force	1	26-07-2022		TLM1	
43.	D-Alembert's principle – Problems, Bodies in rectilinear translation	1	28-07-2022		TLM1	
44.	**Tutorial 7**	1	**30-07-2022**		TLM1	
45.	Bodies in rectilinear translation - Problems	1	01-08-2022		TLM3	
46.	Kinetics of rigid bodies Rotating about Fixed Axis, Derivations,	1	02-08-2022		TLM1	
47.	Problems on Bodies Rotating about Fixed Axis	1	04-08-2022		TLM1	
48.	**Tutorial 8**	1	**06-08-2022**		TLM3	
49.	Problems – fixed rotation of bodies	1	08-08-2022		TLM1	
50.	Fixed rotation of bodies	1	09-08-2022		TLM1	
51.	Curvilinear and general plane motion	1	11-08-2022		TLM1	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

Teaching Learning Methods

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

PART-C

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr M B S Sreekara Reddy	Dr M B S Sreekara Reddy	Mr. B. Sudheer Kumar	Dr. S. Pichi Reddy
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: A.Pratyush
Course Name & Code : Constitution of India & 20MC01
L-T-P Structure : 2-0-0   **Credits:** 0
Program/Sem/Sec : B.Tech/II/A & B   **A.Y.:** 2021-22

PREREQUISITE: No Pre Request

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Understand history and philosophy of constitution with reference to Preamble, Fundamental Rights and Duties (**Understand – L2**).
CO2	Understand the concept of Unitary and Federal Government along with therole of President, Prime Minister and Judicial System (**Understand – L2**).
CO3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions (**Understand – L2**).
CO4	Learn local administration viz. Panchayat, Block, Municipality and Corporation (**Understand – L2**).
CO5	CO5: learn about Election Commission and the process and about SC, ST, OBC and women (**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	3	3		2		3			
CO2						3	2	3		2		3			
CO3						3	3	3		2		3			
CO4						3	2	3		2		3			
CO5						3	3	3		2		3			
1 - Low				**2 –Medium**				**3 - High**							

TEXTBOOKS:

T1 Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall ofIndia Pvt.Ltd., New Delhi.

T2 Subash Kashyap, Indian Constitution, National Book Trust

REFERENCE BOOKS:

R1 J.A. Siwach, Dynamics of Indian Government and Politics.

R2 D.C. Gupta, Indian Government and Politics.

R3 H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (UniversalLaw Publication).

R4 J.C. Johari, Indian Government and Politics Hans.

R5 J.Raj, Indian Government and Politics.

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.	Syllabus,Importance of Subject,CO & PO's,Introduction to Indian Constitution: meaning of the term-Indian Constitution	1	04-05-22		TLM2	
2.	Sources and Constitutional History	1	10-05-22		TLM2	
3.	Features of Citizenship & Preamble	1	11-05-22		TLM2	
4.	Fundamental Rights and Duties	1	17-08-22		TLM2	
5.	Directive Principles of State Policy.	1	18-05-22		TLM2	
No. of classes required to complete UNIT-I: 5				**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
6.	Union Government and its Administration Structure of the Indian Union	1	24-05-22		TLM2	
7.	Federalism Centre – State relationship	1	25-05-22		TLM2	
8.	President: Role	1	31-05-22		TLM2	
9.	Power and Position of Prime Minister(PM) and Council of Ministers	1	01-06-22		TLM2	
10.	Cabinet and Central Secretariat	1	07-06-22		TLM2	
11.	Functions of Lok Sabha & Rajya Sabha	1	07-06-22		TLM2	
12.	The Supreme Court and High Court: Powers and Functions.	1	08-06-22		TLM2	
No. of classes required to complete UNIT-II: 7				**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.	State Government and its Administration	1	14-06-22		TLM2	
14.	Governor – Role and Position	1	14-06-22		TLM2	
15.	Chief Minister (CM) Role	1	15-06-22		TLM2	
16.	Role of Council of Ministers	1	28-06-22		TLM2	
17.	State Secretariat: Organization, Structure	1	29-06-22		TLM2	

18.	State Secretariat Functions	1	05-07-22		TLM2	

No. of classes required to complete UNIT-III: 6	No. of classes taken:
I-Mid Exams :	**27.06.2022 to 02.07.2022**

UNIT-IV: IOT PHYSICAL DEVICES & ENDPOINTS

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.	A Local Administration – District's Administration Head – Role and Importance	1	06-07-22		TLM2	
20.	Municipalities – Mayor and Role of Elected Representative	1	12-07-22		TLM2	
21.	Chief Executive Officer (CEO) of Municipal Corporation	1	13-07-22		TLM2	
22.	Panchayati Raj : Functions PanchayatiRaj Institution (PRI),	1	19-07-22		TLM2	
23.	Zilla Panchayat, Elected Officials and their roles,	1	20-07-22		TLM2	
24.	CEO ZillaPanchayat: Block level organizational Hierarchy – (Different Departments),	1	20-07-22		TLM2	
25.	Village level – Role of Elected and Appointed officials, Importance of grass root	1	26-07-22		TLM2	

No. of classes required to complete UNIT-IV: 7	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
26.	Election Commission: Organization, Structure	1	27-07-22		TLM2	
27.	Role of Chief Election Commissioner	1	02-08-22		TLM2	
28.	State Election Commission: Functions	1	03-08-22		TLM2	
29.	Role of State Election Commissioner	1	03-08-22		TLM2	
30.	Commissions for the welfare of SC/ST/OBC and Women.	1	10-08-22		TLM2	

No. of classes required to complete UNIT-V: 5	No. of classes taken:
II-Mid Exams :	**15.08.2022 to 20.08.2022**

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	A.Pratyush			Dr. S.Pichi Reddy
Signature				

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DEPARTMENT OF AI&DS

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.Pawel Veliventi
Course Name & Code :PCS LAB, 20FE51
L-T-P Structure : 0-0-2   **Credits:**01
Program/Sem/Sec : ME/II SEM
A.Y. :2021-22

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:ProfessionalCommunicationLab(PCS)shallhavetwoparts:

- **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 camcorderetc.

Exercise– I

CALL Lab: Understand-Sentence structure.

ICSLab:Practice-Listening:Identifyingthetopic,thecontextandspecificinformation, Speaking: Introducing oneself and others.

Exercise–II

CALL Lab: Understand-Framing questions.

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

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

Exercise–III

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

ICS Lab: Practice - Listening: Listening for global comprehension and Summarizing Speaking:Discussing specific topics in pairs/small groups, reporting what is discussed

Exercise–IV

CALLLab: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 keyterms and understanding concepts.

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

LabManual:

1. Prabhavati.Y & etal,"English All Round–Communication Skills for Undergraduate Learners", Orient BlackSwan, Hyderabad, 2019.

SuggestedSoftware:

1. Digital Mentor: Globarena, Hyderabad,2005
2. SkyPronunciationSuite:YoungIndia Films, Chennai,2009
3. MasteringEnglishinVocabulary,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	02	10-05-2022		TLM4	
2.	Self Introduction & Introducing others	02	17-05-2022		TLM4	
3.	Self Introduction & Introducing others	02	24-05-2022		TLM4	
4.	JAM- I(Short and Structured Talks)	02	31-05-2022		TLM4	
5.	JAM-II(Short and Structured Talks)	02	7-06-2022		TLM4	
6.	Role Play-I(Formal and Informal)	02	14-06-2022		TLM4	
7.	Role Play-II (Formal and Informal)	02	28-06-2022		TLM4	
8.	Group Discussion-I (Reporting the discussion)	02	5-07-2022		TLM4, TLM6	
9.	Group Discussion-II	02	12-07-2022		TLM4, TLM6	
10.	Oral & Poster Presentation	02	19-07-2022		TLM2, TLM4	
11.	Oral & Poster Presentation	02	26-07-2022		TLM2, TLM4	
12.	Lab Internal Exam	02	2-8-2022			
No. of classes required to complete Syllabus: 26				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task		Marks
Day to Day work (Observation)	A11 - 10	A1 = 05
Record Writing	A12 - 10	
Viva – Voce during Lab Sessions		A2 = 05
Internal Lab Examination		A3 = 05
Cumulative Internal Examination (CIE) : A1+A2+A3+A4		**15**
Semester End Examinations (SEE)		**35**
Total Marks: CIE + SEE		**50**

PART-D

PROGRAMME OUTCOMES (POs):

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

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DEPARTMENT OF AERO SPACE AND ENGINEERING
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NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM	:	B.Tech., II-Sem., Mechanical
ACADEMIC YEAR	:	2020-2021
COURSE NAME & CODE	:	ENGINEERING PHYSICS LAB & 20 FE 55
L-T-P STRUCTURE	:	0-0-3
COURSE CREDITS	:	1.5
COURSE INSTRUCTOR	:	**Dr. P.V.N.Kishore**
COURSE COORDINATOR	:	**Dr. P.V.N.Kishore**

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(Understand – L2).
CO2: Determine the wavelength of laser source and width of slit(Apply - L3).
CO3: Estimate the magnetic field using Stewart's and Gee's apparatus and the rigidity modulus of material using Torsional Pendulum(Understand - L2).
CO4: Identify the phenomena of resonance in strings(Understand – L2).
CO5: Improve report writing skills and individual team work with ethical values(Understand – L2)

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- ASE

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	3	04/05/2022		**TLM4**	1,2,3,4	T1	
2.	Demonstration	3	11/05/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
3.	Experiment 1	3	18/05/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
4.	Experiment 2	3	25/05/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
5.	Experiment 3	3	01/06/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
6.	Experiment 4	3	08/06/2022		**TLM4**	CO1, CO2, CO3, CO4	T1	
7.	Experiment 5	3	15/06/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
8.	Demonstration	2	29/06/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
9.	Experiment 6	1	29/06/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
10.	Experiment 7	2	07/07/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
11.	Experiment 8	1	13/07/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	

12.	Experiment 9	3	20/07/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
13.	Experiment 10	3	27/07/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
14.	**Internal Exam**	3	03/08/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
15.	**Internal Exam**	3	17/08/2022		**TLM4**	CO1, CO2, CO3, CO4, CO5	T1	
No. of classes required to complete UNIT-I	39			No. of classes taken:				

EVALUATION PROCESS:

Evaluation Task	Expt. no's	Marks
Day to Day work = **A**	1,2,3,4,5,6,7,8,9,10	A=05
Record = **B**	1,2,3,4,5,6,7,8,9,10	B=05
Internal Test = **C**	1,2,3,4,5,6,7,8,9,10	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8,9,10	**15**
Semester End Examinations = D	1,2,3,4,5,6,7,8,9,10	**D = 35**
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8,9,10	**50**

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.

Dr. P.V.N. Kishore/ Smt. P.V.Sirisha	Dr. S. YUSUB	Dr. S. YUSUB	Dr A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230
Phone: 08659-222933, Fax: 08659-222931
DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor   :Dr.J.Nageshwara Rao

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

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

Program/Sem/Sec   : B.Tech. –MECH / II Sem /Asec   A.Y.: 2022-23

PRE-REQUISITE:Programming and Problem-Solving Skills

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

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

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

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

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

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Module 1: Introduction to Raptor Tool	03	06/05/2022 2 & 13/05/2022		DM5
2.	Module 2: Problem solving using Raptor Tool				DM5
3.	Module 3: Exercise Programs on Basics of C-Program	03	20/05/2022		DM5
4.	Module 4: Exercise Programs on Control Structures	03	27/05/2022		DM5
5.	Module 5: Exercise Programs on Loops & nesting of Loops	06	03/06/2022		DM5
6.	Module 6: Exercise Programs on Arrays & Strings	06	10/06/2022		DM5
7.	Module 7: Exercise Programs on Pointers	06	17/06/2022 & 24/06/2022		DM5
8.	Module 8: Exercise Programs on Functions	06	01/07/2022		DM5
9.	Module 9: Exercise Programs on user defined data types	06	08/07/2022 & 15/07/202 2		DM5
10.	Module 10: Exercise Programs on Files	06	22/07/2022 & 29/07/2022 05/08/2022 12/08/2022		DM5

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

PART-C

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.J.Nageshwara Rao	Dr.J.Nageshwara Rao	Dr. Y.V. B.reddy	Dr. D. Veeraiah
Signature				

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DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT
PART-A

PROGRAM	**:** B.Tech. II-Sem., ME
ACADEMIC YEAR	**:** 2021-22
COURSE NAME & CODE	**: EMFT Lab**, 20ME52
L-T-P STRUCTURE	**: 0-0-3**
COURSE CREDITS	**:** 1.5
COURSE INSTRUCTOR	**:** Dr.MBS Sreekar Reddy/ Mr.D. Mallikarjuna Rao
COURSE COORDINATOR	**:** Kothari Venkata Viswanadh
MODULE COORDINATOR	**:** Kothari Venkata Viswanadh
PRE-REQUISITE:	Engineering Mechanics, Applied Chemistry

COURSE OBJECTIVE:
The main objective of this course is to demonstrate the concepts of engineering mechanics and fuels through experiments.

COURSE OUTCOMES:
At the end of the course, the student will be able to:
CO1: Verify the basic laws of Mechanics.
CO2: Evaluate the forces in mechanical systems.
CO3: Estimate various properties of fuel like Viscosity, Flash and Fire point.
CO4: Determine calorific-value of fuels.

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

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

Note: 1- Slight (Low), **2 -** Moderate (Medium), **3 -** Substantial (High)

LIST OF EXPERIMENTS:

At least 10 experiments are to be conducted

1 Verification of polygon law of forces using Universal-Table apparatus.

2 Verification of Lami's Theorem.

3 Study of the equilibrium of parallel forces using Beam Reaction apparatus.

4 Determination of coefficient of friction between the two materials using Tilting-plane method.

5 Estimate Time period of oscillations of a simple and compound pendulum.

6 Verification of Newton 's second law.

7 Determination of viscosity of given oil using Saybolt Viscometer.

8 Determination of Calorific value of given fuel using Junkers Gas Calorimeter.

9 Determination of viscosity of given oil using Red-wood-II Viscometer.

10 Determination of viscosity of given oil using Englers Viscometer.

11 Determination of Flash and Fire point of given oil using ABELS Apparatus.

12 Determination of Calorific value of given fuel using BOMB Calorimeter.

REFERENCES:

Lab-Manual

Batches (Section – A)

S.No	Batches	Regd.Nos	Total No. of Students
1	B. Tech – II Sem	21761A0301-21761A0362	62
2	Batch 1	21761A0301-21761A0331	31
3	Batch 2	21761A0332-21761A0362	31

Sub Batch of A: **Sub Batch of A:**
21761A0301-21761A0331 (31)   **21761A0332-21761A0362 (31)**

S. No.	Batch-1	Registered No.	Total	S. No.	Batch-2	Registered No.	Total
1	A1	21761A0301-21761A0306	6	1	B1	21761A0332-21761A0337	6
2	A2	21761A0307-21761A0312	6	2	B2	21761A0338-21761A0343	6
3	A3	21761A0313-21761A0318	6	3	B3	21761A0344-21761A0349	6
4	A4	21761A0319-21761A0324	6	4	B4	21761A0350-21761A0355	6
5	A5	21761A0325-21761A0331	7	5	B5	21761A0356-21761A0362	7
Total			**31**	**Total**			**31**

Schedule of Experiments

CYCLE-1	Experiment (Batch)									
DATE	Ex - 1	Ex – 2	Ex – 3	Ex – 4	Ex – 5	Ex – 6	Ex – 7	Ex – 8	Ex – 9	Ex – 10
02/05/2022	Introduction to Lab, Importance of Lab Demo									
09/05/2022	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5
16/05/2022	A2	A3	A4	A5	B1	B2	B3	B4	B5	A1
23/05/2022	A3	A4	A5	B1	B2	B3	B4	B5	A1	A2
30/05/2022	A4	A5	B1	B2	B3	B4	B5	A1	A2	A3
06/06/2022	A5	B1	B2	B3	B4	B5	A1	A2	A3	A4
CYCLE-2 DATE	Ex - 1	Ex – 2	Ex – 3	Ex – 4	Ex – 5	Ex – 6	Ex – 7	Ex – 8	Ex – 9	Ex – 10
13/06/2022	B1	B2	B3	B4	B5	A1	A2	A3	A4	A5
I Mid Examinations: 20-06-2022 to 25-06-2022										
27/06/2022	B2	B3	B4	B5	A1	A2	A3	A4	A5	B1
04/07/2022	B3	B4	B5	A1	A2	A3	A4	A5	B1	B2
11/07/2022	B4	B5	A1	A2	A3	A4	A5	B1	B2	B3
18/07/2022	B5	A1	A2	A3	A4	A5	B1	B2	B3	B4
25/07/2022	Backlog experiments / Additional Experiments/ Repetition									
01/08/2022	Internal Exam									
II Mid Examinations: 15-08-2022 to 20-08-2022										
08/08/2022-22/08/202	Preparation and Practicals									
29-08-2022-10-09-2022	Semester End Examinations									

	Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty		Dr.MBS Sreekar Reddy/ Mr.D. Mallikarjuna Rao	Mr.K.V. VISWANADH	Mr.K.V. VISWANADH	Dr. S.Pichi Reddy
Signature					

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	HOD Sign Weekly
1.	Introduction to Lab,Importance of Lab Demo	3	02/05/2022		
2.	Verification of polygon law of forces using Universal-Table apparatus	3	09/05/2022		
3.	Verification of Lami's Theorem	3	16/05/2022		
4.	Study of the equilibrium of parallel forces using Beam Reaction apparatus	3	23/05/2022		
5.	Determination of coefficient of friction between the two materials using Tilting-plane method.	3	30/05/2022		
6.	Verification of Newton's second law.	3	06/06/2022		
7.	Determination of viscosity of given oil using Saybolt Viscometer	3	13/06/2022		
8.	Determination of Calorific value of given fuel using Junkers Gas Calorimete	3	27/06/2022		
9.	Determination of viscosity of given oil using Red-wood-II Viscometer.	3	04/07/2022		
10.	Determination of viscosity of given oil using Englers Viscometer	3	11/07/2022		
11.	Determination of Flash and Fire point of given oil using ABELS Apparatus.	3	18/07/2022		
12.	Repetition	3	25/07/2022		
13.	Internal Exam	3	01/08/2022		
14.	Preparation and Practicals	--	08/08/2022-22/08/202		
15.	Semester End Examinations	--	29-08-2022-10-09-2022		

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	M
Day to Day work = **A**	1,2,3,4,5,6,7,8..	A=
Record = **B**	1,2,3,4,5,6,7,8	B=
Internal Test = **C**	1,2,3,4,5,6,7,8	C
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8	15
Semester End Examinations = D	1,2,3,4,5,6,7,8	D
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

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

PROGRAMME OUTCOMES (POs):

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

	Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty		Dr.MBS Sreekar Reddy/ Mr.D. Mallikarjuna Rao	Mr.K.V. VISWANADH	Mr.K.V. VISWANADH	Dr. S.Pichi Reddy
Signature					