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 AEROSPACE ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor : **Ms. M. Anuradha**
Course Name & Code : PC-II, 20FE02
L-T-P Structure : **2-0-0** **Credits:** 02
Program/Sem/Sec : ASE–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	16-03-2023		TLM2	
2.	**Fabric of Change**-'H.G. Wells and the Uncertainties of Progress– Peter J. Bowler'	03	17-03-23, 18 & 23-03-23		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	24-03-23		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	01	31-03-2023		TLM2	
5.	Adjectives and adverbs	01	1-04-2023		TLM2	
6.	Degrees of Comparison	01	6-04-2023		TLM2	
7.	Writing: Information Transfer.	02	8 & 13-04-2023		TLM2 TLM6	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	**Tools for Life** - 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far'	02	15-04-2023, 20 &21-03-23		TLM2	
2	Reading :Global Comprehension & Detailed Comprehension	01	27-04-2023		TLM2	
3	Active & Passive Voice	02	28-04-2023, 29-04-23		TLM2	
4	Idioms & Phrases	02	4 &5-05-23		TLM2	
5	Essay Writing - Structured Essays	01	6-05-2023		TLM2 TLM6	
No. of classes required to complete UNIT-II: 08				**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
1	'Homi Jahangir Bhabha'	03	18-05-2023, & 19&20-05-23		TLM2 TLM6	
2	Words often confused	01	25-05-2023		TLM2	
3	Common Errors	02	26 & 27-05-23		TLM2	
4	Report Writing – Types & Formats	02	1& 2-06-23		TLM2	
5	Incident and Investigation Reports	01	3-06-2023		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
1	**Jagadish Chandra Bose**	03	8&9&10-06-23,		TLM2 TLM2	
2	Use of antonyms	01	15-06-2023		TLM2	
3	Correction of Sentences	02	16&17-06-23		TLM2	
4	Formal and Informal dialogues	01	22-06-2023		TLM2	
5	Dialogue Writing.	01	23-06-2023		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 08				**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
1	**Prafulla Chandra Ray**	03	24-06-2023, 30-06-23		TLM2	
2	Analogy	01	6-07-2023		TLM2	
3	Sentence Completion	02	7-07-23		TLM2	
4	Resume - Formats	02	8-07- 23		TLM2	
5	Writing a Résumé	01	08-07-2021		TLM2 TLM6	
No. of classes required to complete UNIT-V: 09				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM/SEM/SEC : I B. Tech., II-Sem., ASE
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. K.R. Kavitha
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	13/03/23		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	14/03/23		TLM1	
3.	Matrices and rank of a matrix	1	15/03/23		TLM1	
4.	Echelon form of a matrix	1	17/03/23		TLM1	
5.	Normal form of a matrix	1	20/03/23		TLM1	
6.	Normal form of a matrix	1	21/03/23		TLM1	
7.	PAQ form	1	24/03/23		TLM1	
8.	Solution of Non-homogeneous linear system of equations	1	27/03/23		TLM1	
9.	Solution of Non-homogeneous Linear system of equations	1	28/03/23		TLM1	
10.	Solution of Homogeneous Linear system of equations	1	29/03/23		TLM1	
11.	**Tutorial 1**	1	31/03/23		TLM3	
12.	Solution of Homogeneous Linear system of equations	1	03/04/23		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	04/04/23		TLM1	
14.	Eigen values of a matrix	1	10/04/23		TLM1	
15.	Eigen values and Eigen vectors of a matrix.	1	11/04/23		TLM1	
16.	Eigen values and Eigen vectors of a matrix.	1	12/04/23		TLM1	
17.	Eigen values and Eigen vectors of a matrix.	1	17/04/23		TLM1	
18.	Properties	1	18/04/23		TLM1	
19.	Properties		19/04/23			
20.	Cayley – Hamilton Theorem.	1	21/04/23		TLM1	
21.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	24/04/23		TLM1	
22.	Inverse and powers of a matrix by using Cayley – Hamilton Theorem.	1	25/04/23		TLM1	
23.	**Tutorial 2**	1	28/04/23		TLM3	
No. of classes required to complete UNIT-II: 11				**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
24.	Introduction to Unit-III	1	26/04/23		TLM1	
25.	Standard forms of Laplace Transforms.	1	01/05/23		TLM1	
26.	Linear Property, Shifting Theorem.	1	02/05/23		TLM1	
27.	Change of scale property, Multiplication by t.	1	03/05/23		TLM1	
28.	Multiplication by t.	1	05/05/23		TLM1	

II MID EXAMINATIONS (08-05-2023 TO 13-05-2023)						
29.	Division by t	1	15/05/23		TLM1	
30.	Laplace transforms of derivatives.	1	16/05/23		TLM 1	
31.	Laplace transforms of Integrals.	1	17/05/23		TLM1	
32.	**Tutorial 3**	1	19/05/23		TLM3	
33.	Unit step function and Dirac's delta function.	1	22/05/23		TLM1	
34.	Application of Laplace Transforms.	1	23/05/23		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
35.	Introduction to UNIT IV.	1	24/05/23		TLM1	
36.	Linear property.	1	26/05/23		TLM1	
37.	First Shifting properties.	1	29/05/23		TLM1	
38.	Inverse transforms properties	1	30/05/23		TLM1	
39.	Problems	1	31/05/23		TLM1	
40.	Inverse Laplace transform by using partial fractions.	1	02/06/23		TLM1	
41.	Inverse Laplace transform by using partial fractions.	1	05/06/23		TLM1	
42.	Inverse Laplace Transform by using Convolution theorem.	1	06/06/23		TLM1	
43.	Inverse Laplace Transform by using Convolution theorem.	1	07/06/23		TLM1	
44.	Solving of Ordinary differential equation by Laplace transform method.	1	12/06/23		TLM1	
45.	Solving of Ordinary differential equation by Laplace transform method.	1	13/06/23		TLM1	
46.	**Tutorial 4**	1	16/06/23		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
47.	Introduction to UNIT V.	1	14/06/23		TLM1	
48.	Standard forms of Z- Transform.	1	19/06/23		TLM1	
49.	Damping rule	1	20/06/23		TLM1	
50.	Shifting Rule	1	21/06/23		TLM1	
51.	Initial and final value theorems.	1	23/06/23		TLM1	
52.	Other properties	1	26/06/23		TLM1	
53.	Inverse Z – Transforms by using partial fractions.	1	27/06/23		TLM1	
54.	Inverse Z – Transform by using convolution theorem.	1	28/06/23		TLM1	
55.	Solving of Difference equations by using Z – Transforms.	1	30/06/23		TLM1	
56.	Solving of Difference equations by using Z – Transforms.	1	03/07/23		TLM1	
57.	Revision	1	04/07/23		TLM1	
58.	**Tutorial 5**	1	07/07/23		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	05/07/23		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	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr. K.R. Kavitha**	**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., ASE**
ACADEMIC YEAR	**: 2022-23**
COURSE NAME & CODE	**: ENGINEERING PHYSICS & 20FE08**
L-T-P STRUCTURE	**: 3-1-0**
COURSE CREDITS	**: 3**
COURSE INSTRUCTOR	**: Dr. S. Yusub**
COURSE COORDINATOR	**: 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 (Understand-L2).
CO 2	**Apply** the Lasers and Optical Fibers in different fields (Apply-L3).
CO 3	**Summarize** the properties of sound waves (Understand-L2).
CO 4	**Classify** the different types of magnetic and dielectric materials (Understand-L2).
CO5	**Identify** the properties of superconducting and nano materials (Understand-L2).

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	14/03/2023		**TLM1**		
2.	General Properties of matter	1	15/03/2023		**TLM1**		
3.	Introduction to Elasticity /Plasticity	1	16/03/2023		**TLM1**		
4.	TUTORIAL-1	1	17/03/2023		**TLM3**		
5.	Introduction on Stress, strain and their classification	1	21/03/2023		**TLM1**		
6.	Hook's law, Elastic behavior of a material, Factors affecting elasticity	1	23/03/2023		**TLM1**		
7.	Classification of Elastic modulii	1	24/03/2023		**TLM2**		
8.	TUTORIAL-2	1	28/03/2023		**TLM3**		
9.	Relation between Y, K, n and σ	1	29/03/2023		**TLM2**		
10.	Problems &Assignment/Quiz	1	31/03/2023		**TLM4**		
11.	Bending of beams expression, Cantilever	1	04/04/2023		**TLM3**		
12.	TUTORIAL-3	1	06/04/2023		**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	1	11/04/2023		**TLM2**		

	emission						
2.	Einstein Coefficients	1	12/04/2023		**TLM2**		
3.	Nd-YAG Laser, He-Ne gas Laser	1	13/04/2023		**TLM2**		
4.	TUTORIAL-4	1	18/04/2023		**TLM3**		
5.	Applications of LASERS	1	19/04/2023		**TLM5**		
6.	Optical Fiber principle, Structure of optical fiber	1	20/04/2023		**TLM2**		
7.	Numerical aperture and Acceptance angle	1	21/04/2023		**TLM4**		
8.	TUTORIAL-5	1	25/04/2023		**TLM3**		
9.	Types of optical fibers, Applications	1	26/04/2023		**TLM2**		
10.	Problems &Assignment/Quiz	1	27/04/2023		**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	28/04/2023		**TLM5**		
2.	Reverberation-reverberation time, Sabine's formula	1	02/05/2023		**TLM2**		
3.	Sabine's formula	1	03/05/2023		**TLM2**		
4.	Absorption co-efficient and its determination,	1	04/05/2023		**TLM2**		
5.	Problems & Assignment /Quiz	1	05/05/2023		**TLM2**		
6.	**MID-1 Exams**		08/05/2023 to 13/05/2023				
7.	Introduction to Ultrasonics	1	16/05/2023		**TLM2**		
8.	Production & detection of Ultrasonics	1	17/05/2023		**TLM3**		
9.	Non-destructive testing through transmission	1	18/05/2023		**TLM2**		

	method & pulse-echo method						
10.	Discussion on various applications of Ultrasonics	1	19/05/2023		**TLM2**		
11.	Problems &Assignment/Quiz	1	23/05/2023		**TLM2**		
No. of classes required to complete UNIT-III: 12				No. of classes taken:			

UNIT-IV : 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	24/05/2023		**TLM2**		
2.	Classification of magnetic materials – Dia, para & Ferro	1	25/05/2023		**TLM6**		
4.	Hysteresis loop, Soft and hard magnetic materials	1	26/05/2023		**TLM2**		
5.	Applications of magnetic materials	1	30/05/2023		**TLM2**		
7.	Basic Definitions, Electronic polarization	1	31/05/2023		**TLM2**		
8.	Ionic & Orientation polarization	1	01/06/2023		**TLM1**		
10.	Local field,Clausius Mosotti equation	1	02/06/2023		**TLM2**		
12.	Applications of dielectricmaterials	1	06/06/2023		**TLM2**		
13.	Problems & Assignment/Quiz	1	07/06/2023		**TLM2**		
No. of classes required to complete UNIT-IV: 12				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	08/06/2023		**TLM6**		
2.	Meissner effect, Type-I &II	1	09/06/2023		**TLM2**		

	conductors						
3.	Josephson effect, Applications of Superconductors	1	13/06/2023		**TLM2**		
4.	Problems &Assignment/Quiz	1	14/06/2023		**TLM2**		
5.	Introduction to Nano-materials	1	15/06/2023		**TLM5**		
6.	Classification and properties of Nano-materials	1	16/06/2023		**TLM2**		
7.	Discussion on different methods of preparation, applications	1	20/06/2023		**TLM2**		
No. of classes required to complete UNIT-V: 10				No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	SEM	1	21/06/2023		TLM1		R1	
2.	Energy sources	1	22/06/2023		TLM1		R1	
3.	Mid II	1	10-07-2023 to 15-07-2023			CO3, CO4, CO5		
8.	Preparation and Practicals	17-07-2023 to 22-07-2023						
9.	Semester end examinations	24-07-2023 to 05-08-2023						

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=15
I-Quiz Examination (Units-I, II& III (A))	Q1=10
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=15

II-Quiz Examination (Units-III (B), IV & V)	Q2=10
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=15
Quiz Marks =75% of Max(Q-1,Q-2)+25% of Min(Q-1,Q-2)	Q=10
Cumulative Internal Examination (CIE): A+M+Q	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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
Dr. S. Yusub	Dr. P.V.N. Kishore	Dr. S. Yusub	Dr. A. Rami Reddy

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: PHANEENDRA KANAKAMEDALA **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.–ASE/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	14-03-2023		**TLM2**	
3.	Program Execution Scenario, Generations of Computers.	1	16-03-2023		**TLM2**	
4.	Problem solving Techniques, Algorithms, Flowcharts, Examples	2	17-03-2023 20-03-2023		**TLM2**	
5.	Structure of C program, identifiers, basic data types and sizes	1	21-03-2023		**TLM2**	
6.	Constants, variables, Input-output statements	1	23-03-2023		**TLM2**	
7.	A sample c program, operators, expressions	1	24-03-2023		**TLM2**	
8.	Precedence of operators and order of evaluation.	1	27-03-2023		**TLM2**	
9.	Control statements: if, if else	1	28-03-2023		**TLM2**	
10.	else if ladder and switch statements	1	31-03-2022		**TLM2**	
11.	while, do-while	2	03-04-2023 04-04-2023		**TLM2**	
12.	for statements, break, continue	2	06-04-2023 10-04-2023		**TLM2**	
13.	goto and labels	1	11-04-2023		**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	2	13-04-2023 15-04-2023		**TLM2**	
15.	Two dimensional and multi-dimensional arrays	2	17-04-2023 18-04-2023		**TLM2**	
16.	**Character Arrays:** declaration, initialization, reading, writing strings, string handling functions	3	20-04-2023 21-04-2023 24-04-2023		**TLM2**	
17.	Pre-processor Directives, and macros	1	25-04-2023		**TLM2**	
18.	**Applications of Arrays:** Linear search, Binary search, Bubble Sort	2	27-04-2023 28-04-2023		**TLM2**	
No. of classes required to complete UNIT-II: 10				**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	01-05-2023		**TLM2**	
20.	Pointer expressions, pointer arithmetic	1	02-05-2023		**TLM2**	
21.	Pointers and Arrays	1	04-05-2023		**TLM2**	
22.	Pointers and character arrays	1	05-05-2023		**TLM2**	
23.	Pointers to pointers	1	15-05-2023		**TLM2**	
24.	Function's basics, category of functions	1	16-05-2023		**TLM2**	
25.	Parameter passing techniques in Functions	1	18-05-2023		**TLM2**	
26.	Recursive functions-comparison with Iteration	2	19-05-2023 22-05-2023		**TLM2**	
27.	Functions with arrays	1	23-05-2023		**TLM2**	
28.	Standard library functions, dynamic memory management functions, command line arguments.	2	25-05-2023 26-05-2023		**TLM2**	
29.	**Storage classes** - auto, register, static and extern	1	29-05-2023		**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	2	30-05-2023 31-05-2023		**TLM2**	
31.	Nested structures, arrays of structures	2	03-06-2023 04-06-2023		**TLM2**	
32.	Structures and functions	2	06-06-2023 07-06-2023		**TLM2**	
33.	Pointers to structures, self-referential structures	2	10-06-2023 11-06-2023		**TLM2**	
34.	Unions, typedef.	1	13-06-2023		**TLM2**	
No. of classes required to complete UNIT-IV: 09				**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	2	14-06-2023 17-06-2023		**TLM2**	
36.	Text files and binary files	1	18-06-2023		**TLM2**	
37.	Streams, standard I/O, Formatted I/O	2	20-06-2023 21-06-2023		**TLM2**	
38.	File I/O operations	3	24-06-2023 25-06-2023 27-06-2023		**TLM2**	
39.	Error handling	1	28-06-2023		**TLM2**	
40.	Revision	1	04-07-2023			
No. of classes required to complete UNIT-V: 09				**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	01-07-2023		**TLM2**	
2.	I/O Operations in C++.	1	03-07-2023		**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. Phaneendra**	**K. Phaneendra**	**K. Phaneendra**	**Dr. B. Srinivasa Rao**
Signature				

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

DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : I.Dakshina Murthy
Course Name & Code : Elements of Aerospace Engineering 20AE01
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., II-Sem. A.Y : 2022-2023

PRE-REQUISITE: -

Course Educational Objectives: To learn the components of aeroplane and different types of flight vehicles, the basic aspects of aerodynamics and airfoils, the elements of propulsive systems, functions of structural components in wing and fundamental aspects of flight vehicle in space.

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

CO 1	Describe functions of various external and internal components of an airplane (Understand – L2)
CO 2	Classify the various forces and moments acting on an airfoil (Understand – L2)
CO 3	Describe the working principles of various aircraft engine systems (Understand – L2).
CO 4	Describe the basic aspects of space flight (Understand – L2)

Course Code	**COs**	**Programme Outcomes**												**PSOs**	
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**
S120	**CO1**	3	3	1	2	-	-	-	-	-	-	-	3	3	2
	CO2	3	3	1	2	-	-	-	-	-	-	-	3	3	2
	CO3	3	3	1	2	-	-	-	-	-	-	-	3	3	2
	CO4	3	3	1	2	-	-	-	-	-	-	-	3	3	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).

TEXT BOOKS:

T1 Anderson. J.D, Introduction to flight, Eight Edition, McGraw-Hill Education, 2017.

REFERENCE BOOKS:

R1 Houghton. E.L., Carpenter, P.W Aerodynamics for engineering students, seventh edition.

R2 Kermode. A.C, Mechanics of flight, Eleventh edition, Pearson education, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: BASIC ASPECTS

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.	History	1	13-03-2023		TLM2	
2.	Components of airplane	1	14-03-2023		TLM2	
3.	Types of flight vehicles	1	16-03-2023		TLM2	
4.	Tutorial-1	1	17-03-2023		TLM2	
5.	Altitudes, hydrostatic equation	1	20-03-2023		TLM2	
6.	Standard atmosphere	1	21-03-2023		TLM2	
7.	Problems	3	23-03-2023 24-03-2023 27-03-2023		TLM2	
8.	Tutorial-2	2	28-03-2023 31-03-2023		TLM3	
9.	Assignment-1	1	03-04-2023		TLM2	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: BASIC AERODYNAMICS

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, airfoils	1	04-04-2023		TLM2	
2.	Airfoil nomenclature, classifications	1	06-04-2023		TLM2	
3.	Tutorial-3	1	10-04-2023		TLM3	
4.	Wing geometry, aerodynamic forces	1	11-04-2023		TLM2	
5.	Aerodynamic centre, co-efficient of pressure	2	13-04-2023 17-04-2023		TLM2	
6.	Pressure distribution over airfoil	2	18-04-2023 20-04-2023		TLM2	
7.	Types of drag	1	21-04-2023		TLM2	
8.	Tutorial-4	1	24-04-2023		TLM2	
9.	Assignment-2	1	25-04-2023		TLM2	
10.	Revision of unit-1 and 2	2	27-04-2023 28-04-2023		TLM2	
No. of classes required to complete UNIT-II: 13				No. of classes taken:		

UNIT-III: PROPULSION

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, Propeller, Reciprocating engine	3	01-05-2023 02-05-2023 04-05-2023		TLM2	
2.	Jet propulsion- the thrust equation	3	05-05-2023 15-05-2023 16-05-2023		TLM2	

3.	Elements of turbojet and turbofan engines	2	18-05-2023 19-05-2023		TLM2	
4.	Rocket engine, liquid propellants and solid propellants, Rocket staging	3	22-05-2023 23-05-2023 25-05-2023		TLM2	
5.	Assignment -3	1	26-05-203			
No. of classes required to complete UNIT-III: 12				No. of classes taken:		

Mid-1	08-05-2023 to 13-05-2023

UNIT-IV: FLIGHT VEHICLE STRUCTURES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction, Fuselage-monocoque, semi-monocoque structures	3	29-05-2023 30-05-2023 01-06-2023		TLM1	
2.	Components of wing-spars, ribs, longerons, stringers, bulkheads	3	02-06-2023 05-06-2023 06-06-2023		TLM1	
3.	Aircraft materials- metallic and non-metallic materials	1	08-06-2023		TLM1	
4.	Use of aluminium alloy, titanium, use of stainless steel and composite materials	1	09-06-2023		TLM1	
5.	Revision & Assignment-4	3	12-06-2023 13-06-2023 15-06-2023		TLM1	
No. of classes required to complete UNIT-IV:11				No. of classes taken:		

UNIT-V: SPACE FLIGHT

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, Orbit equation, basic aspects of space vehicle trajectories	2	16-06-2023 19-06-2023		TLM1	
2.	Kepler's laws	2	20-06-2023 22-06-2023		TLM1	
3.	Earth and planetary entry	1	23-06-2023		TLM1	
4.	Space explorations- space vehicles and its types, reusable space vehicles, space shuttle satellites	2	26-06-2023 27-06-2023		TLM1	
5.	Types of satellites and their functions, Assignment-5	2	30-06-2023 01-07-2023		TLM1	
6.	Revision (Cycle 1)	2	02-07-2023 05-07-2023			
7.	Revision (Cycle 2)	2	06-07-2023 08-07-2023			
No. of classes required to complete UNIT-V:9				No. of classes taken:		

Mid-2	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 Regulations):

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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures and Flight Dynamics in the Aerospace vehicle design
PSO 2	To prepare the students to work effectively in aerospace and allied engineering organizations

Course Instructor	Module Coordinator	HOD
I.Dakshina Murthy	Dr. P. Lovaraju	Dr. P. Lovaraju

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF AEROSPACE

COURSE HANDOUT

PART-A

Name of Course Instructor: Ashutosh Shukla
Course Name & Code **:** Constitution of India (20MC01)
L-T-P Structure **:2-0-0** **Credits:** 0
Program/Sem/Sec : II **A.Y.:** 2022-2023

PREREQUISITE: History and Civics

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

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)

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Indian Constitution

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Indian Constitution	1	15-03-23			
2.	Citizenship, Preamble & Fundamental Rights &Duties	1	18-03-23			
3.	Tutorial 1	1	25-03-23			
4.	Directive Principles of State Policy	1	29-03-23			
5.	Assignment1, objective-1	1	1-04-23			
No. of classes required to complete UNIT-I:				**No. of classes taken:**		

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

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
6.	President: Role, Power and Position. Prime Minister (PM)	1	12-04-23			
7.	Tutorial 2	1	15-04-23			
8.	Council of Ministers, Cabinet and Central Secretariat.	1	19-04-23			
9.	Lok Sabha, Rajya Sabha. The Supreme Court and High Court: Powers and Functions	1	26-04-23			
10.	Assignment2, objective-2	1	29-04-23			
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	HOD Sign Weekly
11.	Governor – Role and Position	1	3-05-23			
12.	Chief Minister (CM) and Council of Ministers	1	6-05-23			
13.	Tutorial 5	1	10-05-23			
14.	State Secretariat, Organization, Structure and Functions.	1	13-05-23			
15.	Tutorial -6 ,Assignment3, objective-3	1	17-05-23			
No. of classes required to complete UNIT-III:				**No. of classes taken:**		

UNIT-IV: A Local Administration

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
16	A Local Administration -- Role and Importance,	1	31-05-23			
17	Municipalities – Mayor and Role	1	7-06-23			

	of Elected Representative					
18	Tutorial 7	1	10-06-23			
19	Functions of Panchayati Raj Institution, Zilla Panchayat	1	14-06-23			
20	Elected Officials and their roles, Village level – Role of Elected and Appointed officials.	1	17-06-23			
21	Tutorial -6 ,Assignment3, objective-3	1	21-06-23			
No. of classes required to complete UNIT-IV:				**No. of classes taken:**		

UNIT-V: Election Commission:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22	Role of Chief Election Commissioner, Election Commissionerate	1	24-06-23			
23	Tutorial 9	1	28-06-23			
24	Functions and Commissions for the welfare of SC/ST/OBC and Women	1	1-07-23			
25	Tutorial -6 ,Assignment3, objective-3	1	1-07-23			
No. of classes required to complete UNIT-V:				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (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	**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	To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures and Flight Dynamics in the Aerospace vehicle design
PSO 2	To prepare the students to work effectively in the defense and space research programs

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Ashutosh Shukla**	**Ashutosh Shukla**	**Dakshina murthy**	**Dr.P.Lovaraju**
Signature				

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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor:	**: Mr. G V Surya Narayana/Mr. Nazumuddin Shaik/Mr. Ashutosh Shukla,**	**A.Y.:** 2022-23
Course Name &	**:** Computer Aided Engineering Graphics	**Regulation:** R20
Code	**:** 20ME54	
L-T-P Structure	**: 0-0-3**	**Credits:** 1.5
Program/Sem/Sec	**:** B. Tech/II/ASE	

PREREQUISITE: 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 Auto-CAD. (**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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	1	1	3	-	-	-	-	-	-	2	3	2
CO2	3	1	1	1	3	-	-	-	-	-	-	2	3	2
CO3	3	1	1	1	3	-	-	-	-	-	-	2	3	2
CO4	3	1	1	1	3	-	-	-	-	-	-	2	3	2

1 - Low **2** –Medium **3** - High

TEXTBOOK:

T1: D.M. Kulkarni, A.P Rastogi, and A.K. Sarkar, “Engineering Graphics with AutoCAD”, PHI Learning Private Limited, New Delhi, 2009.

REFERENCE

R1: N. D. Bhatt, “Engineering Drawing”, 51st Revised and Enlarged Edition, Charotar Publishers, 2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

Si.No.	Topics to be covered. (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-I					
1.	Introduction to Auto CAD(2-D), Basics of AutoCAD Commands- Basic Drawing Commands	3	13-03-2023		TLM1, TLM4	
2.	Edit Commands-Copy, Move, Erase, Array Commands-Polar array, a rectangular array	3	20-03-2023		TLM1, TLM4	
3.	Projection of Points	3	27-03-2023		TLM1, TLM4	
4.	Projection of Lines-I	3	03-04-2023		TLM1, TLM4	
5.	Projection of Lines-II	3	10-04-2023		TLM1, TLM4	
6.	Projection of planes	3	17-04-2023		TLM1, TLM4	
7.	Projection of solids I	3	24-04-2023		TLM1, TLM4	
8.	Projection of solids-II	3	01-05-2023		TLM1, TLM4	
	CYCLE-II					
9.	Sections of solids	3	15-05-2023		TLM1, TLM4	
10.	Development of Surfaces	3	22-05-2023		TLM1, TLM4	
11.	Orthographic projections	3	29-05-2023		TLM1, TLM4	
12.	Isometric projections I	3	05-06-2023		TLM1, TLM4	
13.	Isometric projections-II	3	12-06-2023		TLM1, TLM4	
14.	Orthographic projections to Isometric projections	3	19-06-2023		TLM1, TLM4	
15.	Isometric projections to Orthographic projections	3	26-06-2023		TLM1, TLM4	
16.	Repetition	3	31-06-2023		TLM1, TLM4	
17.	Internal Lab Exam	3	03-07-2023		-------	
No. of classes required to complete				**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	**Expt. no's**	**Marks**
Day to Day work = **A**	1,2,3,4,5,6,7,8,9,10,11,12.	A=05
Record = **B**	1,2,3,4,5,6,7,8,9,10,11,12.	B=05
Internal Test = **C**	1,2,3,4,5,6,7,8,9,10,11,12.	C = 05
Cumulative Internal Examination: A+B+C = 15	1,2,3,4,5,6,7,8,9,10,11,12.	**15**
Semester End Examinations = D	1,2,3,4,5,6,7,8,9,10,11,12.	**D = 35**
Total Marks: A+ B + C + D = 50	1,2,3,4,5,6,7,8,9,10,11,12.	**50**

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

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

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To apply the knowledge of Aerodynamics, Propulsion, Aircraft structures, and Flight Dynamics in Aerospace vehicle design.
PSO 2	To prepare the students to work effectively in Aerospace and Allied Engineering organizations.

	Course Instructor	**Module Coordinator**	**Head of the Department**
Signature			
Name of the Faculty	Mr. G.V. SURYA NARAYANA	Mr. I DAKSHNAMURTHY	Dr. P. LOVARAJU

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 AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. M Anuradha
Course Name & Code **:** PCS LAB, 20FE51
L-T-P Structure **: 0-0-2** **Credits:** 01
Program/Sem/Sec : ASE II SEM
A.Y. **:** 2022-23

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 questions about main idea and supporting ideas after listening to audio text.

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

Exercise–III

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

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

Exercise–IV

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

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

Exercise– V

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

ICS Lab: Practice –Introduction to Group Discussions.

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

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

Lab Manual:

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

Suggested Software:

1. Digital Mentor: Globarena, Hyderabad,2005
2. Sky Pronunciation Suite: Young India Films, Chennai,2009
3. Mastering English in Vocabulary, Grammar, Spelling, Composition, Dorling Kindersley, USA, 2001
4. Dorling Kindersley Series of Grammar, Punctuation, Composition, USA, 2001
5. Oxford Talking Dictionary, The Learning Company, USA, 2002
6. Learning to Speak English- 4CDs. The Learning Company, USA, 2002
7. Cambridge Advanced Learners English Dictionary (CD). Cambridge University Press, New Delhi, 2008.
8.

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	14-03-2023		TLM4	
2.	Self Introduction & Introducing others	02	21-03-2023		TLM4	
3.	Self Introduction & Introducing others	02	28-03-2023		TLM4	
4.	JAM- I(Short and Structured Talks)	02	04-04-2023		TLM4	
5.	JAM-II(Short and Structured Talks)	02	11-04-2023		TLM4	
6.	JAM-II(Short and Structured Talks)	02	18-04-2023		TLM4	
7.	Role Play-I(Formal and Informal)	02	25-04-2023		TLM4	
8.	Role Play-II (Formal and Informal)	02	02-05-2023		TLM4	
9.	Role Play-II (Formal and Informal)	02	16-05-2023		TLM4	
10.	Group Discussion-I (Reporting the discussion)	02	23-05-2023		TLM4, TLM6	
11.	Group Discussion-II	02	30-05-2023		TLM4, TLM6	
12.	Group Discussion-II	02	06-06-2023		TLM4, TLM6	
13.	Group Discussion-II	02	13-06-2023		TLM4, TLM6	
14.	Oral & Poster Presentation	02	20-06-2023		TLM2, TLM4	
15.	Oral & Poster Presentation	02	27-06-2023		TLM2, TLM4	
16.	Lab Internal Exam		04-07-2023			
No. of classes required to complete Syllabus: 30				**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	**M. Anuradha**	**Dr. B. Samrajya Lakshmi**	**Dr. B. Samrajya Lakshmi**	**Dr. A. Ramireddy**
Signature				

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DEPARTMENT OF AEROSPACE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Phaneendra Kanakamedala
Course Name & Code : Programming for Problem Solving Using C Lab
L-T-P Structure : 0-0-3 Credits : 1.5
Program/Sem/Sec : B.Tech., ASE., 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	15-03-2023		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	29-03-2023		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	12-04-2023		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	19-04-2023		Exercise Programs on Loops a) Count No of Digits b) Multiplication Table c) Prime or not d) Reverse the given no e) Factorial
5	26-04-2023		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 
6	03-05-2023		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	17-05-2023		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	24-05-2023		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	31-05-2023		Exercise Programs on Functions & Recursive Functions. a) Arithmetic operations using functions b) LCM and GCD of two numbers c) evaluate the expression $2.5\log x+\cos 32^0+\lvert x^2-y^2\rvert+\sqrt{2}xy$ d) Factorial of a number with and without recursive function e) Sum of the series $1+2+3+\ldots+n$ f) Fibonacci series recursion g) Towers of Hanoi recursion h) Binary Search using recursion
10	05-06-2023		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	12-06-2023		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	19-06-2023		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):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	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. Phaneendra	**Dr.S. Nagarjuna Reddy**		**Dr. B. Srinivasa Rao**