



COURSE HANDOUT

PART-A

Name of Course Instructor : Ms. M. ANURADHA
Course Name & Code : PC-I, 20FE01
L-T-P Structure : 2-0-0 **Credits:02**
Program/Sem/Sec : EEE -A-I 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 & Writingskills.

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

CO1	Write sentences and paragraphs using proper grammatical structures and word forms.	L1
CO2	Comprehend the given text by employing suitable strategies for skimming and Scanning and draw inferences	L2
CO3	Write summaries of reading texts using correct tense forms & Appropriate structures.	L1
CO4	Write Formal Letters; Memos & E-Mails	L3
CO5	Edit the sentences/short texts by identifying basic errors of grammar/ vocabulary/syntax	L2

Unit-I

Exploration - ‘A Proposal to Girdle the Earth – Nellie Bly’; Reading: Skimming for main idea; Scanning for specific information; Grammar & Vocabulary: Content Words; Function Words; Word Forms: verbs, nouns, adjectives and adverbs; Nouns: Countable and Uncountable, Singular and Plural forms; Wh - Questions; Word Order in Sentences; Writing: Paragraph Analysis; Paragraph Writing; Punctuation and Capital Letters

Unit-II

On Campus- ‘The District School as it Was by One Who Went to it – Warren Burton’; Reading: Identifying Sequence of Ideas; Grammar & Vocabulary: Cohesive Devices: Linkers/signposts/Transition signals, Synonyms, Meanings of Words/Phrases in the context; Writing: Memo Drafting.

Unit-III

Working Together- ‘The Future of Work’
 Reading: Making basic inferences; Strategies to use text clues for comprehension; Summarizing; Grammar & Vocabulary: Verbs: Tenses; Reporting Verbs for Academic Purpose;
 Writing: Rephrasing what is read; Avoiding redundancies and repetitions Abstract Writing/Summarizing.

Unit-IV

‘A.P.J. Abdul Kalam’; Grammar & Vocabulary: Direct & Indirect Speech; articles and their Omission; Writing: E-Mail Drafting.

Unit–V

‘C.V.Raman’;Grammar&Vocabulary:Subject-verbAgreement;Prepositions;Writing:FormalLetterWriting.

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

COs	PO1	P O2	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
 “The Great Indian Scientists” published by Cengage Learning India Pvt. Ltd.,
T2 Delhi, 2017

REFERENCE BOOKS:

- R1** Swan,M., “PracticalEnglishUsage”, OxfordUniversityPress, 2016.
R2 Kumar,SandLatha, P,“CommunicationSkills”, OxfordUniversityPress,2018.
R3 RizviAshrafM,“EffectiveTechnicalCommunication”,TataMcGrawHill,NewDelhi,2008.
R4 BaradwajKumkum,“Professional Communication”,I.K.International PublishingHousePvt.Lt.,NewDelhi,2008.
R5 Wood,F.T.,“RemedialEnglishGrammar”,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	17-10-2022		TLM2	
2.	Proposal to Girdle The Earth by Nellie Bly	02	18-10-2022 22-10-2022		TLM2	
3.	Reading: Skimming for main idea ; Scanning for specific information	01	25-10-2022		TLM2	
4.	Content words and Function words	01	29-10-2022		TLM2	
5.	Word forms – verbs; Adjectives & adverbs	01	31-10-2022		TLM2	
6.	Nouns – countable & uncountable,singular and plural nouns Word order in sentences, “Wh” questions	01	1-11-2022		TLM2	
7.	Writing: Paragraph writing, Paragraph analysis	02	05-11-2022 07-11-2022		TLM2 TLM6	
No. of classes required to complete UNIT-I: 09				No. of classes taken:		

UNIT-II:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	The District School As It Way	02	08-11-2022		TLM2	

	by One Who Went to it - Warren Burton		12-11-2022			
9.	Identifying sequence of ideas	01	14-11-2022			TLM2
10.	Cohesive devices: linkers signposts/transitionsignals	01	15-11-2022			TLM2
11.	Synonyms meanings of words / Phrases in the context	01	19-11-2022			TLM2
12.	Essay Writing - Memo drafting	02	21&22-11-2022			TLM2 TLM6
No. of classes required to complete UNIT-II: 07				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.	The Future of Work	02	26-11-2022 28-11-2022		TLM2 TLM6	
14.	Making basic inferences, Strategies to uses text clues for comprehension	01	29-11-2022		TLM2	
15.	Verbs :tenses, reporting verbs for academic purpose	03	03&05&12-2022		TLM2	
16.	Summarizing rephrasing what is read	02	6&10-12-2022		TLM2	
17.	Avoiding redundancies and repetitions - Abstract Writing	02	19-12-2022		TLM2 TLM6	
No. of classes required to complete UNIT-III: 10				No. of classes taken:		

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	APJ Abdul Kalam	03	20&24&26 - 12-22		TLM2 TLM2	
19.	APJ Abdul Kalam Textual Exercises	01	27-12-2022		TLM2	
20.	Direct-Indirect speech	02	31-12-2022& 2-01-2023		TLM2	
21.	Articles and their omission	02	03& 07-01-2023		TLM2	
22.	E-mail drafting	02	09&10- 01-2023		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 10				No. of classes taken:		

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	C.V.Raman	03	17&21&23-01-2023		TLM2	
24.	C.V.Raman	01	24-01-2023		TLM2	
25.	Subject – Verb agreement	02	28&30-01-2023		TLM2	
26.	Prepositions	01	31-01-2023& 04-02-2023		TLM2	
27.	Formal Letter Writing	01	06&07-02-2023		TLM2 TLM6	
No. of classes required to complete UNIT-V: 08				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (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.

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				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. K. SRIDEVI
Course Name & Code : PC-I, 20FE01
L-T-P Structure : 2-0-0
Program/Sem/Sec : EEE-B –I SEM
A.Y. : 2022-23

Credits: 02

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	Write sentences and paragraphs using proper grammatical structures and word forms.	L1
CO2	Comprehend the given text by employing suitable strategies for skimming and Scanning and draw inferences	L2
CO3	Write summaries of reading texts using correct tense forms & Appropriate structures.	L1
CO4	Write Formal Letters; Memos & E-Mails	L3
CO5	Edit the sentences/short texts by identifying basic errors of grammar/ vocabulary/syntax	L2

Unit-I

Exploration - 'A Proposal to Girdle the Earth – Nellie Bly'; Reading: Skimming for main idea; Scanning for specific information; Grammar & Vocabulary: Content Words; Function Words; Word Forms: verbs, nouns, adjectives and adverbs; Nouns: Countable and Uncountable, Singular and Plural forms; Wh - Questions; Word Order in Sentences; Writing: Paragraph Analysis; Paragraph Writing; Punctuation and Capital Letters

Unit-II

On Campus- 'The District School as it Was by One Who Went to it – Warren Burton'; Reading: Identifying Sequence of Ideas;

Grammar&Vocabulary: Cohesive Devices:Linkers/signposts/Transition signals, Synonyms, MeaningsofWords/Phrasesin thecontext; Writing: Memo Drafting.

Unit-III

WorkingTogether-'The Future of Work'

Reading: Making basic inferences; Strategies to use text clues for comprehension; Summarizing;Grammar & Vocabulary: Verbs: Tenses; Reporting Verbs for Academic Purpose; Writing: Rephrasing what is read; Avoiding redundancies and repetitions Abstract Writing/Summarizing.

Unit-IV

'A.P.J.AbdulKalam'; Grammar & Vocabulary: Direct & Indirect Speech; articles and their Omission; Writing :E-Mail Drafting.

Unit-V

'C.V.Raman'; Grammar & Vocabulary: Subject-verb Agreement; Prepositions; Writing: Formal Letter Writing.

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	20-10-2022		TLM2	
2.	Proposal to Girdle The Earth by Nellie Bly	02	21-10-2022 22-10-2022		TLM2	
3.	Reading: Skimming for main idea ; Scanning for specific information	01	27-10-2022		TLM2	
4.	Content words and Function words	01	28-10-2022		TLM2	
5.	Word forms – verbs; Adjectives & adverbs	01	29-10-2022		TLM2	
6.	Nouns – countable & uncountable, singular and plural nouns Word order in sentences, "Wh" questions	02	03-11-2022 04-11-2022		TLM2	
7.	Writing: Paragraph writing, Paragraph analysis	03	05-11-2022 10-11-2022 11-11-2022		TLM2 TLM6	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	The District School As It Way by One Who Went to it - Warren Burton	03	12-11-2022 17-11-2022 18-11-2022		TLM2	
9.	Identifying sequence of ideas	01	19-11-2022		TLM2	

10.	Cohesive devices: linkers /signposts/transition signals	02	24-11-2022 25-11-2022		TLM2	
11.	Synonyms meanings of words / Phrases in the context	02	26-11-2022 01-12-2022		TLM2	
12.	Essay Writing - Memo drafting	02	02-12-2022 03-12-2023		TLM2 TLM6	
No. of classes required to complete UNIT-II: 10				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.	The Future of Work	02	08-12-2023 09-12-2023		TLM2 TLM6	
14.	Making basic inferences, Strategies to uses text clues for comprehension	01	22-12-2022		TLM2	
15.	Verbs :tenses, reporting verbs for academic purpose	02	23-12-2022 24-12-2022		TLM2	
16.	Summarizing rephrasing what is read	01	29-12-2022		TLM2	
17.	avoiding redundancies and repetitions - Abstract Writing	01	30-12-2022		TLM2 TLM6	
No. of classes required to complete UNIT-III: 07				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	APJ Abdul Kalam	02	31-12-2022 05-01-2023		TLM2 TLM2	
19.	Direct-Indirect speech	02	06-01-2023 07-01-2023		TLM2	
20.	Articles and their omission	02	12-01-2023 13-01-2023		TLM2	
21.	E-mail drafting	03	19-01-2023 20-01-2023 21-01-2023		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 09				No. of classes taken:		

UNIT-V:

S.	Topics to be covered	No. of	Tentative	Actual	Teaching	HOD
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No.		Classes Required	Date of Completion	Date of Completion	Learning Methods	Sign Weekly
22.	C.V.Raman	03	27-01-2023 28-01-2023 02-02-2023		TLM2	
23.	Subject – Verb agreement	02	03-02-2023 04-02-2023		TLM2	
24.	Prepositions	01	09-02-2023		TLM2	
25.	Formal Letter Writing	01	10-02-2023		TLM2 TLM6	
No. of classes required to complete UNIT-V: 07				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.

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



COURSE HANDOUT

Part-A

PROGRAM : I B. Tech., I-Sem., EEE - A
ACADEMIC YEAR : 2022-23
COURSE NAME & CODE : Differential Equations
L-T-P STRUCTURE : 5-0-0
COURSE CREDITS : 4
COURSE INSTRUCTOR : Dr. M.Srinivasa Reddy
COURSE COORDINATOR : Dr. A. Rami Reddy
PRE-REQUISITES : Differentiation, Integration

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this course is to introduce the first order and higher order differential equations, functions of several variables. The students will also learn solving of first order partial differential equations.

COURSE OUTCOMES (COs)

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

CO1: Apply first order and first degree differential equations to find orthogonal trajectories.

CO2: Distinguish between the structure and methodology of solving higher order differential equations with constant coefficients.

CO3: Apply various Numerical methods to solve initial value problem.

CO4: Generate the infinite series for continuous functions and investigate the functional dependence.

CO5: Solve partial differential equations using Lagrange’s method.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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

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

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED 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):

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.	Bridge Course	8	17/10/2022 To 28/10/2022		TLM2			
2.	Introduction to the course, Course Outcomes	1	29/10/2022		TLM2			

UNIT-I: Differential Equations of First Order and First Degree

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
3.	Introduction to UNIT I	1	31/10/2022		TLM2	CO1	T1,T2	
4.	Formation of Differential Equations	1	02/11/2022		TLM1	CO1	T1,T2	
5.	Exact DE	1	03/11/2022		TLM1	CO1	T1,T2	
6.	Non-exact DE Type I	1	04/11/2022		TLM1	CO1	T1,T2	
7.	Non-exact DE Type II	1	05/11/2022		TLM1	CO1	T1,T2	
8.	Non-exact DE Type III	1	07/11/2022		TLM1	CO1	T1,T2	
9.	Non-exact DE Type IV	1	09/11/2022		TLM1	CO1	T1,T2	
10.	Orthogonal Trajectories (Cartesian)	1	10/11/2022		TLM1	CO1	T1,T2	
11.	Orthogonal Trajectories (Cartesian)	1	11/11/2022		TLM1	CO1	T1,T2	
12.	Orthogonal Trajectories (polar)	1	12/11/2022		TLM1	CO1	T1,T2	
13.	Orthogonal Trajectories (polar)	1	14/11/2022		TLM1	CO1	T1,T2	
14.	Problems	1	16/11/2022		TLM1	CO1	T1,T2	
15.	TUTORIAL 1	1	17/11/2022		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		13				No. of classes taken:		

UNIT-II: Higher Order Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
16.	Introduction to UNIT II	1	18/11/2022		TLM2	CO2	T1,T2	
17.	Solving a homogeneous DE	1	19/11/2022		TLM1	CO2	T1,T2	
18.	Finding Particular Integral, P.I for e^{ax+b}	1	21/11/2022		TLM1	CO2	T1,T2	
19.	P.I for Cos bx or sin bx	1	23/11/2022		TLM1	CO2	T1,T2	
20.	P.I for polynomial function	1	24/11/2022		TLM1	CO2	T1,T2	
21.	P.I for $e^{ax+b}v(x)$	1	25/11/2022		TLM1	CO2	T1,T2	
22.	P.I for $e^{ax+b}v(x)$	1	26/11/2022		TLM1	CO2	T1,T2	

23.	P.I for $x^k v(x)$	1	28/11/2022		TLM1	CO2	T1,T2	
24.	Method of Variation of parameters	1	30/11/2022		TLM1	CO2	T1,T2	
25.	Method of Variation of parameters	1	1/12/2022		TLM1	CO2	T1,T2	
26.	TUTORIAL 2	1	2/12/2022		TLM3	CO2	T1,T2	
No. of classes required to complete UNIT-II		11			No. of classes taken:			

UNIT-III: Numerical solution of Ordinary Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
27.	Introduction to Unit-III	1	03/12/2022		TLM2	CO3	T1,T2	
28.	Numerical Methods	1	5/12/2022		TLM1	CO3	T1,T2	
29.	Solution by Taylor's series	1	07/12/2022		TLM1	CO3	T1,T2	
30.	Solution by Taylor's series	1	08/12/2022		TLM1	CO3	T1,T2	
31.	Picard's Method	1	9/12/2022		TLM1	CO3	T1,T2	
32.	Picard's Method	1	10/12/2022		TLM1	CO3	T1,T2	
I MID EXAMINATIONS (12-12-2022 TO 17-12-2022)								
33.	Euler's Method	1	17/12/2022		TLM1	CO3	T1,T2	
34.	Modified Euler's Method	1	19/12/2022		TLM1	CO3	T1,T2	
35.	Modified Euler's Method	1	21/12/2022		TLM1	CO3	T1,T2	
36.	Runge- Kutta Method	1	22/12/2022		TLM1	CO3	T1,T2	
37.	Runge- Kutta Method	1	23/12/2022		TLM1	CO3	T1,T2	
38.	TUTORIAL 3	1	24/12/2022		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		12			No. of classes taken:			

UNIT-IV: Functions of Several Variables

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
39.	Introduction to UNIT IV	1	26/12/2022		TLM2	CO4	T1,T2	
40.	Generalized Mean Value Theorem, Taylor's series	1	28/12/2022		TLM1	CO4	T1,T2	
41.	Maclaurin's series	1	29/12/2022		TLM1	CO4	T1,T2	
42.	Functions of several variables	1	30/12/2022		TLM1	CO4	T1,T2	
43.	Jacobians(Cartesian coordinates)	1	31/12/2023		TLM1	CO4	T1,T2	
44.	Jacobians (polar, coordinates)	1	02/01/2023		TLM1	CO4	T1,T2	

45.	Jacobians (cylindrical, spherical coordinates)	1	04/01/2023		TLM1	CO4	T1,T2	
46.	Functional dependence	1	05/01/2023		TLM1	CO4	T1,T2	
47.	Maxima and Minima	1	06/01/2023		TLM1	CO4	T1,T2	
48.	Maxima and Minima of functions of two variables	1	07/01/2023		TLM1	CO4	T1,T2	
49.	Maxima and Minima of functions of two variables	1	09/01/2023		TLM1	CO4	T1,T2	
50.	TUTORIAL 4	1	11/01/2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		12			No. of classes taken:			

UNIT-V: Partial Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
51.	Introduction to UNIT V	1	12/01/2023		TLM2	CO5	T1,T2	
52.	Partial Differential equations	1	13/01/2023		TLM1	CO5	T1,T2	
53.	Formation of PDE by elimination of arbitrary constants	1	18/01/2023		TLM1	CO5	T1,T2	
54.	Formation of PDE by elimination of arbitrary functions	1	19/01/2023		TLM1	CO5	T1,T2	
55.	Formation of PDE by elimination of arbitrary functions	1	20/01/2023		TLM1	CO5	T1,T2	
56.	Formation of PDE by elimination of arbitrary functions	1	21/01/2023		TLM1	CO5	T1,T2	
57.	Solving of PDE	1	23/01/2023		TLM1	CO5	T1,T2	
58.	Solving of PDE	1	25/01/2023		TLM1	CO5	T1,T2	
59.	Solving of PDE	1	27/01/2023		TLM1	CO5	T1,T2	
60.	Lagrange's Method	1	28/01/2023		TLM1	CO5	T1,T2	
61.	Lagrange's Method	1	30/01/2023		TLM1	CO5	T1,T2	
62.	Lagrange's Method	1	1/02/2023		TLM1	CO5	T1,T2	
63.	TUTORIAL 5	1	2/02/2023		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		13			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 Weekly
64.	Lagrange's Method Other models	1	3/02/2023		TLM1	CO4	T1,T2	

65.	Solving of PDE other methods	1	4/02/2023		TLM5	CO5	T1,T2	
66.	Unit-1-Class Test	1	06/02/2023		TLM3	CO1	T1,T2	
67.	Unit-2-Class Test	1	08/02/2023		TLM3	CO2	T1,T2	
68.	Unit-3-Class Test	1	09/02/2023		TLM3	CO3	T1,T2	
69.	Unit-4-Class Test	1	10/02/2023		TLM3	CO4	T1,T2	
70.	Unit-5-Class Test	1	11/02/2023		TLM3	CO5	T1,T2	
No. of classes		9			No. of classes taken:			
II MID EXAMINATIONS (13-02-2023 TO 18-02-2023)								

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.

Dr.M.Srinivasa Reddy	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY	Dr. A. RAMI REDDY
Course Instructor	Course Coordinator	Module Coordinator	HOD



COURSE HANDOUT

Part-A

PROGRAM	: I B. Tech., I-Sem., EEE-B
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: Differential Equations
L-T-P STRUCTURE	: 3-2-0
COURSE CREDITS	: 4
COURSE INSTRUCTOR	: Y. P. C. S. Anil Kumar
COURSE COORDINATOR	: Dr. A. Rami Reddy
PRE-REQUISITES	: None

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this course is to introduce the first order and higher order differential equations, functions of several variables. The students will also learn solving of first order partial differential equations.

COURSE OUTCOMES (COs)

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

CO1: Apply first order and first degree differential equations to find orthogonal trajectories.

CO2: Distinguish between the structure and methodology of solving higher order differential equations with constant coefficients.

CO3: Apply various Numerical methods to solve initial value problem.

CO4: Generate the infinite series for continuous functions and investigate the functional dependence.

CO5: Solve partial differential equations using Lagrange's method.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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

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

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED 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):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	17/10/2022		TLM1			

UNIT-I: Differential Equations of First Order and First Degree

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
2.	Introduction to UNIT I	1	19/10/2022		TLM2	CO1	T1,T2	
3.	Formation of Differential Equations	1	19/10/2022		TLM1	CO1	T1,T2	
4.	Exact DE	1	20/10/2022		TLM1	CO1	T1,T2	
5.	Non-exact DE Type I	2	21/10/2022 22/10/2022		TLM1	CO1	T1,T2	
6.	Non-exact DE Type II	2	26/10/2022 27/10/2022		TLM1	CO1	T1,T2	
7.	Non-exact DE Type III	2	28/10/2022 29/10/2022		TLM1	CO1	T1,T2	
8.	Non-exact DE Type IV	2	31/10/2022		TLM3	CO1	T1,T2	
9.	Orthogonal Trajectories (Cartesian)	2	02/11/2022 03/11/2022		TLM1	CO1	T1,T2	
10.	Orthogonal Trajectories (polar)	2	04/11/2022 05/11/2022		TLM1	CO1	T1,T2	
11.	Tutorial	1	07/11/2022		TLM3	CO1	T1,T2	
No. of classes required to complete UNIT-I		17			No. of classes taken:			

UNIT-II: Higher Order Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
12.	Introduction to UNIT II	1	09/11/2022		TLM2	CO2	T1,T2	
13.	Solving a homogeneous DE	1	10/11/2022		TLM1	CO2	T1,T2	
14.	Finding Particular Integral, P.I for e^{ax+b}	1	11/11/2022		TLM1	CO2	T1,T2	
15.	P.I for Cos bx, or sin bx	1	12/11/2022		TLM1	CO2	T1,T2	

16.	P.I for polynomial function	2	14/11/2022 16/11/2022		TLM1	CO2	T1,T2
17.	P.I for $e^{ax+b}v(x)$	2	17/11/2022 18/11/2022		TLM1	CO2	T1,T2
18.	P.I for $x^k v(x)$	2	19/11/2022 21/11/2022		TLM1	CO2	T1,T2
19.	Method of Variation of parameters	2	23/11/2022 24/11/2022		TLM1	CO2	T1,T2
20.	TUTORIAL 2	1	25/11/2022		TLM3	CO2	T1,T2
No. of classes required to complete UNIT-II		13			No. of classes taken:		

UNIT-III: Numerical solution of Ordinary Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
21.	Introduction to Unit-III	1	28/11/2022		TLM2	CO3	T1,T2	
22.	Taylor's series	2	30/11/2022		TLM1	CO3	T1,T2	
23.	Solution by Taylor's series	2	01/12/2022 02/12/2022		TLM1	CO3	T1,T2	
24.	Picard's Method	1	05/12/2022		TLM1	CO3	T1,T2	
25.	Solution by Picard's Method	2	07/12/2022 08/12/2022		TLM1	CO3	T1,T2	
26.	Revision	2	09/12/2022 10/12/2022		TLM1	CO3	T1,T2	
I MID EXAMINATIONS (12-12-2022 TO 16-12-2022)								
27.	Euler's Method	1	17/12/2022		TLM1	CO3	T1,T2	
28.	Modified Euler's Method	1	19/12/2022					
29.	Solution by Modified Eulers Method	2	21/12/2022 22/12/2022		TLM1	CO3	T1,T2	
30.	Runge- Kutta Method	1	23/12/2022		TLM1	CO3	T1,T2	
31.	Solution by Runge Kutta Method	2	24/12/2022 26/12/200					
32.	TUTORIAL 3	1	28/12/2022		TLM3	CO3	T1,T2	

No. of classes required to complete UNIT-III	18	No. of classes taken:
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UNIT-IV: Functions of Several Variables

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
33.	Introduction to UNIT IV	1	29/12/2022		TLM1	CO4	T1,T2	
34.	Generalized Mean Value Theorem, Taylor's series	2	30/12/2022 31/12/2022		TLM1	CO4	T1,T2	
35.	Maclaurin's series	1	04/01/2023		TLM1	CO4	T1,T2	
36.	Functions of several variables	2	05/01/2023 06/01/2023		TLM1	CO4	T1,T2	
37.	Jacobians (polar, cylindrical, spherical coordinates)	2	07/01/2023 09/01/2023		TLM1	CO4	T1,T2	
38.	Functional dependence	2	19/01/2021 20/01/2023		TLM1	CO4	T1,T2	
39.	Maxima and Minima of functions of two variables	2	21/01/2023 23/01/2023		TLM1	CO4	T1,T2	
40.	Maxima and Minima of functions of two variables	1	21/01/2023		TLM1	CO4	T1,T2	
41.	TUTORIAL 4	1	25/01/2023		TLM3	CO4	T1,T2	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT-V: Partial Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
42.	Introduction to UNIT V	1	27/01/2023		TLM1	CO5	T1,T2	
43.	Formation of PDE by elimination of arbitrary constants	2	28/01/2023 30/01/2023		TLM1	CO5	T1,T2	
44.	Formation of PDE by elimination of arbitrary functions	2	01/02/2023 02/02/2023		TLM1	CO5	T1,T2	
45.	Solving of PDE	1	03/02/2023		TLM1	CO5	T1,T2	
46.	Lagrange's Method	2	04/02/2023 06/02/2023		TLM1	CO5	T1,T2	
47.	Revision	2	08/02/2023 09/02/2023		TLM1	CO5	T1,T2	
48.	TUTORIAL 5	1	10/04/2021		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			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 Weekly
49.	Solving of PDE other methods	1	11/02/2023		TLM5	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (13-02-2023 TO 17-02-2023)								

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM2	PPT	TLM6	Assignment or Quiz
TLM3	Tutorial	TLM7	Group Discussion/Project
TLM4	Demonstration (Lab/Field Visit)		

Part - C

EVALUATION PROCESS:

Evaluation Task	Units	Marks
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2,3,5	B1=18
Objective Questions-1	1,2,3,5	C1=7
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=18
Online Quiz-2	3,4,5	C2=7
Evaluation of Assignment: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=18
Evaluation of Objective Questions Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	1,2,3,4,5	C=7
Cumulative Internal Examination : A+B+C	1,2,3,4,5	30
Semester End Examinations : D	1,2,3,4,5	70
Total Marks: A+B+C+D	1,2,3,4,5	100

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



FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM	: B.Tech., I-Sem., EEE-A
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: APPLIED PHYSICS & 20FE07
L-T-P STRUCTURE	: 4-1-0
COURSE CREDITS	3
COURSE INSTRUCTOR	: N. T. SARMA
PRE-REQUISITE	: Basic Knowledge of Physics

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	Define the nature of Interference and Diffraction.
CO 2	Apply the Lasers and Optical Fibers in different fields.
CO 3	Estimate the electrical conductivity of metals.
CO 4	Analyze the properties of Semiconducting materials.
CO5	Classify the different types of Magnetic and Dielectric materials.

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

APPLIED 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	-	-	-	-	1
CO4.	3	3	1	1	1	1	1	-	-	-	-	1
CO5.	3	3	1	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			
TLM-1	Chalk and Talk	TLM-4	Demonstration (Lab/Field Visit)
TLM-2	PPT/AV illustrations	TLM-5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM-3	Tutorial/Quiz/Assignment	TLM-6	Group Discussion/Project

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

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.	Basic theories of light, Snell’s law, Properties of transparent and opaque surfaces, Principle of superposition	1	17/10/2022				
2.	Basic definitions of Magnetism, Classification of magnetic materials,	1	18/10/2022				

3.	Basic definitions of electricity, charges and their properties, Capacitors and their fundamentals	1	19/10/2022				
4.	Intrinsic Semiconductors, P Type & N Type Semiconductors, Bias techniques V-I Characteristics Laws of, photoelectric emission	1	20/10/2022				
5.	Electromagnetic spectrum, Classification of solids	1	22/10/2022				

UNIT-I: INTERFERENCE & DIFFRACTION

Course Outcome :- CO 1; Text Book :- T1, R2

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	25/10/2022		TLM-2		
2.	Superposition of waves, Coherence, Conditions for Interference	1	26/10/2022		TLM-3		
3.	Interference in thin films	1	27/10/2022		TLM-4		
4.	Newton's rings	1	29/10/2022		TLM-2		
5.	TUTORIAL	1	31/10/2022		TLM-3		
6.	Michelson's interferometer	1	01/11/2022		TLM-2		
7.	Introduction – Diffraction, Types	1	02/11/2022		TLM-1		
8.	Single slit diffraction	1	03/11/2022		TLM-1		
9.	Diffraction – Circular aperture,	1	05/11/2022		TLM-2		

	Diffraction grating					
10.	TUTORIAL	1	07/11/2022		TLM-3	
11.	Resolving power of Grating	1	08/11/2022		TLM-4	
12.	Problems & Assignment/Quiz	1	09/11/2022		TLM-3	
No. of classes required to complete UNIT-I: 12			No. of classes taken:			

UNIT-II: LASERS & OPTICAL FIBERS

Course Outcome :- CO 2; Text Book :- T1, R2

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	10/11/2022		TLM-2		
2.	Characteristics of laser light	1	12/11/2022		TLM-2		
3.	TUTORIAL	1	14/11/2022		TLM-3		
4.	Einstein Coefficients	1	15/11/2022		TLM-1		
5.	Nd-YAG Laser, He-Ne gas Laser	1	16/11/2022		TLM-2		
6.	Applications of LASERS	1	17/11/2022		TLM-5		
7.	Problems & Assignment/Quiz	1	19/11/2022		TLM-3		
8.	TUTORIAL	1	21/11/2022		TLM-3		
9.	Optical Fiber principle, Structure of optical fiber	1	22/11/2022		TLM-2		
10.	Numerical aperture and Acceptance angle	1	23/11/2022		TLM-1		
11.	Types of optical fibers	1	24/11/2022		TLM-1		
12.	Applications and Advantages of Optical Fibers	1	26/11/2022		TLM-5		
13.	TUTORIAL	1	28/11/2022		TLM-3		
14.	Problems & Assignment/Quiz	1	29/11/2022		TLM-3		
No. of classes required to complete UNIT-II: 14			No. of classes taken:				

UNIT-III: PRICIPLES OF QUANTUM MECHANICS & FREE ELECTRON THEORY

Course Outcome :- CO 3; Text Book :- T1, R2

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 quantum mechanics, De Broglie hypothesis	1	30/11/2022		TLM-5		
2.	Davisson and Germer Experiment, Physical significance of wave function	1	01/12/2022		TLM-2		
3.	Schrodinger time dependent & independent wave equations	1	03/12/2022		TLM-1		
4.	TUTORIAL	1	05/12/2022		TLM-3		
5.	Particle in a potential box	1	06/12/2022		TLM-1		
6.	Eigen function and Eigen values	1	07/12/2022		TLM-1		
7.	Problems & Assignment/Quiz	1	08/12/2022		TLM-3		
8.	MID-1 Preparation & Revision	1	10/12/2022		TLM-2		
9.	MID-1 Examinations	1	12/12/2022		---		
10.	MID-1 Examinations	1	13/12/2022		---		
11.	MID-1 Examinations	1	14/12/2022		---		
12.	MID-1 Examinations	1	15/12/2022		---		
13.	MID-1 Examinations	1	17/12/2022		---		
14.	TUTORIAL	1	19/12/2022		TLM-3		
15.	Classical free electron theory- postulates, Success & Failures	1	20/12/2022		TLM-2		
16.	Expression for electrical conductivity and drift velocity	1	21/12/2022		TLM-1		
17.	Fermi-Dirac distribution function- Temperature dependence	1	22/12/2022		TLM-2		
18.	Classification of Solids on the basis of Band theory	1	24/12/2022		TLM-6		
19.	TUTORIAL	1	26/12/2022		TLM-3		
20.	Problems & Assignment/Quiz	1	27/12/2022		TLM-3		
No. of classes required to complete UNIT-III: 20				No. of classes taken:		18	

UNIT-IV : SEMICONDUCTOR PHYSICS

Course Outcome :- CO 4; Text Book :- T2, R1

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 - Classification of semiconductors	1	28/12/2022		TLM-6		
2.	Conductivity of Intrinsic and Extrinsic semiconductors	1	29/12/2022		TLM-1		
3.	Drift and Diffusion Current, Einstein relation	1	31/12/2022		TLM-2		
4.	TUTORIAL	1	02/01/2023		TLM-3		
5.	Hall Effect and Hall Coefficient	1	03/01/2023		TLM-5		
6.	Direct and indirect band gap semiconductors	1	04/01/2023		TLM-2		
7.	Solar Cell, Applications	1	05/01/2023		TLM-4		
8.	Problems & Assignment/Quiz	1	07/01/2023		TLM-3		
9.	TUTORIAL	1	09/01/2023		TLM-3		
No. of classes required to complete UNIT-IV: 09				No. of classes taken:			

UNIT-V : MAGNETIC & DIELECTRIC MATERIALS

Course Outcome :- CO 5; Text Book :- T2, R1

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	10/01/2023		TLM-3		
2.	Classification of magnetic materials – Dia, para & Ferro	1	11/01/2023		TLM-6		
3.	Hysteresis loop and its formation	1	12/01/2023		TLM-2		
4.	TUTORIAL	1	16/01/2023		TLM-3		
5.	Soft & hard Magnetic materials	1	17/01/2023		TLM-2		
6.	Applications of magnetic materials	1	18/01/2023		TLM-2		
7.	Problems & Assignment/Quiz	1	19/01/2023		TLM-1		
8.	Basic definitions of dielectrics	1	21/01/2023		TLM-2		
9.	TUTORIAL	1	23/01/2023		TLM-3		

10.	Expression for Electronic polarization	1	24/01/2023		TLM-1	
11.	Ionic & Orientation polarization	1	25/01/2023		TLM-1	
12.	Local field, Expression for local field	1	28/01/2023		TLM-1	
13.	TUTORIAL	1	30/01/2023		TLM-3	
14.	Clausius - Mosotti equation	1	31/01/2023		TLM-1	
15.	Applications of dielectric materials	1	01/02/2023		TLM-5	
16.	Problems & Assignment/Quiz	1	02/02/2023		TLM-1	
No. of classes required to complete UNIT-V: 16				No. of classes taken:		

Revision Classes

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 of Unit-1	1	04/02/2023		TLM-2		
2.	Revision of Unit-1	1	06/02/2023		TLM-2		
3.	Revision of Unit-2	1	07/02/2023		TLM-2		
4.	Revision of Unit-2	1	08/02/2023		TLM-2		
5.	Revision of Unit-3	1	09/02/2023		TLM-2		
6.	Revision of Unit-3	1	11/02/2023		TLM-2		
7.	MID-2 Examinations	1	13/02/2023		---		
8.	MID-2 Examinations	1	14/02/2023		---		
9.	MID-2 Examinations	1	15/02/2023		---		
10.	MID-2 Examinations	1	16/02/2023		---		
No. of classes required for Revision: 06				No. of classes taken:			

PART-C

EVALUATION PROCESS (R-20 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II & III (A))	A-1 = 5
I-Mid Examination (Units-I, II & III (A))	M-1 = 15
I-Quiz Examination (Units-I, II & III (A))	Q-1 = 10
Assignment-III (Units-III (B), IV & V)	A-2 = 5
II-Mid Examination (Units-III (B), IV & V)	M-2 = 15
II-Quiz Examination (Units-III (B), IV & V)	Q-2 = 10
Assignment Marks = Best of A1 & A2	A = 5
Mid Marks = 80% of Max (M-1, M-2) + 20% of Min (M-1, M-2)	M = 15
Quiz Marks = 80% of Max (Q-1, Q-2) + 20% 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	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

N. T. SARMA

P.V.SIRISHA

DR. S. YUSUB

DR. A. RAMI REDDY



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (GSE, IT, ECE, EEE & ME)

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

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

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

PROGRAM	: B.Tech., I-Sem., EEE-B
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: APPLIED PHYSICS & 20FE07
L-T-P STRUCTURE	: 3-1-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: P VIJAYA SIRISHA
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	Define the nature of Interference and Diffraction.
CO 2	Apply the Lasers and Optical Fibers in different fields.
CO 3	Estimate the electrical conductivity of metals.
CO 4	Analyze the properties of Semiconducting materials.
CO5	Classify the different types of Magnetic and Dielectric materials.

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

APPLIED 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	-	-	-	-	1
CO4.	3	3	1	1	1	1	1	-	-	-	-	1
CO5.	3	3	1	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: INTERFERENCE & DIFFRACTION**

Course Outcome :- CO 1; Text Book :- T1, R2

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	17/10/2022		TLM2		
2.	General Properties of Light	1	17/10/2022		TLM5		
3.	Recapitulation of Basic Concepts of Physics	1	19/10/2022		TLM6		
4.	Superposition of waves, Coherence, Conditions for Interference	1	19/10/2022		TLM6		

5.	Interference from thin films	1	20/10/2022		TLM1		
6.	Newton's rings	1	21/10/2022		TLM4		
7.	TUTORIAL-1	1	22/10/2022		TLM3		
8.	Michelson's interferometer	1	26/10/2022		TLM2		
9.	Problems & Assignment/Quiz	1	27/10/2022		TLM1		
10.	Introduction – Diffraction, Types	1	28/10/2022		TLM2		
11.	Single slit diffraction	1	29/10/2022		TLM4		
12.	Diffraction – Circular aperture, Diffraction grating	1	02/11/2022		TLM4		
13.	TUTORIAL-2	1	09/11/2022		TLM3		
14.	Resolving power of Grating	1	10/11/2022		TLM1		
15.	Problems & Assignment/Quiz	1	11/11/2022		TLM1		
No. of classes required to complete UNIT-I: 15				No. of classes taken:			

UNIT-II: LASERS & OPTICAL FIBERS

Course Outcome :- CO 2; Text Book :- T1, R2

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	12/11/2022		TLM2		
2.	Einstein Coefficients	1	14/11/2022		TLM1		
3.	TUTORIAL-3	1	16/11/2022		TLM3		
4.	Nd-YAG Laser, He-Ne gas Laser	1	17/11/2022		TLM2		
5.	Applications of LASERS	1	18/11/2022		TLM5		
6.	Optical Fiber principle, Structure of optical fiber	1	19/11/2022		TLM2		
7.	Numerical aperture and Acceptance angle	1	21/11/2022		TLM4		
8.	TUTORIAL-4	1	23/11/2022		TLM3		

9.	Types of optical fibers	1	24/11/2022		TLM2		
10.	Applications	1	25/11/2022		TLM5		
No. of classes required to complete UNIT-II: 10				No. of classes taken:			

UNIT-III: PRICIPLES OF QUANTUM MECHANICS & FREE ELECTRON THEORY

Course Outcome :- CO 3; Text Book :- T1, R2

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 quantum mechanics, De Broglie hypothesis	1	26/11/2022		TLM5		
2.	TUTORIAL-5	1	28/11/2022		TLM3		
3.	Davisson and Germer Experiment,	1	30/11/2022		TLM2		
4.	Physical significance of wave function	1	01/12/2022		TLM1		
5.	Schrodinger time dependent & independent wave equations	1	02/12/2022		TLM1		
6.	Particle in a box	1	03/12/2022		TLM1		
7.	Problems & Assignment/Quiz	1	05/12/2022		TLM3		
8.	TUTORIAL-6	---	07/12/2022		TLM4		
9.	PROBLEMS	---	08/12/2022		TLM4		
10.	Revision	---	09/12/2022				
11.	Revision	---	10/12/2022				
12.	MID 1 EXAMS	1	12/12/2022				
13.	MID 1 EXAMS		14/12/2022				
14.	MID 1 EXAMS	1	15/12/2022				
15.	MID 1 EXAMS		16/12/2022				
16.	Classical free electron theory- postulates, Success & Failures	1	17/12/2022		TLM4		
17.	Expression for electrical conductivity and drift velocity	1	19/12/2022		TLM4		

18.	Fermi-Dirac distribution function- Temperature dependence	1	21/12/2022		TLM2		
19.	Classification of Solids on the basis of Band theory	1	22/12/2022		TLM6		
20.	Problems		23/12/2022				
21.	Assignment/Quiz	1	24/12/2022		TLM1		
No. of classes required to complete UNIT-III: 17				No. of classes taken:			

UNIT-IV :SEMICONDUCTOR PHYSICS

Course Outcome :- CO 4; Text Book :- T2, R1

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 - Classification of semiconductors	1	26/12/2022		TLM6		
2.	TUTORIAL-7	1	28/12/2022		TLM3		
3.	Conductivity of Intrinsic and Extrinsic semiconductors	1	29/12/2022		TLM1		
4.	Drift and Diffusion Current, Einstein relation	1	30/12/2022		TLM1		
5.	Hall Effect and Hall Coefficient	1	31/12/2022		TLM5		
6.	Direct band gap and indirect band gap semiconductors	1	02/01/2023		TLM2		
7.	TUTORIAL-8	1	04/01/2023		TLM3		
8.	Solar Cell, Applications	1	05/01/2023		TLM4		
9.	Problems		06/01/2023		TLM4		
10.	Assignment/Quiz	1	07/01/2023		TLM1		
No. of classes required to complete UNIT-IV: 10				No. of classes taken:			

UNIT-V :MAGNETIC & DIELECTRIC MATERIALS

Course Outcome :- CO 5; Text Book :- T2, R1

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	09/01/2023		TLM2		
2.	Classification of magnetic materials – Dia, para & Ferro	1	11/01/2023		TLM6		
3.	Classification of magnetic materials – Dia, para & Ferro	1	12/01/2023		TLM3		
4.	TUTORIAL-9	1	18/01/2023		TLM2		
5.	Hysteresis loop,	1	19/01/2023				
6	soft and hard magnetic materials	1	20/01/2023		TLM2		
7	Applications of magnetic materials	1	21/01/2023		TLM6		
8	Problems	1	23/01/2023		TLM3		
9	TUTORIAL-10	1	25/01/2023		TLM2		
10	Basic Definitions,	1	27/01/2023		TLM6		
11	Electronic polarization	1	28/01/2023		TLM3		
12	Ionic & Orientation polarization	1	30/01/2023		TLM2		
13	TUTORIAL-11	1	01/02/2023		TLM6		
14	Local field,	1	01/02/2023		TLM3		
15	Clausius Mosotti equation	1	02/02/2023		TLM2		
16	Applications of dielectricmaterials	1	03/02/2023		TLM6		
17	Problems &	1	04/02/2023		TLM3		
16	Assignment/Quiz	1	06/02/2023		TLM2		
18	Revision	1	08/02/2023				
19	Revision	1	09/02/2023		TLM2		
20	Revision	1	10/02/2023				
21	Revision	1	11/02/2023				
22	MID-2 Exams	---	13/02/2023		TLM1		
23	MID-2 Exams	---	15/02/2023				

24	MID-2 Exams	---	16/02/2023		TLM1		
25	MID-2 Exams	---	17/02/2023		---		
No. of classes required to complete UNIT-V: 16				No. of classes taken:			

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

P Vijaya Sirisha

Dr. S. Yusub

Dr. S. Yusub

Dr. A. Rami Reddy



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.KARTHIK

Course Name & Code : BCME Lab & 20CE53

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

Program/Sem/Sec : B.Tech/I-SEM/Sec-A

Regulation: R20

Credits: 1

A.Y.: 2022-2023

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Find the Viscosity of different oils using Viscometers.
CO2	Analyze valve and port timing diagrams in I.C engines.
CO3	Determine the performance parameters of hydraulic turbines.
CO4	Conduct the Reynolds experiment to decide the flow classification.
CO5	Evaluate Bernoulli's principles in pipe flows.

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

TEXTBOOKS: Lab Manuals

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. 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
1.	Lab Demonstration	3	22-10-2022		TLM4	
2.	Determination of Radius of Gyration using compound pendulum.	3	29-10-2022		TLM4	
3.	Determination of Radius of Gyration using bifilar suspension.	3	5-11-2022		TLM4	
4.	Determination of viscosity of given oil using Redwood viscometer	3	12-11-2022		TLM4	
5.	Determination of Flash and Fire points of a given oil using ABEL'S apparatus.	3	19-11-2022		TLM4	
6.	Valve timing diagram for single cylinder, four stroke water cooled Diesel engine.	3	26-11-2022		TLM4	
7.	Port timing diagram for single cylinder, two stroke air cooled Diesel engine.	3	3-12-2022		TLM4	
8.	Verification of Bernoulli's Theorem	3	10-12-2022		TLM4	
9.	Impact of jets on Vanes.	3	7-01-2023		TLM4	
10.	Performance Test on Pelton Wheel.	3	21-01-2023		TLM4	
11.	Calibration of Turbine Flow meter.	3	4-02-2023		TLM4	
12.	Repetition	3	11-02-2023		TLM4	
No. of classes required to complete 36				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...	A=05
Record = B	1,2,3,4,5,6,7,8	B=05
Internal Test = C	1,2,3,4,5,6,7,8	C = 05
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 = 35
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge:
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

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	Mr.K.Karthik	Mr.B.Sudheer Kumar	Dr.P.Vijaya Kumar	Dr.S.Pichi Reddy
Signature				



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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.A.Pratyush

Course Name & Code : BC&ME, 20CE04

L-T-P Structure : 4-0-0

Program/Sem/Sec : B.Tech/I-Sem/B-Sec

PREREQUISITE: NO

Credits: 3

A.Y.: 2022-23

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to know the system of forces, Centre of Gravity, Centroid principles in Engineering Mechanics, fluid mechanics concepts in basic civil engineering and thermodynamic, IC engines, steam and gas turbine principles in mechanical engineering fundamental concepts.

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

CO1	Compute the center of gravity and Centroid in simple basic structures and resolve the system of forces from free body diagrams while designing any component.
CO2	Differentiates the fluid statics and kinematic principles in fluid flows.
CO3	Understand the working principles of hydraulic turbines.
CO4	Discuss the laws of thermodynamics and working principles in Internal Combustion engines
CO5	Comprehends the working principles of steam and gas turbines.

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	2	2	-	1	-	-	-	-	-	-	-	1	-	-	-
CO3	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-
CO4	2	2	1	1	-	-	-	-	-	-	-	1	-	-	-
CO5	3	2	1	-	-	-	-	-	-	-	-	2	-	-	-
	1 - Low			2 -Medium					3 - High						

TEXTBOOKS:

T1. S.S. Bhavikatti, Engineering Mechanics, 4th Edition, New Age International (P) Ltd, 2012.

T2. R.K.Rajput, Thermal Engineering, 6th Edition, 2007

T3. R.K.Bansal, "Fluid Mechanics and Hydraulic Machines", 9th Edition, Lakshmi publications.

REFERENCE BOOKS:

R1 N.H.Dubey, Engineering Mechanics, McGraw Hill, 2013

R2 D.S. Bedi, MP Poonia, Elements of Mechanical Engineering, 2019

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Engineering Mechanics

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, Basic concepts of mechanics	1	17-10-2022		TLM1	
2.	Resultant of system of forces	1	18-10-2022		TLM1	
3.	Resultant of Coplanar Concurrent Force System	1	20-10-2022		TLM1	
4.	Moment of a Force, Couple	1	22-10-2022 25-10-2022		TLM1	
5.	Varignon's Theorem	1	27-10-2022		TLM1	
6.	Problems	1	29-10-2022		TLM1	
7.	Resultant of Coplanar, Non-Concurrent Force System	1	1-11-2022		TLM1	
8.	Equilibrium of a Body Subjected to Concurrent Forces and Non-concurrent Forces	1	3-11-2022		TLM1	
9.	Free Body Diagrams	1	5-11-2022		TLM1	
10.	Lami's Theorem	1	7-11-2022		TLM1	
11.	Concept of Centroid and Centre of gravity for simple bodies	1	8-11-2022		TLM1	
12.	Problems	1	10-11-2022		TLM1	
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: Fluid Mechanics

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.	FLUID STATICS: Introduction, Dimensions and Units	1	12-11-2022		TLM1	
14.	Physical Properties of Fluids- Specific Gravity	1	14-11-2022		TLM1	
15.	Viscosity, Surface Tension	1	15-11-2022		TLM1	
16.	Vapour Pressure and its influence on Fluid Motion,	1	17-11-2022		TLM1	
17.	Atmospheric Gauge and Vacuum Pressure	1	19-11-2022		TLM1	
18.	Measurement of Pressure- Piezometer,	1	21-11-2022		TLM1	
19.	Working of U-Tube Manometers	1	22-11-2022		TLM1	
20.	Working of Differential Manometers	1	24-11-2022		TLM1	

21.	problems	1	25-11-2022		TLM1	
22.	Stream Line, Path Line, Streak Line, Stream Tube,	1	26-11-2022		TLM1	
23	Classification of Flows	1	28-11-2022		TLM1	
24	Equation of Continuity for One Dimensional Flow	1	29-11-2022		TLM1	
No. of classes required to complete UNIT-II: 12				No. of classes taken:		

UNIT-III: Hydraulic Turbines

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
25	HYDRAULIC TURBINES Introduction, Classification of Turbines	1	1-12-2022		TLM1	
26	Working of Pelton Wheel	1	3-12-2022		TLM1	
27	Working of Francis Turbine	1	5-12-2022		TLM1	
28	Working of Kaplan Turbine	1	6-12-2022		TLM1	
29	Draft Tube Theory	1	8-12-2022		TLM1	
30	Concept of Cavitation	1	10-12-2022		TLM1	
21	Derivation of specific speed of hydraulic turbines.	1	19-12-2022		TLM1	
32	Numerical problems on specific speed	1	20-12-2022		TLM1	
33	Comparison Of among 3-types of turbines	1	22-12-2022		TLM1	
I-Mid Exams			12-12-2022 to 17-12-2022			
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV: Basic Of Thermodynamics, Internal Combustion Engines

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	BASICS OF THERMODYNAMICS: Introduction	1	24-12-2022		TLM1	
35	System, Property, State, Path, Process, Cycle	1	26-12-2022		TLM1	
36	Laws of thermodynamics	1	27-12-2022		TLM1	
37	Energy, Internal Energy, Enthalpy,	1	29-12-2022		TLM1	
38	Specific heat, Latent heat	1	31-12-2022		TLM1	
39	Heat Engines, Refrigerator and Heat Pump	1	2-1-2023		TLM1	
40	INTERNAL COMBUSTION ENGINES: Introduction	1	3-1-2023		TLM1	
41	classification, I.C engine parts and their functions,	1	5-01-2023		TLM1	

42	I.C engine Nomenclature, Applications of IC engines	1	7-01-2023		TLM1	
43	working of 4-stroke petrol & diesel engines,	1	9-01-2023 10-01-2023		TLM1	
44	working of 2-stroke petrol & diesel engines &	1	12-01-2023 16-01-2023		TLM1	
45	Coparision of 4 & 2 Stroke engines	1	17-01-2023		TLM1	
46	Valve and Port timing diagrams	1	19-01-2023 21-01-2023		TLM1	
No. of classes required to complete UNIT-IV: 13				No. of classes taken:		

UNIT-V: Steam & Gas Turbines

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	STEAM TURBINES Introduction & Classification	1	23-01-2023		TLM1	
48	Working of impulse turbine	1	24-01-2023		TLM1	
49	Working of reaction steam	1	28-01-2023		TLM1	
50	comparison of impulse and reaction steam turbines	1	30-01-2023		TLM1	
51	Applications of steam turbines	1	31-01-2023		TLM1	
52	Classification of Gas Turbines	1	2-01-2023		TLM1	
53	Working of open cycle gas turbine (constant pressure)	1	4-02-2023		TLM1	
54	Working open closed gas turbine (constant pressure)	1	6-02-2023		TLM1	
55	Difference between open and closed cycle gas turbines	1	7-02-2023		TLM1	
56	Applications open and closed cycle gas turbines	1	9-02-2023		TLM1	
57	Working open closed gas turbine (constant volume)	1	11-02-2023		TLM1	
II-Mid Exams				13-02-2023 to 18-02-2023		
No. of classes required to complete UNIT-V: 11				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (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:
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

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	Mr.A.Pratyush	Mr.B.Sudheer Kumar	Dr.P.Vijaya Kumar	Dr.S.Pichi Reddy
Signature				

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech., I-Sem., EEE
ACADEMIC YEAR : 2022-23
COURSE NAME & CODE : **Electronic Circuits and Devices 20EE03**
L-T-P STRUCTURE : 2-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr.R.ANJANEYULU NAIK
COURSE COORDINATOR : Mr. R.ANJANEYULU NAIK
PRE-REQUISITE: NIL

COURSE OBJECTIVE : This course enables the student to interpret the concepts of basic and special semiconductor devices and their applications.

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

CO1 : Illustrate the working of different types of diodes and their characteristics (Understand-L2)

CO2 : Analyze the operation of diode rectifiers with filters(Understand-L2)

CO3 : Understand the working and characteristics of various transistor configurations. (Understand-L2)

CO4: Analyze the transistor biasing, stabilization and amplification circuits. (Understand-L2)

Mappings of course outcomes (COs) with programme outcomes (POs) & PSOs – 20EE03 – ELECTRONIC CIRCUITS AND DEVICES																	
		Pos											PSOs				
		1	2	3	4	5	6	7	8	9	10	11	12	PSO1	PSO2	PSO3	PSO4
COs	CO1	3				2							1	2			3
	CO2	3				2							1	2			3
	CO3	3				2								2			3
	CO4	3				2								2			3
		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:

T1 R.L. Boylestad and Louis Nashelsky, Electronic Devices and Circuits, Pearson/Prentice Hall,9th Edition,2006

T2 Jacob Millman, Christos C Halkias and SatyabrataJit, Millman's Electronic Devices and Circuits, Tata McGraw Hill, Second Edition, New Delhi, 2008.

BOS APPROVED REFERENCE BOOKS:

R1 S Salivahanan, N.Suresh Kumar and A Vallavaraj, Electronic Devices and Circuits,

McGraw Hill, 5th edition, 2010.

R2 J.B Gupta Electronic Devices and Circuits, S.K. Kataria&Sons, 2ndEdition,2013.

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : JUNCTION DIODE CHARACTERISTICS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Subject & Course Outcomes	1	17-10-2022		TLM1	CO 1	T1, T2	
2.	Review of Semiconductor Physics	1	18-10-2022		TLM2	CO 1	T1, T2	
3.	N and P type Semiconductors	1	19-10-2022		TLM1	CO 1	T1, T2	
4.	Mass action law and continuity equation	1	20-10-2022		TLM1	CO 1	T1, T2	
5.	Hall effect	1	21-10-2022		TLM8	CO 1	T1, T2	
6.	TUTORIAL	1	25-10-2022		TLM1	CO 1	T1, T2	
7.	Fermi level of Semiconductors, Energy band diagram of PN diode	1	26-10-2022		TLM1	CO 1	T1, T2	
8.	PN diode biasing, V-I characteristics	1	27-10-2022		TLM3	CO 1		
9.	Current components, Diode equation,	1	28-10-2022		TLM1	CO 1	T1, T2	
10.	Transition and Diffusion capacitances and problems	1	31-10-2022		TLM1	CO 1	T1, T2	
11.	TUTORIAL	1	01-11-2022		TLM1	CO 1	T1, T2	
12.	Temperature dependence of V-I characteristics ,	1	02-11-2022		TLM1	CO 1	T1, T2	
13.	Breakdown mechanisms in PN diode	1	03-11-2022		TLM3	CO 1		
14.	Zener diode	1	04-11-2022		TLM1	CO 1	T1, T2	
15.	Tunnel Diode, Varactor diode	1	09-11-2022		TLM1	CO 1	T1, T2	
No. of classes required to complete UNIT-I		15			No. of classes taken:			

UNIT-II : RECTIFIERS AND FILTERS

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
16.	Half wave Rectifier	1	10-11-2022		TLM1	CO 2	T1, T2	
17.	Full wave Rectifier	1	11-11-2022		TLM1	CO 2	T1, T2	
18.	Bridge Rectifier	1	14-11-2022		TLM1	CO 2	T1, T2	
19.	TUTORIAL	1	15-11-2022		TLM1	CO 2	T1, T2	
20.	Ripple factor, Harmonic components in Rectifiers	1	16-11-2022		TLM1	CO 2	T1, T2	
21.	Inductor filter and capacitor filter	1	17-11-2022		TLM4	CO 2	T1, T2	
22.	L-section filter, Π - section filter and	1	18-11-2022		TLM3	CO 2		
23.	multiple L- section filter, Multiple Π -section filter	1	21-11-2022		TLM1	CO 2	T1, T2	
24.	comparison of various filter circuits	1	22-11-2022		TLM1	CO 2	T1, T2	
25.	TUTORIAL	1	23-11-2022		TLM1	CO 2	T1, T2	
26.	Basics of Regulators	1	24-11-2022		TLM1	CO 2	T1, T2	
No. of classes required to complete UNIT-II		11			No. of classes taken:			

UNIT-III : TRANSISTOR AND FET CHARACTERISTICS

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
27.	Junction Transistor, Transistor as an amplifier	1	28-11-2022		TLM1	CO 1	T1, T2	
28.	TUTORIAL	1	29-11-2022		TLM1	CO 1	T1, T2	
29.	Transistor construction	1	30-11-2022		TLM1	CO 1	T1, T2	
30.	Transistor Current components	1	01-12-2022		TLM1	CO 1	T1, T2	
31.	Input and Output characteristics of Transistor in Common Base configurations	1	02-12-2022		TLM1	CO 1	T1, T2	
32.	Common Emitter configuration	1	05-12-2022		TLM3	CO 1		
33.	TUTORIAL	1	06-12-2022		TLM1	CO 1	T1, T2	
34.	common collector configuration	1	07-12-2022		TLM1	CO 1	T1, T2	
35.	Common collector configuration, Comparison of Transistor Configurations	1	08-12-2022		TLM1	CO 1	T1, T2	
36.	Relation between alpha, beta and gama	1	09-12-2022		TLM3	CO 1		

37.	I MID EXAMS		12-12-2022 TO 16-12-2022					
38.	Small signal model of Transistor	1	19-12-2022		TLM1	CO 1	T1, T2	
39.	TUTORIAL	1	20-12-2022		TLM1	CO 1	T1, T2	
40.	FET characteristics	1	21-12-2022		TLM1	CO 1	T1, T2	
41.	Repetition	1	22-12-2022		TLM1	CO 1	T1, T2	
No. of classes required to complete UNIT-III		14			No. of classes taken:			

UNIT-IV : BIASING AND STABILISATION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
42.	BJT biasing	1	26-12-2022		TLM1	CO 3	T1, T2	
43.	TUTORIAL	1	27-12-2022		TLM1	CO 3	T1, T2	
44.	DC equivalent model	1	28-12-2022		TLM1	CO 3	T1, T2	
45.	Criteria for fixing operating point, Fixed bias	1	29-12-2022		TLM3	CO 3		
46.	Collector to base bias and self bias	1	30-12-2022		TLM1	CO 3	T1, T2	
47.	Stabilization factors(S,S',S'')	1	02-01-2023		TLM1	CO 3	T1, T2	
48.	TUTORIAL	1	03-01-2023		TLM1	CO 3	T1, T2	
49.	Compensation techniques against variation in V_{BE}	1	04-01-2023		TLM1	CO 3	T1, T2	
50.	Compensation techniques against variation in I_{c0}	1	05-01-2023		TLM3	CO 3		
51.	Thermal runaway, Thermal stability	1	06-01-2023		TLM1	CO 3	T1, T2	
52.	FET biasing	1	17-1-2022		TLM1	CO 3	T1, T2	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V : AMPLIFIERS

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
53.	Small signal low frequency transistor amplifiers circuits	1	19-01-2023		TLM1	CO 1	T1, T2	
54.	h-parameters representation of a transistor	1	20-01-2023		TLM1	CO 1	T1, T2	
55.	TUTORIAL	1	23-01-2023		TLM1	CO 1	T1, T2	
56.	h-parameters representation of a transistor	1	24-01-2023		TLM1	CO 1	T1, T2	
57.	Analysis of single stage transistor amplifier using h-parameters	1	25-01-2023		TLM3	CO 1		

58.	Voltage gain, Current gain, Input Impedance and Output Impedance	1	30-01-2023		TLM1	CO 1	T1, T2	
59.	Comparisons of transistor parameters A_i, R_i, A_v, R_o	1	31-01-2023		TLM1	CO 1	T1, T2	
60.	TUTORIAL-12	1	01-02-2023		TLM1	CO 1	T1, T2	
61.	FET amplifier	1	02-02-2023		TLM1	CO 1	T1, T2	
62.	CD ,CS configuration	1	03-02-2023		TLM3	CO 1		
63.	Repetition	1	06-02-2023		TLM1	CO 1	T1, T2	
64.	Assignment/Quiz-5	1	07-02-2023		TLM1	CO 1	T1, T2	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
65.	Oscillators Introduction	1	08-02-2023		TLM1			
66.	Introduction to Digital Electronics	1	09-02-2023		TLM1			

Teaching Learning Methods

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	17-10-2022	10-12-2022	8 W
I Mid Examinations	12-12-2022	17-12-2022	1 W
II Phase of Instructions	19-12-2022	11-02-2023	8 W
II Mid Examinations	13-02-2023	18-02-2023	1 W
Preparation and Practicals	20-02-2023	25-02-2023	1 W
Semester End Examinations	27-02-2023	11-03-2023	2 W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment-1	1,2	A1=5
I-Mid Examination	1,2	B1=15
Quiz Marks-1	1,2	C1=10
Assignment-2	3,4	A2=5
II-Mid Examination	3,4	B2=15

Quiz Marks-2	3,4	C2=10
Evaluation of Assignment/Quiz Marks: $A=(A1+A2)/2$	1,2,3,4	A=5
Evaluation of Mid Marks: $B=80\%$ of $\text{Max}(B1,B2)+20\%$ of $\text{Min}(B1,B2)$	1,2,3,4	B=20
Evaluation of Quiz Marks: $B=80\%$ of $\text{Max}(C1,C2)+20\%$ of $\text{Min}(C1,C2)$	1,2,3,4	C=10
Cumulative Internal Examination : A+B+C+D	1,2,3,4	A+B+C=30
Semester End Examinations	1,2,3,4	E=70
Total Marks: A+B+C+D+E	1,2,3,4	100

PEOs(Program Educational Objectives):

PEO1. Design and develop innovative products and services in the field of Electrical and Electronics Engineering and allied engineering disciplines.

PEO2. Apply the knowledge of Electrical and Electronics Engineering to solve problems of social relevance, pursue higher education and research.

PEO3. Work effectively as individuals and as team members in multidisciplinary projects.

PEO4. Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.

POs:(Program Outcomes)

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 modeling to complex engineering activities with an understanding of the limitations.

6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9: Individual and team work: Function effectively as an individual, and as a member or leader in

diverse teams, and in multidisciplinary settings.

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

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

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.

PSOs(Program Specific Outcomes)

PSO-a: Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power

PSO b: Design and analyze electrical machines, modern drive and lighting systems

PSO c: Specify, design, implement and test analog and embedded signal processing electronic systems

PSO d: Design controllers for electrical and electronic systems to improve their performance

Course Instructor

Course Coordinator

Module Coordinator

HOD



FRESHMAN ENGINEERING DEPARTMENT COURSE HANDOUT

Part-A

PROGRAM	: B.Tech., I-Sem., EEE-A
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: APPLIED PHYSICS LAB & 20FE54
L-T-P STRUCTURE	: 0 – 0 – 3
COURSE CREDITS	: 1.5
COURSE INSTRUCTOR	: N. T. SARMA / P.V. SIRISHA
COURSE COORDINATOR	: Dr. S. YUSUB

Pre-requisites : Nil

Course Educational Objective: This course enables the students to acquire theoretical ideas, analytical techniques, and graphical analysis, 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:

- CO 1:** Analyse the wave characteristics of light.
- CO 2:** Estimate the magnetic field using Stewart’s and Gee’s apparatus.
- CO 3:** Verify the characteristics of semiconductor diodes.
- CO 4:** Determine the acceptance angle and numerical aperture of optical fibre.
- CO 5:** Improve report writing skills and individual teamwork with ethical values.

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

Applied 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		

BOS APPROVED TEXT BOOKS:

1. Lab Manual Prepared by the LBRCE.

Part-B**COURSE DELIVERY PLAN (LESSON PLAN): CSE – B**

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.	Introduction to Physics Lab	3	17/10/2022		TLM4	CO1, CO2, CO3, CO4	T1		
2.	Demonstration	3	31/10/2022		TLM4	CO1, CO2, CO3, CO4	T1		
3.	Experiment 1	3	07/11/2022		TLM4	CO1, CO2, CO3, CO4	T1		
4.	Experiment 2	3	14/11/2022		TLM4	CO1, CO2, CO3, CO4	T1		
5.	Experiment 3	3	21/11/2022		TLM4	CO1, CO2, CO3, CO4	T1		
6.	Experiment 4	3	28/11/2022		TLM4	CO1, CO2, CO3, CO4	T1		
7.	Experiment 5	3	05/12/2022		TLM4	CO1, CO2, CO3, CO4	T1		
8.	Demonstration	3	19/12/2022		TLM4	CO1, CO2, CO3, CO4	T1		
9.	Experiment 6	3	26/12/2022		TLM4	CO1, CO2, CO3, CO4	T1		
10.	Experiment 7	3	02/01/2023		TLM4	CO1, CO2, CO3, CO4	T1		
11.	Experiment 8	3	09/01/2023		TLM4	CO1, CO2, CO3, CO4	T1		
12.	Experiment 9	3	16/01/2023		TLM4	CO1, CO2, CO3, CO4	T1		
13.	Experiment 10	3	23/01/2023		TLM4	CO1, CO2, CO3, CO4	T1		
14.	Internal Exam	3	30/01/2023		---	---	---		
15.	Internal Exam	3	06/02/2023		---	---	---		
No. of classes required to complete lab		13			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
Internal test = B	1,2,3,4,5,6,7,8,9,10	B = 05
Evaluation of viva voce = 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). **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- (9). **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.
- (10). **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- (11). **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- (12). **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Course Instructor

Course Coordinator

Module Coordinator

H.O.D

N. T. SARMA

P.V. SIRISHA

Dr. S. YUSUB

Dr. A. RAMIREDDY

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- ECE-C

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	15-12-2021		TLM4	1,2,3,4	T1	
2.	Demonstration	3	22-12-2021		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
3.	Experiment 1	3	29-12-2021		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
4.	Experiment 2	3	05-01-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
5.	Experiment 3	3	19-01-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
6.	Experiment 4	3	02-02-2022		TLM4	CO1, CO2, CO3, CO4	T1	
7.	Experiment 5	3	16-02-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
8.	Experiment 6	3	23-02-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
9.	Experiment 7	3	02-03-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
10.	Experiment 8	3	09-03-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
11.	Experiment 9	3	16-03-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	

12.	Experiment 10	3	23-03-2022		TLM4	CO1, CO2, CO3, CO4, CO5	T1	
13.	Internal Exam	3	30-03-2022					
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	A=20
Internal test = B	1,2,3,4,5,6,7,8	B=10
Evaluation of viva voce = C	1,2,3,4,5,6,7,8	C = 5
Evaluation of attendance Marks = D	1,2,3,4,5,6,7,8	D = 5
Cumulative Internal Examination : A + B + C + D = 40	1,2,3,4,5,6,7,8	40
Semester End Examinations = E	1,2,3,4,5,6,7,8	E = 60
Total Marks: A + B + C + D + E = 100	1,2,3,4,5,6,7,8	100

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

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

PROGRAM OUTCOMES:

Engineering Graduates will be able to:

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

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

Graduate of the ECE will have the ability to

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

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



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.

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.KARTHIK

Course Name & Code : BC&ME, 20CE04

L-T-P Structure : 4-0-0

Program/Sem/Sec : B.Tech/I-Sem/A-Sec

PREREQUISITE: NO

Credits: 3

A.Y.: 2022-23

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to know the system of forces, Centre of Gravity, Centroid principles in Engineering Mechanics, fluid mechanics concepts in basic civil engineering and thermodynamic, IC engines, steam and gas turbine principles in mechanical engineering fundamental concepts.

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

CO1	Compute the center of gravity and Centroid in simple basic structures and resolve the system of forces from free body diagrams while designing any component.
CO2	Differentiates the fluid statics and kinematic principles in fluid flows.
CO3	Understand the working principles of hydraulic turbines.
CO4	Discuss the laws of thermodynamics and working principles in Internal Combustion engines
CO5	Comprehends the working principles of steam and gas turbines.

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	2	2	-	1	-	-	-	-	-	-	-	1	-	-	-
CO3	3	3	1	1	-	-	-	-	-	-	-	-	-	-	-
CO4	2	2	1	1	-	-	-	-	-	-	-	1	-	-	-
CO5	3	2	1	-	-	-	-	-	-	-	-	2	-	-	-
	1 - Low			2 -Medium					3 - High						

TEXTBOOKS:

T1. S.S. Bhavikatti, Engineering Mechanics, 4th Edition, New Age International (P) Ltd, 2012.

T2. R.K.Rajput, Thermal Engineering, 6th Edition, 2007

T3. R.K.Bansal, "Fluid Mechanics and Hydraulic Machines", 9th Edition, Lakshmi publications.

REFERENCE BOOKS:

R1 N.H.Dubey, Engineering Mechanics, McGraw Hill, 2013

R2 D.S. Bedi, MP Poonia, Elements of Mechanical Engineering, 2019

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, Basic concepts of mechanics	1	19-10-2022		TLM1	
2.	Resultant of system of forces	1	20-10-2022		TLM1	
3.	Resultant of Coplanar Concurrent Force System	1	21-10-2022		TLM1	
4.	Moment of a Force, Couple	1	22-10-2022		TLM1	
5.	Varignon's Theorem	1	26-10-2022		TLM1	
6.	Problems	1	27-10-2022		TLM1	
7.	Resultant of Coplanar, Non-Concurrent Force System	1	28-10-2022		TLM1	
8.	Equilibrium of a Body Subjected to Concurrent Forces and Non-concurrent Forces	1	29-10-2022		TLM1	
9.	Free Body Diagrams	1	2-11-2022		TLM1	
10.	Lami's Theorem	1	3-11-2022		TLM1	
11.	Concept of Centroid and Centre of gravity for simple bodies	1	4-11-2022		TLM1	
12.	Problems	1	5-11-2022		TLM1	
No. of classes required to complete UNIT-I: 12				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
13.	FLUID STATICS: Introduction, Dimensions and Units	1	9-11-2022		TLM1	
14.	Physical Properties of Fluids- Specific Gravity	1	10-11-2022		TLM1	
15.	Viscosity, Surface Tension	1	11-11-2022		TLM1	
16.	Vapour Pressure and its influence on Fluid Motion,	1	12-11-2022		TLM1	
17.	Atmospheric Gauge and Vacuum Pressure	1	16-11-2022		TLM1	
18.	Measurement of Pressure- Piezometer,	1	17-11-2022		TLM1	
19.	Working of U-Tube Manometers	1	18-11-2022		TLM1	
20.	Working of Differential Manometers	1	19-11-2022		TLM1	
21.	problems		23-11-2022		TLM1	

22.	Stream Line, Path Line, Streak Line, Stream Tube,	1	24-11-2022		TLM1	
23	Classification of Flows	1	25-11-2022		TLM1	
24	Equation of Continuity for One Dimensional Flow	1	26-11-2022		TLM1	
No. of classes required to complete UNIT-II: 12				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
25	HYDRAULIC TURBINES Introduction, Classification of Turbines	1	30-11-2022		TLM1	
26	Working of Pelton Wheel	1	1-12-2022		TLM1	
27	Working of Francis Turbine	1	2-12-2022		TLM1	
28	Working of Kaplan Turbine	1	3-12-2022		TLM1	
29	Draft Tube Theory	1	7-12-2022		TLM1	
30	Concept of Cavitation	1	8-12-2022		TLM1	
21	Derivation of specific speed of hydraulic turbines.	1	9-12-2022		TLM1	
32	Numerical problems on specific speed	1	10-12-2022		TLM1	
33	Comparison Of among 3-types of turbines	1	21-12-2022		TLM1	
I-Mid Exams			12-12-2022 to 17-12-2022			
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

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
34	BASICS OF THERMODYNAMICS: Introduction	1	22-12-2022		TLM1	
35	System, Property, State, Path, Process, Cycle	1	23-12-2022		TLM1	
36	Laws of thermodynamics	1	24-12-2022		TLM1	
37	Energy, Internal Energy, Enthalpy,	1	28-12-2022		TLM1	
38	Specific heat, Latent heat	1	29-12-2022		TLM1	
39	Heat Engines, Refrigerator and Heat Pump	1	30-12-2022		TLM1	
40	INTERNAL COMBUSTION ENGINES: Introduction	1	31-12-2022		TLM1	
41	classification, I.C engine parts and their functions,	1	4-01-2023		TLM1	
42	I.C engine Nomenclature, Applications of IC engines	1	5-01-2023		TLM1	

43	working of 4-stroke petrol & diesel engines,	1	6-01-2023		TLM1	
44	working of 2-stroke petrol & diesel engines &	1	7-01-2023		TLM1	
45	Coparision of 4 & 2 Stroke engines	1	18-01-2023		TLM1	
46	Valve and Port timing diagrams	1	19-01-2023		TLM1	
No. of classes required to complete UNIT-IV: 13				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
47	STEAM TURBINES Introduction & Classification	1	20-01-2023		TLM1	
48	Working of impulse turbine	1	21-01-2023		TLM1	
49	Working of reaction steam	1	25-01-2023		TLM1	
50	comparison of impulse and reaction steam turbines	1	1-02-2023		TLM1	
51	Applications of steam turbines	1	2-02-2023		TLM1	
52	Classification of Gas Turbines	1	3-02-2023		TLM1	
53	Working of open cycle gas turbine (constant pressure)	1	4-02-2023		TLM1	
54	Working open closed gas turbine (constant pressure)	1	8-02-2023		TLM1	
55	Difference between open and closed cycle gas turbines	1	9-02-2023		TLM1	
56	Applications open and closed cycle gas turbines	1	10-02-2023		TLM1	
57	Working open closed gas turbine (constant volume)	1	11-02-2023		TLM1	
II-Mid Exams				13-02-2023 to 18-02-2023		
No. of classes required to complete UNIT-V: 11				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (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:
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

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	Mr.K.Karthik	Mr.B.Sudheer Kumar	Dr.P.Vijaya Kumar	Dr.S.Pichi Reddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.A.PRATYUSH

Course Name & Code : BCME Lab & 20CE53

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

Program/Sem/Sec : B.Tech/I-SEM/Sec-B

Regulation: R20

Credits: 1

A.Y.: 2022-2023

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Find the Viscosity of different oils using Viscometers.
CO2	Analyze valve and port timing diagrams in I.C engines.
CO3	Determine the performance parameters of hydraulic turbines.
CO4	Conduct the Reynolds experiment to decide the flow classification.
CO5	Evaluate Bernoulli's principles in pipe flows.

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

TEXTBOOKS: Lab Manuals

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. 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
1.	CO'S & PO'S	3	18-10-2022		TLM4	
2.	Lab Demonstration	3	25-10-2022		TLM4	
3.	Determination of Radius of Gyration using compound pendulum.	3	1-11-2022		TLM4	
4.	Determination of Radius of Gyration using bifilar suspension.	3	8-11-2022		TLM4	
5.	Determination of viscosity of given oil using Redwood viscometer	3	15-11-2022		TLM4	
6.	Determination of Flash and Fire points of a given oil using ABEL'S apparatus.	3	22-11-2022		TLM4	
7.	Valve timing diagram for single cylinder, four stroke water cooled Diesel engine.	3	29-11-2022		TLM4	
8.	Port timing diagram for single cylinder, two stroke air cooled Diesel engine.	3	6-12-2022		TLM4	
9.	Verification of Bernoulli's Theorem	3	20-12-2022		TLM4	
10.	Impact of jets on Vanes.	3	27-12-2022		TLM4	
11.	Performance Test on Pelton Wheel.	3	3-01-2023		TLM4	
12.	Calibration of Turbine Flow meter.	3	10-01-2023		TLM4	
13.	Repetition	3	24-1-2023		TLM4	
14.	Internal Exam	3	31-1-2023			
15.	Viva-voice	3	7-02-2023			
No. of classes required to complete :45				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...	A=05
Record = B	1,2,3,4,5,6,7,8	B=05
Internal Test = C	1,2,3,4,5,6,7,8	C = 05
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 = 35
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8	50

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge:
PO 2	Problem analysis
PO 3	Design/development of solutions
PO 4	Conduct investigations of complex problems
PO 5	Modern tool usage
PO 6	The engineer and society
PO 7	Environment and sustainability
PO 8	Ethics
PO 9	Individual and team work
PO 10	Communication
PO 11	Project management and finance
PO 12	Life-long learning

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	Mr.A.Pratyush	Mr.B.Sudheer Kumar	Dr.P.Vijaya Kumar	Dr.S.Pichi Reddy
Signature				



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

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. A.V.G.A.Marthanda & Mr. P.V.Ratnakar kumar
Course Name & Code : 2022-23
COURSE NAME & CODE : **ELECTRONIC CIRCUITS AND DEVICES LAB 20EE53**

L-T-P Structure : **0-0-3** Credits: 1.5
Program/Sem/Sec : **B.Tech., EEE., I -Sem., Section- A** A.Y : 2022-23

Pre-requisites : Pre-requisites: Nil

Course Educational Objective: This lab course enables the student to demonstrate characteristics of semi-conductor devices

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

CO1: Analyze the characteristics of diodes.(Understand-L2)	
CO2: Examine the performance of rectifiers with filters. (Apply-L3)	
CO3:Analyze the characteristics of BJT and FET. (Understand-L2)	
CO4:Designvarious transistor amplifier circuits.(Apply-L3)	

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

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN)

DAY : Tuesday (2,3,4, Hours)

Batches : 22761A0201 to 228

B. NO	H.T.NO	I WEE K	II WEE K	III WEE K	IV WEE K	V WEE K	VI WEE K	VII WEE K	VIII WEE K	IX WEE K	X WEE K	XI WEE K	XII WEE K	XIII WEE K	XIV WEE K	XV WEE K
	TENTATIVE DATE	18/10	25/10	1/11	8/11	15/11	22/11	29/11	6/12	20/12	27/12	3/1/23	10/1	17/1	24/1	31/1
	Actual Date															
B-1	22761A0201,2,3	DE MO	1	2	3	4	5	6	7	8	9	10	REVISION OF EXPERIMENTS	REVISION OF EXPERIMENTS	REVISION OF EXPERIMENTS	INTERNAL EXAM
B-2	22761A0204,5,6	DE MO	2	3	4	5	6	7	8	9	10	1				
B-3	22761A0207,8,9	DE MO	3	4	5	6	7	8	9	10	1	2				
B-4	22761A0210,11,12	DE MO	4	5	6	7	8	9	10	1	2	3				
B-5	22761A0213,14,15	DE MO	5	6	7	8	9	10	1	2	3	4				
B-6	22761A0216,17,18	DE MO	6	7	8	9	10	1	2	3	4	5				
B-7	22761A0219,20,21	DE MO	7	8	9	10	1	2	3	4	5	6				
B-8	22761A0222,23,24	DE MO	8	9	10	1	2	3	4	5	6	7				
B-9	22761A0225,26,27,28	DE MO	9	10	1	2	3	4	5	6	7	8				

DAY : wednesday (2,3,4 Hours)

Batches : 22761A0229 to255

B. NO	H.T.NO	I WEE K	II WEE K	III WEE K	IV WEE K	V WEE K	VI WEE K	VII WEE K	VIII WEE K	IX WEE K	X WEE K	XI WEE K	XII WEE K	XIII WEE K	XIV	XV
	TENTATIVE DATE	9/10	16/10	2/11	9/11	16/11	23/11	30/11	7/12	21/12	28/12	4/1/23			25/1	1/2/23
	ACTUAL DATE															
B-1	22761A0229,30,31	DE MO	1	2	3	4	5	6	7	8	9	10	REVISION OF EXPERIMENTS	REVISION OF EXPERIMENT	REVISION OF EXPERIMENT	INTERNAL EXAM
B-2	22761A0232,33,34	DE MO	2	3	4	5	6	7	8	9	10	1				
B-3	22761A0235,36,37	DE MO	3	4	5	6	7	8	9	10	1	2				
B-4	22761A0238,39,40	DE MO	4	5	6	7	8	9	10	1	2	3				
B-5	22761A0241,42,43	DE MO	5	6	7	8	9	10	1	2	3	4				
B-6	22761A0244,45,46	DE MO	6	7	8	9	10	1	2	3	4	5				
B-7	22761A0247,48,49	DE MO	7	8	9	10	1	2	3	4	5	6				
B-8	22761A0250,51,52	DE MO	8	9	10	1	2	3	4	5	6	7				
B-9	22761A0253,54,55	DE MO	9	10	1	2	3	4	5	6	7	8				

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	Marks
Day – Day Evaluation	A=10
Record	B=10
Internal Exam	C=10
Viva	D=5
Attendance	E=5
Cumulative Internal Examination (CIE) : A+B+C+D+E	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1	Design and develop innovative products and services in the field of Electrical and Electronics Engineering and allied engineering disciplines.
PEO2	Apply the knowledge of Electrical and Electronics Engineering to solve problems of social relevance, pursue higher education and research.
PEO3	Work effectively as individuals and as team members in multidisciplinary projects.
PEO4	Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Specify, design and analyze systems that efficiently generate, transmit and distribute electrical power
PSO 2	Design and analyze electrical machines, modern drive and lighting systems
PSO 3	Specify, design, implement and test analog and embedded signal processing electronic systems
PSO4	Design controllers for electrical and electronic systems to improve their performance.

Course Instructor	Course Coordinator	Module Coordinator	HOD
Dr.A.V.G.A.MARTHANDA . Mr. P.Ratnakar kumar	Dr.A.V.G.A.MARTHANDA	Dr.A.V.G.A.MARTHANDA	Dr.JSV.Prasad



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DEPARTMENT OF MECHANICAL ENGINEERING

COURSEHANDOUT

PROGRAM : B. Tech. I-Sem, EEE–A-Section

ACADEMIC YEAR : 2022-2023

COURSE NAME & CODE : **Engineering Workshop,**
20ME51

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

COURSE CREDITS : 1.5

COURSE INSTRUCTOR : Dr. P. Vijay Kumar/ Mr. Mallikarjuna Rao Dandu

COURSE COORDINATOR : Seelam Srinivasa Reddy

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

COURSE OBJECTIVE:

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

COURSE OUTCOMES (CO)

CO1	Design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.
CO2	Fabricate and model various basic prototypes in the trade of fitting such as Straight fit, V-fit.
CO3	Produce various basic prototypes in the trade of Tin smithy such as Rectangular tray, and open Cylinder.
CO4	Perform various basic House Wiring techniques.

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

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

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

REFERENCE:

R1 | Lab Manual

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

S. No.	Experiment to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Reference	HOD Sign Weekly	
1.	Induction Programme	3	25-10-2022		TLM8	-		
2.	Demonstration	3	01-11-2022		TLM8	R1		
3.	Experiment-1	3	08-11-2022		TLM8	R1		
4.	Experiment-2	3	15-11-2022		TLM8	R1		
5.	Experiment-3	3	22-11-2022		TLM8	R1		
6.	Experiment-4	3	29-11-2022		TLM8	R1		
7.	Experiment-5	3	06-12-2022		TLM8	61		
I-Mid Examinations-12-12-2022 TO 17-12-2022								
8.	Experiment-6	3	20-12-2022		TLM8	R1		
9.	Experiment-7	3	27-12-2022		TLM8	R1		
10.	Experiment-8	3	03-01-2023		TLM8	R1		
11.	Repetition lab	3	17-01-2023		TLM8	R1		
12.	Repetition lab	3	24-01-2023		TLM8	R1		
13.	Lab Internal	3	31-01-2023		TLM6	R1		

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

S. No.	Experiment to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Reference	HOD Sign Weekly	
1.	Induction Programme	3	26-10-2022		TLM8	-		
2.	Demonstration	3	02-11-2022		TLM8	R1		
3.	Experiment-1	3	09-11-2022		TLM8	R1		
4.	Experiment-2	3	16-11-2022		TLM8	R1		
5.	Experiment-3	3	23-11-2022		TLM8	R1		
6.	Experiment-4	3	30-11-2022		TLM8	R1		
7.	Experiment-5	3	07-12-2022		TLM8	61		
I-Mid Examinations-12-12-2022 TO 17-12-2022								
8.	Experiment-6	3	21-12-2022		TLM8	R1		
9.	Experiment-7	3	28-12-2022		TLM8	R1		
10.	Experiment-8	3	04-01-2023		TLM8	R1		
11.	Repetition lab	3	18-01-2023		TLM8	R1		
12.	Repetition lab	3	25-01-2023		TLM8	R1		
13.	Lab Internal	3	01-02-2023		TLM6	R1		

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
Induction Programme	26-09-2022	15-10-2022	
I Phase of Instructions-1	17-10-2022	10-12-2022	8W
I Mid Examinations	12-12-2022	17-12-2022	1W
II Phase of Instructions	19-12-2022	11-02-2023	8W
II Mid Examinations	13-02-2023	18-02-2023	1W
Preparation and Practical's	20-02-2023	25-02-2023	1W
Semester End Examinations	27-02-2023	11-03-2023	2W

Part-C

EVALUATION PROCESS:

Parameter		Marks
Day-to-Day Work	Observation	A1=2.5Marks
	Record	A2=2.5Marks
Internal Test		B=5Marks
Viva-Voce During Regular Lab Sessions		C=05Marks
Cumulative Internal Examination		A1+A2+B+C=15Marks
Semester End Examinations		D=35Marks
Total Marks : A1+A2+B+C+D		50Marks

Details of Batches: B-SEC

Batch No.	Reg.No.of Students	Number of Students	Batch No.	Reg.No.of Students	Number of Students
B11	22761A0201-207	07	B21	22761A0229-235	07
B12	22761A0208-214	07	B22	22761A0236-242	07
B13	22761A0215-221	07	B23	22761A0243-249	07
B14	22761A0222-228	07	B24	22761A0250-255	06

Batch No:	Exp. 01	Exp. 02	Exp. 03	Exp. 04	Exp. 05	Exp. 06	Exp. 07	Exp. 08
B11	C1	C2	F1	F2	P1	P2	E1	E2
B12	C2	C1	F2	F1	P2	P1	E2	E1
B13	F1	F2	C1	C2	E1	E2	P1	P2
B14	F2	F1	C2	C1	E2	E1	P2	P1
B21	C1	C2	F1	F2	P1	P2	E1	E2
B22	C2	C1	F2	F1	P2	P1	E2	E1
B23	F1	F2	C1	C2	E1	E2	P1	P2
B24	F2	F1	C2	C1	E2	E1	P2	P1

LIST OF EXPERIMENTS:

Exp. No.	Name of the Experiment	Related CO
1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
2.	Carpentry-2(C2)-Dove tail Joint	CO1
3.	Fitting-1(F1)-T-Joint	CO2
4.	Fitting-2(F2)-V-Joint	CO2
5.	Plumbing-1(P1)-Pipe Threading practice	CO3
6.	Plumbing-2(P2)-Pipe Layout	CO3
7.	House Wiring-1(E1)-Series and Parallel connection	CO4
8.	HouseWiring-2(E2)-Fluorescent Lamp and Calling Bell Circuit	CO4

NOTIFICATION OF CYCLE:

cycle	Exp. No.	Name of the Experiment	Related CO
Cycle 1	1.	Carpentry-1(C1)-Corner Bridle Joint	CO1
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	4.	Fitting-2(F2)-V-Joint	CO2
	5.	Plumbing-1(P1)-Pipe Threading practice	CO3
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	7.	House Wiring-1(E1)-Series and Parallel Connection	CO4
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PROGRAM OUT COMES (POs)

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- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
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2. To apply the principles of manufacturing technology, scientific management towards Improvement of quality and optimization of engineering systems in the design, analysis and manufacture ability of products.
3. To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Course Instructors	Course Coordinator	Module Coordinator	HOD
Dr. P. Vijay Kumar/ Mallikarjuna Rao Dandu	S. Srinivas Reddy	J. Subba Reddy	Dr.S.PichiReddy



DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech. I-Sem, EEE–B-Section
ACADEMIC YEAR : 2022-2023
COURSE NAME & CODE : **Engineering Workshop, 20ME51**
L-T-P STRUCTURE : 0-0-3
COURSE CREDITS : 1.5
COURSE INSTRUCTOR : Dr.K.Dilip Kumar/ Mr.M.Oliva
COURSE COORDINATOR : Seelam Srinivasa Reddy

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

COURSE OBJECTIVE:

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

COURSE OUTCOMES (CO)

CO1	Design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.
CO2	Fabricate and model various basic prototypes in the trade of fitting such as Straight fit, V-fit.
CO3	Produce various basic prototypes in the trade of Tin smithy such as Rectangular tray, and open Cylinder.
CO4	Perform various basic House Wiring techniques.

COURSE ARTICULATION MATRIX (Correlation between Cos & POs, PSO's):

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

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

REFERENCE:

R1	LabManual
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COURSE DELIVERY PLAN (LESSON PLAN): Section-B (BATCH-A1)

S. No.	Experiment to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Reference	HOD Sign Weekly
1.	Induction Programme	3			TLM8	-	
2.	Demonstration	3			TLM8	R1	
3.	Experiment-1	3			TLM8	R1	
4.	Experiment-2	3			TLM8	R1	
5.	Experiment-3	3			TLM8	R1	
6.	Experiment-4	3			TLM8	R1	
7.	Experiment-5	3			TLM8	61	
I-Mid Examinations							
8.	Experiment-6	3			TLM8	R1	
9.	Experiment-7	3			TLM8	R1	
10.	Experiment-8	3			TLM8	R1	
11.	Repetition lab	3			TLM8		
12.	Lab Internal	3			TLM6		

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

S.No.	Experiment to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Reference	HOD Sign Weekly
1.	Induction Programme	3			TLM8	-	
2.	Demonstration	3			TLM8	R1	
3.	Experiment-1	3			TLM8	R1	
4.	Experiment-2	3			TLM8	R1	
5.	Experiment-3	3			TLM8	R1	
6.	Experiment-4	3			TLM8	R1	
7.	Experiment-5	3			TLM8	R1	
I-Mid Examinations							
8.	Experiment-6	3			TLM8	R1	

9.	Experiment-7	3			TLM8	R1	
10.	Experiment-8	3			TLM8	R1	
11.	Repetition	3			TLM8	R1	
12.	LabInternal	3			TLM6	-	

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
Induction Programme	26-09-2022	15-10-2022	
I Phase of Instructions-1	17-10-2022	10-12-2022	8W
I Mid Examinations	12-12-2022	17-12-2022	1W
II Phase of Instructions	19-12-2022	11-02-2023	8W
II Mid Examinations	13-02-2023	18-02-2023	1W
Preparation and Practical's	20-02-2023	25-02-2023	1W
Semester End Examinations	27-02-2023	11-03-2023	2W

Part-C

EVALUATIONPROCESS:

Parameter		Marks
Day-to-Day Work	Observation	A1=2.5Marks
	Record	A2=2.5Marks
Internal Test		B=5Marks
Viva-Voce During Regular Lab Sessions		C=05Marks
Cumulative Internal Examination		A1+A2+B+C=15Marks
Semester End Examinations		D=35Marks
Total Marks : A1+A2+B+C+D		50Marks

Details of Batches: B-SEC

Batch No.	Reg.No.of Students	Number of Students	Batch No.	Reg.No.of Students	Number of Students
B11	22761A0256-262	07	B21	22761A0283-289	07
B12	22761A0263-269	07	B22	22761A0290-296	07
B13	22761A0270-276	07	B23	22761A0297-2A3	07
B14	22761A0277-282	06	B24	22761A02A4-2A9	06

Batch No:	Exp. 01	Exp. 02	Exp. 03	Exp. 04	Exp. 05	Exp. 06	Exp. 07	Exp. 08
B11	C1	C2	F1	F2	P1	P2	E1	E2
B12	C2	C1	F2	F1	P2	P1	E2	E1
B13	F1	F2	C1	C2	E1	E2	P1	P2
B14	F2	F1	C2	C1	E2	E1	P2	P1
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B22	C2	C1	F2	F1	P2	P1	E2	E1
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