LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech.I-Sem., CSE (A)

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Professional Communication - I (17FE01)

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Ms.** K. Sridevi

COURSE COORDINATOR: Dr.B.Samrajya Lakshmi

Pre-requisites : Basics in English Grammar & Vocabulary

Course Educational Objective (CEOs) : Improve the proficiency of students in English with an emphasis on Vocabulary& Grammar for better communication in formal and informal situations; Develop listening skills required for thorough understanding and analysis to face interviews with confidence.

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

CO1 : Use English vocabulary & grammar effectively while speaking and writing.
CO2 : Comprehend the given texts and Communicate confidently in formal and informal contexts.
CO3 : Draft E-mails& Memos
CO4 : Understand the written and spoken information thoroughly.
CO5 : Face interviews with confidence.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE01	CO1				2					3	3		2			
	CO2		1		2		1			3	3		2			
	CO3				2					3	3		2			
	CO4		1		2		1			3	3		2			
	CO5				2					3	3		2			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

BOS APPROVED TEXT BOOKS:

T1	Board of Editors, "Fluency in English – A Course book for Engineering Students", Orient Black Swan, Hyderabad, 2016.
T2	Dhanavel S.P, "English and Soft Skills", Orient Black Swan, Hyderabad, 2010.

BOS APPROVED REFERENCE BOOKS:

R1	Murphy, "English Grammar with CD", Cambridge University Press, New Delhi, 2004.
R2	Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, New Delhi, 2008.
R3	Baradwaj Kumkum, "Professional Communication", I.K.International Publishing House Pvt.Lt., New Delhi, 2008.
R4	Raman, Meenakshi; Sharma, Sangeeta,. "Technical Communication -Principles and Practice" Oxford University Press, New Delhi, Third Edition. 2015.

Part-B
COURSE DELIVERY PLAN (LESSON PLAN): Section-A/B/C

UNIT-I :

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 UNIT-I	1	26-08-2019		TLM1			
2.	Presidential Address – Dr. A.P.J. Abdul Kalam	1	28-08-2019		TLM1	CO1	T1	
3.	Word formation: Prefixes & suffixes	1	30-08-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
4.	Word formation: Compound Collocations	1	04-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
5.	Punctuation	1	06-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
6.	Parts of Speech	1	09-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
7.	Double Angels - David Scott	1	11-09-2019		TLM1	CO1	T1	

8.	Sentence structure; Paragraph writing	1	13-09-2019		TLM1, TLM2	CO1	T1,R2,R4	
9.	Dialogue writing	1	16-09-2019		TLM1, TLM2, TLM5, TLM6	CO1	T2,R2,R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
10.	Satya Nadella's E-Mail to his Employees	1	18-09-2019		TLM1, TLM6	CO2	T2	
11.	Words often confused-Homonyms, Homographs	2	20-09-2019 23-09-2019		TLM1, TLM6	CO2	T2,R2,R4	
12.	Words often confused - Homophones	1	25-09-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
13.	Words often confused-	2	27-09-2019 30-09-2019		TLM1, TLM6	CO2	T2	
14.	Types of verbs	1	04-10-2019		TLM1, TLM6	CO2	T2,R2,R4	
15.	'The Road Not Taken' by Robert Frost	2	09-10-2019 11-10-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
16.	Letter Writing: Official Letters	3	14-10-2019 16-10-2019 18-10-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Technology with a Human Face	1	28-10-2019		TLM1	CO3	T1	
18.	Synonyms & Antonyms	1	30-10-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
19.	commonly misspelt words	1	01-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
20.	Tenses: Types & Uses	1	04-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
21.	'Preface' to Lyrical Ballads	1	06-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
22.	E-mails	1	08-11-2019		TLM1, TLM6	CO3	T1	
23.	Memo drafting	1	11-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24.	Listening Skills	1	13-11-2019		TLM1, TLM6	CO4	T2	
25.	The boy who broke the bank	1	15-11-2019		TLM1, TLM6	CO4	T2,R2,R4	
26.	Understanding the story, People, Places and Events	1	18-11-2019		TLM1, TLM6	CO4	T2,R2,R4	
27.	Understanding Places &	1	20-11-2019		TLM1, TLM6	CO4	T2,R2,R4	

	Events							
28.	Exercises on Prefixes & suffixes	1	22-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R2,R4	
29.	Active Listening	1	25-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
30.	Proverbial expansion on Listening	1	27-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
31.	Listening Skills	1	29-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
No. of classes required to complete UNIT-IV : 08					No. of classes taken:			

UNIT-V :

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
32.	Interview Skills	1	02-12-2019		TLM1, TLM6	CO5	T2	
33.	The lighthouse keeper of Aspinwall	2	04-12-2019 06-12-2019		TLM1, TLM6	CO5	T2,R2,R4	
34.	Understanding the story, People & World	1	09-12-2019		TLM1, TLM6	CO5	T2,R2,R4	
35.	Conjunctions	1	11-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
36.	Résumé with covering letter	2	13-12-2019 16-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3	
37.	Proverbial expansion on Interview Skills	2	18-12-2019 20-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
38.	Interview	1	23-12-2019		TLM1, TLM2,	CO5	T2,R1,R3	

	Skills				TLM5, TLM6			
No. of classes required to complete UNIT-V : 11					No. of classes taken:10			

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
39.	Verbal Reasoning	1	27-12-2019		TLM1, TLM2, TLM5, TLM6	CO1 & CO5	Book of Reasoning by Agarwal	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

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

	K. Sridevi	Prof.B.Samrajya Lakshmi	Prof.A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

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COURSE HANDOUT

Part-A

PROGRAM : B.Tech.I-Sem., CSE (B)

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Professional Communication - I (17FE01)

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : Dr.B.Samrajya Lakshmi

COURSE COORDINATOR: Dr.B.Samrajya Lakshmi

Pre-requisites : Basics in English Grammar & Vocabulary

Course Educational Objective (CEOs) : Improve the proficiency of students in English with an emphasis on Vocabulary& Grammar for better communication in formal and informal situations; Develop listening skills required for thorough understanding and analysis to face interviews with confidence.

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

CO1 : Use English vocabulary & grammar effectively while speaking and writing.
CO2 : Comprehend the given texts and Communicate confidently in formal and informal contexts.
CO3 : Draft E-mails& Memos
CO4 : Understand the written and spoken information thoroughly.
CO5 : Face interviews with confidence.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes											PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE01	CO1				2					3	3		2			
	CO2		1		2		1			3	3		2			
	CO3				2					3	3		2			
	CO4		1		2		1			3	3		2			
	CO5				2					3	3		2			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

BOS APPROVED TEXT BOOKS:

T1	Board of Editors, "Fluency in English – A Course book for Engineering Students", Orient Black Swan, Hyderabad, 2016.
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R4	Raman, Meenakshi; Sharma, Sangeeta,. "Technical Communication -Principles and Practice" Oxford University Press, New Delhi, Third Edition. 2015.

Part-B
COURSE DELIVERY PLAN (LESSON PLAN): Section-A/B/C

UNIT-I :

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
40.	Introduction to UNIT-I	1	26-08-2019		TLM1			
41.	Presidential Address – Dr. A.P.J. Abdul Kalam	1	28-08-2019		TLM1	CO1	T1	
42.	Word formation: Prefixes & suffixes	1	29-08-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
43.	Word formation: Compound Collocations	1	04-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
44.	Punctuation	1	05-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
45.	Parts of Speech	1	09-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
46.	Double Angels - David Scott	1	11-09-2019		TLM1	CO1	T1	

47.	Sentence structure; Paragraph writing	1	12-09-2019		TLM1, TLM2	CO1	T1,R2,R4	
48.	Dialogue writing	1	16-09-2019		TLM1, TLM2, TLM5, TLM6	CO1	T2,R2,R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Satya Nadella's E-Mail to his Employees	1	18-09-2019		TLM1, TLM6	CO2	T2	
50.	Words often confused-Homonyms, Homographs	2	19-09-2019 23-09-2019		TLM1, TLM6	CO2	T2,R2,R4	
51.	Words often confused - Homophones	1	25-09-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
52.	Words often confused-	2	26-09-2019 30-09-2019		TLM1, TLM6	CO2	T2	
53.	Types of verbs	1	03-10-2019		TLM1, TLM6	CO2	T2,R2,R4	
54.	'The Road Not Taken' by Robert Frost	1	14-10-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
55.	Letter Writing: Official Letters	2	16-10-2019 17-10-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
56.	Technology with a Human Face	1	28-10-2019		TLM1	CO3	T1	
57.	Synonyms & Antonyms	1	30-10-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
58.	commonly misspelt words	1	31-10-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
59.	Tenses: Types & Uses	1	04-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
60.	'Preface' to Lyrical Ballads	1	06-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
61.	E-mails	1	07-11-2019		TLM1, TLM6	CO3	T1	
62.	Memo drafting	1	11-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
63.	Listening Skills	1	13-11-2019		TLM1, TLM6	CO4	T2	
64.	The boy who broke the bank	1	14-11-2019		TLM1, TLM6	CO4	T2,R2,R4	
65.	Understanding the story, People, Places and Events	1	18-11-2019		TLM1, TLM6	CO4	T2,R2,R4	
66.	Understanding Places &	1	20-11-2019		TLM1, TLM6	CO4	T2,R2,R4	

	Events							
67.	Exercises on Prefixes & suffixes	1	21-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R2,R4	
68.	Active Listening	1	25-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
69.	Proverbial expansion on Listening	1	27-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
70.	Listening Skills	1	28-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
No. of classes required to complete UNIT-IV : 08					No. of classes taken:			

UNIT-V :

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
71.	Interview Skills	1	02-12-2019		TLM1, TLM6	CO5	T2	
72.	The lighthouse keeper of Aspinwall	2	04-12-2019 05-12-2019		TLM1, TLM6	CO5	T2,R2,R4	
73.	Understanding the story, People & World	1	09-12-2019		TLM1, TLM6	CO5	T2,R2,R4	
74.	Conjunctions	1	11-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
75.	Résumé with covering letter	2	12-12-2019 16-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3	
76.	Proverbial expansion on Interview Skills	2	18-12-2019 19-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
77.	Interview	1	23-12-2019		TLM1, TLM2,	CO5	T2,R1,R3	

	Skills				TLM5, TLM6			
No. of classes required to complete UNIT-V : 11					No. of classes taken:10			

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
78.	Verbal Reasoning	1	26-12-2019		TLM1, TLM2, TLM5, TLM6	CO1 & CO5	Book of Reasoning by Agarwal	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAM OUTCOMES

Engineering Graduates will be able to:

13. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
14. **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.
15. **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.
16. **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.
17. **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.
18. **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.
19. **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.
20. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
21. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
22. **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.
23. **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.
24. **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.

	Prof.B.Samrajya Lakshmi	Prof.B.Samrajya Lakshmi	Prof.A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B. Tech. I-Sem.; CSE - C

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Professional Communication - I (17FE01)

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. B. SAGAR

COURSE COORDINATOR: Dr. B. Samrajya Lakshmi

Pre-requisites : Basics in English Grammar & Vocabulary

Course Educational Objective (CEOs) : Improve the proficiency of students in English with an emphasis on Vocabulary& Grammar for better communication in formal and informal situations; Develop listening skills required for thorough understanding and analysis to face interviews with confidence.

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

CO1 : Use English vocabulary & grammar effectively while speaking and writing.
CO2 : Comprehend the given texts and Communicate confidently in formal and informal contexts.
CO3 : Draft E-mails& Memos
CO4 : Understand the written and spoken information thoroughly.
CO5 : Face interviews with confidence.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes											PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE01	CO1				2					3	3		2			
	CO2		1		2		1			3	3		2			
	CO3				2					3	3		2			
	CO4		1		2		1			3	3		2			
	CO5				2					3	3		2			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

BOS APPROVED TEXT BOOKS:

T1	Board of Editors, "Fluency in English – A Course book for Engineering Students", Orient Black Swan, Hyderabad, 2016.
T2	Dhanavel S.P, "English and Soft Skills", Orient Black Swan, Hyderabad, 2010.

BOS APPROVED REFERENCE BOOKS:

R1	Murphy, "English Grammar with CD", Cambridge University Press, New Delhi, 2004.
R2	Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, New Delhi, 2008.
R3	Baradwaj Kumkum, "Professional Communication", I.K.International Publishing House Pvt.Lt., New Delhi, 2008.
R4	Raman, Meenakshi; Sharma, Sangeeta,. "Technical Communication -Principles and Practice" Oxford University Press, New Delhi, Third Edition. 2015.

Part-B
COURSE DELIVERY PLAN (LESSON PLAN): Section-A/B/C

UNIT-I :

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
79.	Introduction to UNIT-I	1	27-08-2019		TLM1			
80.	Presidential Address – Dr. A.P.J. Abdul Kalam	1	28-08-2019		TLM1	CO1	T1	
81.	Word formation: Prefixes & suffixes	1	30-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
82.	Word formation: Compound Collocations	1	03-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
83.	Punctuation	1	04-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
84.	Parts of Speech	1	06-09-2019		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
85.	Double Angels - David Scott	1	11-09-2019		TLM1	CO1	T1	

86.	Sentence structure; Paragraph writing	1	13-09-2019		TLM1, TLM2	CO1	T1,R2,R4	
87.	Dialogue writing	1	17-09-2019		TLM1, TLM2, TLM5, TLM6	CO1	T2,R2,R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
88.	Satya Nadella's E-Mail to his Employees	1	18-09-2019		TLM1, TLM6	CO2	T2	
89.	Words often confused-Homonyms	1	20-09-2019		TLM1, TLM6	CO2	T2,R2,R4	
90.	Words often confused - Homophones	1	24-09-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
91.	Words often confused-Homographs	1	25-09-2019		TLM1, TLM6	CO2	T2	
92.	Types of verbs	1	27-09-2019		TLM1, TLM6	CO2	T2,R2,R4	
93.	Types of sentences	1	01-10-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
94.	'The Road Not Taken' by Robert Frost	2	04-10-2019 15-10-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
95.	Letter Writing: Official Letters	2	16-10-2019 18-10-2019		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
96.	Technology with a Human Face	1	29-10-2019		TLM1	CO3	T1	
97.	Synonyms & Antonyms	1	30-10-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1, R2, R4	
98.	commonly misspelt words	1	01-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
99.	Tenses: Types & Uses	1	05-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
100	'Preface' to Lyrical Ballads	1	06-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
101	E-mails	1	08-11-2019		TLM1, TLM6	CO3	T1	
102	Memo drafting	1	12-11-2019		TLM1, TLM2, TLM5, TLM6	CO3	T1, R2, R4	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
103.	Listening Skills	1	13-09-2019		TLM1, TLM6	CO4	T2	
104.	The boy who broke the bank	3	15-11-2019 19-11-2019 20-11-2019		TLM1, TLM6	CO4	T2,R2,R4	
105.	Understanding the story, People, Places and Events	2	22-11-2019 26-11-2019		TLM1, TLM6	CO4	T2,R2,R4	
106.	Understanding Places &	1	27-11-2019		TLM1, TLM6	CO4	T2,R2,R4	

	Events							
107.	Exercises on Prefixes & suffixes	1	29-11-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R2,R4	
108.	Active Listening	1	03-12-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
109.	Proverbial expansion on Listening	1	04-12-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
110.	Listening Skills	1	06-12-2019		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
No. of classes required to complete UNIT-IV : 11					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
111.	Interview Skills	1	10-12-2019		TLM1, TLM6	CO5	T2	
112.	The lighthouse keeper of Aspinwall	2	11-12-2019		TLM1, TLM6	CO5	T2,R2,R4	
113.	Understanding the story, People & World	1	13-12-2019		TLM1, TLM6	CO5	T2,R2,R4	
114.	Conjunctions	1	17-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
115.	Résumé with covering letter	1	18-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3	
116.	Proverbial expansion on Interview Skills	1	20-12-2019		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
117.	Interview	1	24-12-2019		TLM1, TLM2,	CO5	T2,R1,R3	

	Skills				TLM5, TLM6			
No. of classes required to complete UNIT-V : 08					No. of classes taken:10			

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
118.	Verbal Reasoning	1	27-12-2019		TLM1, TLM2, TLM5, TLM6	CO1 & CO5	Book of Reasoning by Agarwal	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAM OUTCOMES

Engineering Graduates will be able to:

25. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
26. **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.
27. **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.
28. **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.
29. **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.
30. **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.
31. **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.
32. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
33. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
34. **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.
35. **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.
36. **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.

Mr. B. ***Sagar***	**Prof. B. Samrajya Lakshmi**	**Prof. B.Samrajya Lakshmi**	**Prof. A. Ramireddy**
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

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COURSE HANDOUT

Part-A

PROGRAM : B.Tech, I-Sem., CSE (A)

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Differential Equations and Numerical application – 17FE05

L-T-P STRUCTURE : 4-1-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : Dr. A. Rami Reddy

COURSE COORDINATOR : Dr. A. Rami Reddy

PRE-REQUISITES: Basics of Differential Equations, Partial Differentiation, Matrices.

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

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 and to calculate current flow in a simple LCR circuit.
CO2	Discriminate among the structure and procedure of solving a higher order differential equations with constant coefficients and variable coefficients.
CO3	Developing continuous functions as an infinite series and compute the Jacobian to determine the functional dependence.
CO4	Formation of partial differential equations and solve linear partial differential equations.
CO5	Apply various Numerical methods in solving and initial value problem involving an ordinary differential equation.

COURSE ARTICULATION MATRIX (Correlation between COs&POs):

CO N0.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO2	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO3	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO4	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO5	**3**	**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 Michael D. Greenberg , "Advanced Engineering Mathematics", 2nd Edition, TMH, New Delhi, 2011.

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

R3 W.E. Boyce, R.C.Diprima, "Elementary Differential Equations", 7th Edition, John Wiley and sons, New Delhi, 2001.

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 Subject	1	26/08/19		TLM1			
2.	Course Outcomes	1	27/08/19		TLM1			
UNIT-I : Differential Equations of First Order and First Degree								
3.	Introduction to UNIT-I	1	28/08/19		TLM1	CO1	T1,T2	
4.	Formation of Differential Equations	1	29/08/19		TLM1	CO1	T1,T2	
5.	Exact DE	1	30/08/19		TLM1	CO1	T1,T2	
6.	Non-exact DE Type I	1	03/09/19		TLM1	CO1	T1,T2	
7.	Non-exact DE Type II	1	04/09/19		TLM1	CO1	T1,T2	
8.	Non-exact DE Type III	1	05/09/19		TLM1	CO1	T1,T2	
9.	Non-exact DE Type IV	1	06/09/19		TLM1	CO1	T1,T2	
10.	TUTORIAL- 1	1	09/09/19		TLM3	CO1	T1,T2	
11.	Orthogonal Trajectories (Cartesian)	1	11/09/19		TLM1	CO1	T1,T2	
12.	Orthogonal Trajectories (polar)	1	12/09/19		TLM1	CO1	T1,T2	
13.	Newton's Law of Cooling	1	13/09/19		TLM1	CO1	T1,T2	
14.	Newton's Law of Cooling	1	16/09/19		TLM1	CO1	T1,T2	
15.	TUTORIAL- 2	1	17/09/19		TLM3	CO1	T1,T2	
16.	Law of Growth	1	18/09/19		TLM1	CO1	T1,T2	
17.	Law of Decay	1	19/09/19		TLM1	CO1	T1,T2	
18.	Assignment/Quiz	1	20/09/19		TLM6	CO1	T1,T2	
No. of classes required to complete UNIT-I		16			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 Week**
19.	Introduction to Unit – II & Solving a homogeneous DE	1	21/09/19		TLM1	CO2	T1,T2	
20.	Solving a homogeneous DE	1	23/09/19		TLM1	CO2	T1,T2	
21.	P.I when $Q(x)=e^{ax}e^{ax}$	1	24/09/19		TLM1	CO2	T1,T2	
22.	P.I when $Q(x)=e^{ax}e^{ax}$	1	25/09/19		TLM1	CO2	T1,T2	
23.	P.I when $Q(x)=\sin bx \, or \cos bx \, e^{ax}$	1	26/09/19		TLM1	CO2	T1,T2	
24.	TUTORIAL-3	1	27/09/19		TLM3	CO2	T1,T2	
25.	P.I when $Q(x)=\sin bx \, or \cos bx \, e^{ax}$	1	30/09/19		TLM1	CO2	T1,T2	
26.	P.I when $Q(x)= x^k e^{ax}$	1	01/10/19 03/10/19		TLM1	CO2	T1,T2	
27.	P.I when $Q(x)= e^{ax} v(x)$	1	04/10/19		TLM1	CO2	T1,T2	
28.	P.I when $Q(x)= e^{ax} v(x)$	1	11/10/19		TLM1	CO2	T1,T2	
29.	P.I when $Q(x)= x^m.v(x)$ $x^k v$	1	14/10/19		TLM1	CO2	T1,T2	
30.	Method of Variation of parameters	1	15/10/19 16/10/19		TLM1	CO2	T1,T2	
31.	TUTORIAL-4	1	17/10/19		TLM3	CO2	T1,T2	
32.	Assignment/Quiz	1	18/10/19		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		14			No. of classes taken:			

UNIT-III : Functions of Several Variables, 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**
33.	Introduction to UNIT III	1	28/10/19		TLM1	CO3	T1,T2	
34.	Generalized Mean Value Theorem	1	29/10/19		TLM1	CO3	T1,T2	
35.	Taylor's series	1	30/10/19		TLM1	CO3	T1,T2	
36.	Taylor's series	1	31/10/19		TLM1	CO3	T1,T2	

37.	Maclaurin's series	1	01/11/19		TLM1	CO3	T1,T2	
38.	Jacobians (polar, cylindrical, spherical coordinates)	1	04/11/19		TLM1	CO3	T1,T2	
39.	Jacobians (polar, cylindrical, spherical coordinates)	1	05/11/19		TLM1	CO3	T1,T2	
40.	Functional dependence	1	06/11/19		TLM1	CO3	T1,T2	
41.	TUTORIAL-5	1	07/11/19		TLM3	CO3	T1,T2	
42.	Maxima and Minima of a function in two variables	1	08/11/19		TLM1	CO3	T1,T2	
43.	Maxima and Minima of a function in three variables	1	11/11/19		TLM1	CO3	T1,T2	
44.	Lagrange's Multipliers Method	1	12/11/19		TLM1	CO3	T1,T2	
45.	Lagrange's Multipliers Method	1	13/11/19		TLM1	CO3	T1,T2	
46.	Assignment/Quiz	1	14/11/19		TLM6	CO3	T1,T2	
47.	TUTORIAL-6	1	15/11/19		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		15			No. of classes taken:			

UNIT-IV : System of Linear 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**
48.	Introduction to UNIT IV	1	18/11/19		TLM1	CO4	T1,T2	
49.	Formation of PDE by eliminating arbitrary constants	1	19/11/19		TLM1	CO4	T1,T2	
50.	Formation of PDE by eliminating arbitrary constants	1	20/11/19		TLM1	CO4	T1,T2	
51.	Formation of PDE by eliminating arbitrary functions	1	21/11/19		TLM1	CO4	T1,T2	
52.	Tutorial-7	1	22/11/19		TLM3	CO4	T1,T2	
53.	Formation of PDE by eliminating arbitrary functions	1	25/11/19		TLM1	CO4	T1,T2	
54.	Solution of linear PDE - Lagranze's method	1	26/11/19		TLM1	CO4	T1,T2	
55.	Solution of linear PDE - Lagranze's method	1	27/11/19		TLM1	CO4	T1,T2	

56.	Solution of linear PDE - Lagranze's method	1	28/11/19		TLM1	CO4	T1,T2	
57.	Tutorial-8	1	29/11/19		TLM3	CO4	T1,T2	
58.	Assignment/Quiz - 4	1	02/12/19		TLM6	CO4	T1,T2	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V : Eigen Values and Eigen Vectors								
S.No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
59.	Introduction to UNIT V	1	03/12/19		TLM1	CO5	T1,T2	
60.	Taylor's series method	1	05/12/19		TLM1	CO5	T1,T2	
61.	Taylor's series method	1	06/12/19		TLM1	CO5	T1,T2	
62.	Picard's method	1	09/12/19		TLM1	CO5	T1,T2	
63.	Tutorial-9	1	10/12/19		TLM3	CO5	T1,T2	
64.	Euler's method	1	11/12/19		TLM1	CO5	T1,T2	
65.	Modified Euler's method	1	12/12/19		TLM1	CO5	T1,T2	
66.	R-K method	1	13/12/19		TLM1	CO5	T1,T2	
67.	R-K method	1	16/12/19		TLM3	CO5	T1,T2	
68.	R-K method	1	17/12/19		TLM3	CO5	T1,T2	
69.	Tutorial-10	1	18/12/19		TLM3	CO5	T1,T2	
70.	Assignment/Quiz - 5	1	19/12/19		TLM6	CO5	T1,T2	
71.	Revision	1	20/12/19		TLM6	CO5	T1,T2	
72.	Revision	1	23/112/19		TLM6	CO5	T1,T2	
73.	Revision	1	24/12/19		TLM6	CO5	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**
74.	Comparing the Numerical and Analytic solutions of O.D.E	1	26/112/19 27/12/19		TLM1	CO4	T1,T2	

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	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAMME OUTCOMES (POs)

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr. A. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech, I-Sem., CSE (B)

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Differential Equations and Numerical application – 17FE05

L-T-P STRUCTURE : 4-1-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : D. VIJAY KUMAR

COURSE COORDINATOR : Dr. A. Rami Reddy

PRE-REQUISITES: Basics of Differential Equations, Partial Differentiation, Matrices.

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

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 and to calculate current flow in a simple LCR circuit.
CO2	Discriminate among the structure and procedure of solving a higher order differential equations with constant coefficients and variable coefficients.
CO3	Developing continuous functions as an infinite series and compute the Jacobian to determine the functional dependence.
CO4	Formation of partial differential equations and solve linear partial differential equations.
CO5	Apply various Numerical methods in solving and initial value problem involving an ordinary differential equation.

COURSE ARTICULATION MATRIX (Correlation between COs&POs):

CO N0.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO2	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO3	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO4	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO5	**3**	**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 Michael D. Greenberg , "Advanced Engineering Mathematics", 2nd Edition, TMH, New Delhi, 2011.

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

R3 W.E. Boyce, R.C.Diprima, "Elementary Differential Equations", 7th Edition, John Wiley and sons, New Delhi, 2001.

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 Subject	1	26/08/19		TLM1			
2.	Course Outcomes	1	27/08/19		TLM1			
UNIT-I : Differential Equations of First Order and First Degree								
3.	Introduction to UNIT-I	1	29/08/19		TLM1	CO1	T1,T2	
4.	Formation of Differential Equations	1	29/08/19		TLM1	CO1	T1,T2	
5.	Exact DE	1	31/08/19		TLM1	CO1	T1,T2	
6.	Non-exact DE Type I	1	03/09/19		TLM1	CO1	T1,T2	
7.	Non-exact DE Type II	1	05/09/19		TLM1	CO1	T1,T2	
8.	Non-exact DE Type III	1	05/09/19		TLM1	CO1	T1,T2	
9.	BRIDGE COURSE	1	06/09/19		TLM1	CO1	T1,T2	
10.	Non-exact DE Type IV	1	07/09/19		TLM1	CO1	T1,T2	
11.	Orthogonal Trajectories (Cartesian)	1	09/09/19		TLM1	CO1	T1,T2	
12.	Orthogonal Trajectories (polar)	1	12/09/19		TLM1	CO1	T1,T2	
13.	Newton's Law of Cooling	1	12/09/19		TLM1	CO1	T1,T2	
14.	TUTORIAL 1	1	16/09/19		TLM3	CO1	T1,T2	
15.	Law of Growth	1	17/09/19		TLM1	CO1	T1,T2	
16.	Law of Decay	1	19/09/19		TLM1	CO1	T1,T2	
17.	Assignment/Quiz	1	19/09/19		TLM6	CO1	T1,T2	
18.	TUTORIAL 2	1	21/09/19		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**
19.	Bridge Course	1	20/09/19		TLM1	CO2	T1,T2	
20.	Introduction to Unit – II & Solving a homogeneous DE	1	23/09/19		TLM1	CO2	T1,T2	
21.	Solving a homogeneous DE	1	24/09/19		TLM1	CO2	T1,T2	
22.	P.I when $Q(x)=e^{ax}$ e^{ax}	1	26/09/19		TLM1	CO2	T1,T2	
23.	P.I when $Q(x)=e^{ax}$ e^{ax}	1	26/09/19		TLM1	CO2	T1,T2	
24.	TUTORIAL-3	1	28/09/19		TLM3	CO2	T1,T2	
25.	P.I when $Q(x)=\sin bx \, or \cos bx$ e^{ax}	1	01/10/19 03/10/19		TLM1	CO2	T1,T2	
26.	P.I when $Q(x)= x^k$ e^{ax}	1	03/10/19		TLM1	CO2	T1,T2	
27.	Bridge Course	2	04/10/19		TLM1	CO2	T1,T2	
28.	TUTORIAL-4	1	05/10/19		TLM3	CO2	T1,T2	
29.	P.I when $Q(x)= e^{ax} v(x)$	1	10/10/19 10/10/19		TLM1	CO2	T1,T2	
30.	P.I when $Q(x)= x^m .v(x) x^k v$	1	14/10/19		TLM1	CO2	T1,T2	
31.	Method of Variation of parameters	1	17/10/19 17/10/19		TLM1	CO2	T1,T2	
32.	Assignment/Quiz	1	19/10/19		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		16			No. of classes taken:			

UNIT-III : Functions of Several Variables, 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**
33.	Introduction to UNIT III	1	28/10/19		TLM1	CO3	T1,T2	
34.	Generalized Mean Value Theorem	1	29/10/19		TLM1	CO3	T1,T2	
35.	Taylor's series	1	31/10/19		TLM1	CO3	T1,T2	
36.	Maclaurin's series	1	31/10/19		TLM1	CO3	T1,T2	
37.	Bridge Course	1	01/11/19		TLM1	CO3	T1,T2	
38.	Jacobians (polar, cylindrical, spherical coordinates)	1	02/11/19 04/11/19		TLM1	CO3	T1,T2	
39.	Functional dependence	1	05/11/19		TLM1	CO3	T1,T2	
40.	TUTORIAL-5	1	09/11/19		TLM3	CO3	T1,T2	
41.	Maxima and Minima of a function in two variables	1	07/11/19		TLM1	CO3	T1,T2	
42.	Maxima and Minima of a function in three variables	1	07/11/19		TLM1	CO3	T1,T2	
43.	Lagrange's Multipliers Method	1	11/11/19 12/11/19		TLM1	CO3	T1,T2	
44.	Assignment/Quiz	1	14/11/19 14/11/19		TLM6	CO3	T1,T2	
45.	TUTORIAL-6	1	16/11/19		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		14			No. of classes taken:			

UNIT-IV : System of Linear 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**
46.	Bridge Course	1	15/11/19		TLM1	CO4	T1,T2	
47.	Introduction to UNIT IV	1	18/11/19		TLM1	CO4	T1,T2	
48.	Formation of PDE by eliminating arbitrary constants	1	19/11/19		TLM1	CO4	T1,T2	
49.	Tutorial-7	1	23/11/19		TLM1	CO4	T1,T2	
50.	Formation of PDE by eliminating arbitrary constants	1	21/11/19		TLM3	CO4	T1,T2	

51.	Formation of PDE by eliminating arbitrary functions	1	21/11/19					
52.	Formation of PDE by eliminating arbitrary functions	1	25/11/19		TLM1	CO4	T1,T2	
53.	Tutorial-8	1	30/11/19		TLM1	CO4	T1,T2	
54.	Formation of PDE by eliminating arbitrary functions	1	26/11/19		TLM3	CO4	T1,T2	
55.	Solution of linear PDE - Lagranze's method	1	28/11/19		TLM1	CO4	T1,T2	
56.	Solution of linear PDE - Lagranze's method	1	28/11/19		TLM1	CO4	T1,T2	
57.	Solution of linear PDE - Lagranze's method	1	29/11/19		TLM1	CO4	T1,T2	
58.	Assignment/Quiz - 4	1	02/12/19		TLM1	CO4	T1,T2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

UNIT-V : Eigen Values and Eigen Vectors								
S.No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
59.	Introduction to UNIT V	1	03/12/19		TLM1	CO5	T1,T2	
60.	Taylor's series method	1	05/12/19		TLM1	CO5	T1,T2	
61.	Taylor's series method	1	05/12/19		TLM1	CO5	T1,T2	
62.	Picard's method	1	09/12/19		TLM3	CO5	T1,T2	
63.	Tutorial-9	1	07/12/19		TLM1	CO5	T1,T2	
64.	Euler's method	1	10/12/19		TLM1	CO5	T1,T2	
65.	Modified Euler's method	1	12/12/19 12/12/19		TLM1	CO5	T1,T2	
66.	R-K method	1	13/12/19		TLM1	CO5	T1,T2	
67.	R-K method	1	16/12/19		TLM3	CO5	T1,T2	
68.	Tutorial-10	1	21/12/19		TLM3	CO5	T1,T2	
69.	Assignment/Quiz - 5	1	17/12/19		TLM6	CO5	T1,T2	
70.	Revision	2	19/12/19		TLM6	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
71.	Comparing the Numerical and Analytic solutions of O.D.E	1	23/112/19 24/12/19		TLM1	CO4	T1,T2	

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	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAMME OUTCOMES (POs)

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

D.Vijay kumar	Dr. A. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech, I-Sem., CSE (C)

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Differential Equations and Numerical application – 17FE05

L-T-P STRUCTURE : 4-1-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : K.Bhanu Lakshmi

COURSE COORDINATOR : Dr. A. Rami Reddy

PRE-REQUISITES: Basics of Differential Equations, Partial Differentiation, Matrices.

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

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 and to calculate current flow in a simple LCR circuit.
CO2	Discriminate among the structure and procedure of solving a higher order differential equations with constant coefficients and variable coefficients.
CO3	Developing continuous functions as an infinite series and compute the Jacobian to determine the functional dependence.
CO4	Formation of partial differential equations and solve linear partial differential equations.
CO5	Apply various Numerical methods in solving and initial value problem involving an ordinary differential equation.

COURSE ARTICULATION MATRIX (Correlation between COs&POs):

CO N0.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO2	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO3	**3**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO4	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO5	**3**	**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.

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R1 Michael D. Greenberg , "Advanced Engineering Mathematics", 2nd Edition, TMH, New Delhi, 2011.

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

R3 W.E. Boyce, R.C.Diprima, "Elementary Differential Equations", 7th Edition, John Wiley and sons, New Delhi, 2001.

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
75.	Introduction to Subject	1	26/08/19		TLM1			
76.	Course Outcomes	1	27/08/19		TLM1			
UNIT-I : Differential Equations of First Order and First Degree								
77.	Introduction to UNIT-I	1	28/08/19		TLM1	CO1	T1,T2	
78.	Formation of Differential Equations	1	29/08/19		TLM1	CO1	T1,T2	
79.	Exact DE	1	30/08/19		TLM1	CO1	T1,T2	
80.	Non-exact DE Type I	1	03/09/19		TLM1	CO1	T1,T2	
81.	Non-exact DE Type II	1	04/09/19		TLM1	CO1	T1,T2	
82.	Non-exact DE Type III	1	05/09/19		TLM1	CO1	T1,T2	
83.	Non-exact DE Type IV	1	06/09/19		TLM1	CO1	T1,T2	
84.	TUTORIAL- 1	1	09/09/19		TLM3	CO1	T1,T2	
85.	Orthogonal Trajectories (Cartesian)	1	11/09/19		TLM1	CO1	T1,T2	
86.	Orthogonal Trajectories (polar)	1	12/09/19		TLM1	CO1	T1,T2	
87.	Newton's Law of Cooling	1	13/09/19		TLM1	CO1	T1,T2	
88.	Newton's Law of Cooling	1	16/09/19		TLM1	CO1	T1,T2	
89.	TUTORIAL- 2	1	17/09/19		TLM3	CO1	T1,T2	
90.	Law of Growth	1	18/09/19		TLM1	CO1	T1,T2	
91.	Law of Decay	1	19/09/19		TLM1	CO1	T1,T2	
92.	Assignment/Quiz	1	20/09/19		TLM6	CO1	T1,T2	
No. of classes required to complete UNIT-I		16			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 Week**
93.	Introduction to Unit – II & Solving a homogeneous DE	1	21/09/19		TLM1	CO2	T1,T2	
94.	Solving a homogeneous DE	1	23/09/19		TLM1	CO2	T1,T2	
95.	P.I when $Q(x)=e^{ax}e^{ax}$	1	24/09/19		TLM1	CO2	T1,T2	
96.	P.I when $Q(x)=e^{ax}e^{ax}$	1	25/09/19		TLM1	CO2	T1,T2	
97.	P.I when $Q(x)=\sin bx \, or \cos bx \, e^{ax}$	1	26/09/19		TLM1	CO2	T1,T2	
98.	TUTORIAL-3	1	27/09/19		TLM3	CO2	T1,T2	
99.	P.I when $Q(x)=\sin bx \, or \cos bx \, e^{ax}$	1	30/09/19		TLM1	CO2	T1,T2	
100.	P.I when $Q(x)= x^k e^{ax}$	1	01/10/19 03/10/19		TLM1	CO2	T1,T2	
101.	P.I when $Q(x)= e^{ax} v(x)$	1	04/10/19		TLM1	CO2	T1,T2	
102.	P.I when $Q(x)= e^{ax} v(x)$	1	11/10/19		TLM1	CO2	T1,T2	
103.	P.I when $Q(x)= x^m.v(x)$ $x^k v$	1	14/10/19		TLM1	CO2	T1,T2	
104.	Method of Variation of parameters	1	15/10/19 16/10/19		TLM1	CO2	T1,T2	
105.	TUTORIAL-4	1	17/10/19		TLM3	CO2	T1,T2	
106.	Assignment/Quiz	1	18/10/19		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		14			No. of classes taken:			

UNIT-III : Functions of Several Variables, 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**
107.	Introduction to UNIT III	1	28/10/19		TLM1	CO3	T1,T2	
108.	Generalized Mean Value Theorem	1	29/10/19		TLM1	CO3	T1,T2	
109.	Taylor's series	1	30/10/19		TLM1	CO3	T1,T2	
110.	Taylor's series	1	31/10/19		TLM1	CO3	T1,T2	

111.	Maclaurin's series	1	01/11/19		TLM1	CO3	T1,T2	
112.	Jacobians (polar, cylindrical, spherical coordinates)	1	04/11/19		TLM1	CO3	T1,T2	
113.	Jacobians (polar, cylindrical, spherical coordinates)	1	05/11/19		TLM1	CO3	T1,T2	
114.	Functional dependence	1	06/11/19		TLM1	CO3	T1,T2	
115.	TUTORIAL-5	1	07/11/19		TLM3	CO3	T1,T2	
116.	Maxima and Minima of a function in two variables	1	08/11/19		TLM1	CO3	T1,T2	
117.	Maxima and Minima of a function in three variables	1	11/11/19		TLM1	CO3	T1,T2	
118.	Lagrange's Multipliers Method	1	12/11/19		TLM1	CO3	T1,T2	
119.	Lagrange's Multipliers Method	1	13/11/19		TLM1	CO3	T1,T2	
120.	Assignment/Quiz	1	14/11/19		TLM6	CO3	T1,T2	
121.	TUTORIAL-6	1	15/11/19		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		15			No. of classes taken:			

UNIT-IV : System of Linear 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**
122.	Introduction to UNIT IV	1	18/11/19		TLM1	CO4	T1,T2	
123.	Formation of PDE by eliminating arbitrary constants	1	19/11/19		TLM1	CO4	T1,T2	
124.	Formation of PDE by eliminating arbitrary constants	1	20/11/19		TLM1	CO4	T1,T2	
125.	Formation of PDE by eliminating arbitrary functions	1	21/11/19		TLM1	CO4	T1,T2	
126.	Tutorial-7	1	22/11/19		TLM3	CO4	T1,T2	
127.	Formation of PDE by eliminating arbitrary functions	1	25/11/19		TLM1	CO4	T1,T2	
128.	Solution of linear PDE - Lagranze's method	1	26/11/19		TLM1	CO4	T1,T2	
129.	Solution of linear PDE - Lagranze's method	1	27/11/19		TLM1	CO4	T1,T2	

130.	Solution of linear PDE - Lagranze's method	1	28/11/19		TLM1	CO4	T1,T2	
131.	Tutorial-8	1	29/11/19		TLM3	CO4	T1,T2	
132.	Assignment/Quiz - 4	1	02/12/19		TLM6	CO4	T1,T2	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V : Eigen Values and Eigen Vectors								
S.No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
133.	Introduction to UNIT V	1	03/12/19		TLM1	CO5	T1,T2	
134.	Taylor's series method	1	05/12/19		TLM1	CO5	T1,T2	
135.	Taylor's series method	1	06/12/19		TLM1	CO5	T1,T2	
136.	Picard's method	1	09/12/19		TLM1	CO5	T1,T2	
137.	Tutorial-9	1	10/12/19		TLM3	CO5	T1,T2	
138.	Euler's method	1	11/12/19		TLM1	CO5	T1,T2	
139.	Modified Euler's method	1	12/12/19		TLM1	CO5	T1,T2	
140.	R-K method	1	13/12/19		TLM1	CO5	T1,T2	
141.	R-K method	1	16/12/19		TLM3	CO5	T1,T2	
142.	R-K method	1	17/12/19		TLM3	CO5	T1,T2	
143.	Tutorial-10	1	18/12/19		TLM3	CO5	T1,T2	
144.	Assignment/Quiz - 5	1	19/12/19		TLM6	CO5	T1,T2	
145.	Revision	1	20/12/19		TLM6	CO5	T1,T2	
146.	Revision	1	23/112/19		TLM6	CO5	T1,T2	
147.	Revision	1	24/12/19		TLM6	CO5	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**
148.	Comparing the Numerical and Analytic solutions of O.D.E	1	26/112/19 27/12/19		TLM1	CO4	T1,T2	

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	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAMME OUTCOMES (POs)

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

K.Bhanu Lakshmi	Dr. A. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF FRESHMAN ENGINEERING DEPARTMENT
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech.I-Sem., CSE-A

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Engineering Chemistry (17FE15)

L-T-P STRUCTURE : 4-0-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : Dr.T.V.Nagalakshmi

COURSE COORDINATOR: Dr.V Parvathi

Pre-requisites : Knowledge of galvanic cell, working principle of battery, concept of polymerization, qualitative and quantitative analysis.

Course Educational Objective (CEOs):

In this course, the students will learn the concepts and applications of chemistry in engineering. It aims at strengthening the students with fundamental concepts of chemistry. It makes the students to effectively use the knowledge of electrochemistry, battery technology, and corrosion science in engineering applications.

It makes the students to identify the interdisciplinary nature of nanotechnology and use of polymers. It enables the students to identify the significance of photochemical reactions and applications of liquid crystals in various fields. It also provides the basic the knowledge of spectroscopic and analytical techniques.

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

- CO1: Analyze different types of electrodes and batteries for technological applications.
- CO2: Apply principles of corrosion for design and effective maintenance of various equipments.
- CO3: Identify the importance of engineering materials like nano materials, plastics and rubbers.
- CO4: Analyze various photo chemical processes & applications of liquid crystals.
- CO5: Identify the importance of analytical and spectroscopic techniques in chemical analysis.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes											PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE15	CO1	3	3	3				2					2			
	CO2	3	2	3			2	1					2			
	CO3	2	2				2	1					2			
	CO4	3	3					1					2			
	CO5	2	3										1			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

BOS APPROVED TEXT BOOKS:

T1	Shikha Agarwal, "A Text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
T2	Jain, Jain, "A textbook of Engineering Chemistry", Dhanpat Rai Publicating Company, New Delhi, 16th Edition, 2015.

BOS APPROVED REFERENCE BOOKS:

R1	Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.
R2	S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S.Chand Publications, New Delhi, 12th Edition, 2010.
R3	Y. Bharathi Kumari and Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

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

UNIT-I:

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
119.	Concept of electrode potential, SRP & SOP, EMF	2	27/8/19& 27/8/19		TLM1	CO1	T1&T2	
120.	S.H.E and its drawbacks, Calomel electrode	2	30/8/19 & 30/8/19		TLM1	CO1	T1&T2	
121.	**Tutorial-1**	1	31/8/19		TLM3	CO1	T1&T2	
122.	Measurement of electrode potential, Electrochemical series &	2	03/9/19& 03/9/19		TLM1	CO1	T1&T2	

	applications							
123.	Nernst equation Derivation	1	05/9/19		TLM1	CO1	T1&T2	
124.	Problems on Nernst equation	2	06/9/19 & 07/9/19		TLM	CO1	T1,T2 & R1	
125.	Primary, secondary &reserve batteries	2	12/9/19 & 12/9/19		TLM1	CO1	T1,T2 & R1	
126.	Dry battery (leclanche cell), Nickel- Cadmium battery	1	13/9/19		TLM1	CO1	T1,T2 & R1	
127.	Magnesium – Copper reserve battery & Hydrogen – oxygen Fuel cell	1	17/9/19		TLM1	CO1	T1,T2 & R1	
128.	**Tutorial-2**	1	17/9/19		TLM3	CO1	T1,T2 & R1	
129.	Quiz	1	19/9/19		TLM3	CO1		
130.	Assignment	1	20/9/19		Test	CO1		
131.	Revision	1	21/9/19		TLM1	CO1	T1,T2 & R1	
No. of classes required to complete UNIT-I : 16					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
132.	Corrosion definition examples, definition of dry corrosion, Oxidative corrosion	2	24/9/19& 24/9/19		TLM1	CO2	T1&T2	
133.	Corrosion by other gases, liquid metal corrosion, pilling Bed Worth rule	1	26/9/19		TLM1	CO2	T1&T2	
134.	Wet corrosion-mechanism	1	26/9/19		TLM1	CO2	T1&T2	
135.	Galvanic corrosion, Concentration cell corrosion	1	27/9/19		TLM1	CO2	T1&T2	
136.	**Tutorial-1**	1	28/9/19		TLM3	CO2	T1&T2	
137.	Passivity, Exceptions in E.C series, Galvanic	1	01/10/19		TLM1	CO2	T1&T2	

	series							
138.	Nature of metal	1	01/10/19		TLM1	CO2	T1&T2	
139.	Nature of environment	1	03/10/19		TLM1	CO2	T1&T2	
140.	**Tutorial-2**	1	04/10/19		TLM3	CO2	T1&T2	
141.	Cathodic protection	1	05/10/19		TLM1	CO2		
142.	Electroplating	1	15/10/19		TLM1	CO2	T1,T2&R2	
143.	Metal cladding	1	15/10/19		TLM1	CO2	T1&T2	
144.	Quiz questions	1	17/10/19		TLM1	CO2		
145.	Assignment	1	17/10/19		TLM1	CO2	T1&T2	
146.	Revision	2	18/10/19 & 19/10/19		TLM1	CO2		
No. of classes required to complete UNIT-II : 16					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
147.	Introduction,definition of nano material, properties of nano materials.	1	29/10/19		TLM2	CO3	T1,T2 &R2	
148.	Preparation of nano materials (sol gel method)Method	1	31/10/19		TLM2	CO3	T1,T2 &R2	
149.	Applications of nano materials	1	01/11/19		TLM2	CO3	T1,T2 &R2	
150.	**Tutorial 1**	1	02/11/19		TLM3	CO3	T1,T2 &R2	
151.	Basic terminology of polymers	1	05/11/19		TLM1	CO3	T1,T2 & R3	
152.	Classification of polymers & Types of polymerisation	1	05/11/19		TLM1	CO3	T1,T2 & R3	
153.	Preparation , properties & applications of Bakelite, PMMA	1	07/11/19		TLM1	CO3	T1,T2 & R3	
154.	Conducting polymers	1	07/11/19		TLM1	CO3	T1,T2 & R3	
155.	FRPs and processing of natural rubber,	1			TLM1	CO3	T1,T2	

	vulcanization, advantages						& R3	
156.	Preparation , properties & applications of Thiokol and BUNA-S	1	07/11/19		TLM1	CO3	T1,T2 & R3	
157.	**Tutorial-2**	1	11/11/19		TLM3	CO3	T1,T2 & R3	
158.	Quiz questions	1	12/11/19		Test	CO3		
159.	Assignment	1	12/11/19		Test	CO3	T1,T2 & R3	
No. of classes required to complete UNIT-III : 13					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
160.	Definition, differences between thermal and photo chemical reactions	1	08/11/19		TLM1	CO4	T1, T2 & R1	
161.	Grothers-Droper law, Stark-Einstein law and Quantum efficiency(Definition only).	1	12/11/19		TLM1	CO4	T1, T2 & R1	
162.	Fluorescence, phosphorescence – applications	1	12/11/19		TLM1	CO4	T1, T2 & R1	
163.	chemiluminiscence, bio-luminescence and Photo-sensitization.	1	14/11/19		TLM1	CO4	T1&T2	
164.	**Tutorial-1**	1	21/11/19		TLM3	CO4	T1&T2	
165.	Definition, Identification and structural aspects of molecules to form liquid crystals	1	22/11/19		TLM1	CO4	T1&T2	
166.	Thermo tropic liquid crystals and types	1	23/11/19		TLM1	CO4	T1&T2	
167.	lyotropic liquid crystals and applications.	1	26/11/19		TLM1	CO4	T1&T2	
168.	**Tutorial-II**	1	26/11/19		TLM3	CO4	T1&T2	
169.	Quiz questions	1	26/11/19		Test	CO4		

170.	Assignment	1	28/11/19	27/11/19	Test	CO4		
No. of classes required to complete UNIT-IV : 12					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
171.	Types of analysis, Analysis of physical characteristics, Gravimetric and volumetric analysis Analysis of physical characteristics.	2	29/11/19 & 30/11/19		TLM1	CO5	T1&T2	
172.	Electro analytical techniques – Introduction	1	31/12/19		TLM1	CO5	T1&T2	
173.	Strong acid - strong base and strong acid - weak base, weak acid -strong base and weak acid -weak base – advatages.	2	03/12/19 & 03/12/19		TLM1	CO5	T1&T2	
174.	Acid-base and oxidation-reduction titrations-advantages	1	05/12/19		TLM1	CO5	T1&T2	
175.	**Tutorial-1**	1	06/12/19		TLM3	CO4	T1&T2	
176.	Principle and determination of Iron by using thiocynate as a reagent.	1	07/12/19		TLM1	CO5	T1&T2	
177.	Origin of electronic spectra, Types of spectra-emission and absorption spectra and Beer-Lambert's law	1	10/12/19 & 10/12/19		TLM1	CO5	T1&T2	
178.	Types of vibrations, factors influencing vibrational frequencies.	1	12/12/19 & 12/12/19		TLM1	CO5	T1&T2	
179.	Applications of IR-Spectroscopy.applications of IR-Spectroscopy.	1	13/12/19		TLM1	CO5	T1&T2	
180.	Types of electronic transitions, probability	1	14/12/19		TLM1	CO5	T1&T2	
181.	Chomophores, Auxochromes and applications of UV-Spectroscopy.	2	17/12/19Y& 17/12/19		TLM1	CO5	T1&T2	

182.	**Tutorial-2**	1	19/12/19		TLM3	CO5	T1&T2	
183.	Quiz questions	2	20/12/19& 21/12/19		TLM1	CO5		
184.	Assignment	1	24/12/19		TLM1	CO5	T1&T2	
No. of classes required to complete UNIT-IV : 14					No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
1.	Batteries in present day technology	3	26/12/19, 26/12/19		TLM1	CO1	T1 & T2	
2.	Applications of nano materials and liquid crystals	4	27/12/19 28/12/19 31/12/19 31/12/19		TLM5	CO3	Nptel biomedical nanotechnology	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAM OUTCOMES

Engineering Graduates will be able to:

37. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
38. **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.
39. **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.
40. **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.
41. **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.
42. **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.
43. **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.
44. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
45. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
46. **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.
47. **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.
48. **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 .T.V.Nagalakshmi	Dr V Parvathi	Dr V Parvathi	Dr. A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF FRESHMAN ENGINEERING DEPARTMENT
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech.I-Sem., CSE-B

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Engineering Chemistry (17FE15)

L-T-P STRUCTURE : 4-0-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : Dr.V Parvathi

COURSE COORDINATOR: Dr.V Parvathi

Pre-requisites : Knowledge of galvanic cell, working principle of battery, concept of polymerization, qualitative and quantitative analysis.

Course Educational Objective (CEOs) :

In this course, the students will learn the concepts and applications of chemistry in engineering. It aims at strengthening the students with fundamental concepts of chemistry. It makes the students to effectively use the knowledge of electrochemistry, battery technology, and corrosion science in engineering applications.

It makes the students to identify the interdisciplinary nature of nanotechnology and use of polymers. It enables the students to identify the significance of photochemical reactions and applications of liquid crystals in various fields. It also provides the basic the knowledge of spectroscopic and analytical techniques.

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

- CO1: Analyze different types of electrodes and batteries for technological applications.
- CO2: Apply principles of corrosion for design and effective maintenance of various equipments.
- CO3: Identify the importance of engineering materials like nano materials, plastics and rubbers.
- CO4: Analyze various photo chemical processes & applications of liquid crystals.
- CO5: Identify the importance of analytical and spectroscopic techniques in chemical analysis.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE15	CO1	3	3	3				2					2			
	CO2	3	2	3			2	1					2			

	CO3	2	2				2	1					2			
	CO4	3	3					1					2			
	CO5	2	3										1			
1 = Slight (Low)		**2 = Moderate (Medium)**											**3-Substantial(High)**			

BOS APPROVED TEXT BOOKS:

T1	Shikha Agarwal, "A Text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
T2	Jain, Jain, "A textbook of Engineering Chemistry", Dhanpat Rai Publicating Company, New Delhi, 16th Edition, 2015.

BOS APPROVED REFERENCE BOOKS:

R1	Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.
R2	S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S.Chand Publications, New Delhi, 12th Edition, 2010.
R3	Y. Bharathi Kumari and Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I:

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
149.	Concept of electrode potential, SRP & SOP, EMF	2	26/8/19& 27/8/19		TLM1	CO1	T1&T2	
150.	S.H.E and its drawbacks, Calomel electrode	2	28/8/19 & 29/8/19		TLM1	CO1	T1&T2	
151.	**Tutorial-1**	1	30/8/19		TLM3	CO1	T1&T2	
152.	Measurement of electrode potential, Electrochemical series & applications	2	03/9/19& 04/9/19		TLM1	CO1	T1&T2	
153.	Nernst equation Derivation	2	05/9/19		TLM1	CO1	T1&T2	
154.	Problems on Nernst equation	1	06/9/19		TLM	CO1	T1,T2 & R1	
155.	Primary, secondary &reserve	2	09/9/19		TLM1	CO1	T1,T2 & R1	

	batteries							
156.	Dry battery (leclanche cell), Nickel- Cadmium battery	1	11/9/19		TLM1	CO1	T1,T2 & R1	
157.	Magnesium – Copper reserve battery & Hydrogen – oxygen Fuel cell	1	12/9/19		TLM1	CO1	T1,T2 & R1	
158.	**Tutorial-2**	1	13/9/19		TLM3	CO1	T1,T2 & R1	
159.	Quiz	1	16/9/19		TLM3	CO1		
160.	Assignment	1	17/9/19		Test	CO1		
161.	Revision	3	18/9/19		TLM1	CO1	T1,T2 & R1	
No. of classes required to complete UNIT-I : 16					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
162.	Corrosion definition examples, definition of dry corrosion, Oxidative corrosion	2	19/9/19		TLM1	CO2	T1&T2	
163.	Corrosion by other gases, liquid metal corrosion, pilling Bed Worth rule	1	20/9/19		TLM1	CO2	T1&T2	
164.	Wet corrosion-mechanism	1	23/9/19		TLM1	CO2	T1&T2	
165.	Galvanic corrosion, Concentration cell corrosion	1	24/9/19		TLM1	CO2	T1&T2	
166.	**Tutorial-1**	1	25/9/19		TLM3	CO2	T1&T2	
167.	Passivity, Exceptions in E.C series, Galvanic series	1	26/09/19		TLM1	CO2	T1&T2	
168.	Nature of metal	1	27/09/19		TLM1	CO2	T1&T2	
169.	Nature of environment	1	30/09/19		TLM1	CO2	T1&T2	
170.	**Tutorial-2**	1	01/10/19		TLM3	CO2	T1&T2	
171.	Cathodic protection	1	03/10/19		TLM1	CO2		

172.	Electroplating	1	04/10/19		TLM1	CO2	T1,T2&R2	
173.	Metal cladding	1	14/10/19		TLM1	CO2	T1&T2	
174.	Quiz questions	1	15/10/19		TLM1	CO2		
175.	Assignment	1	16/10/19		TLM1	CO2	T1&T2	
176.	Revision	2	17/10/19 & 18/10/19		TLM1	CO2		
No. of classes required to complete UNIT-II : 16					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
177.	Introduction,definition of nano material, properties of nano materials.	1	28/10/19		TLM2	CO3	T1,T2 &R2	
178.	Preparation of nano materials (sol gel method)Method	1	29/10/19		TLM2	CO3	T1,T2 &R2	
179.	Applications of nano materials	1	30/10/19		TLM2	CO3	T1,T2 &R2	
180.	**Tutorial 1**	1	31/10/19		TLM3	CO3	T1,T2 &R2	
181.	Basic terminology of polymers	1	01/11/19		TLM1	CO3	T1,T2 & R3	
182.	Classification of polymers & Types of polymerisation	1	04/11/19		TLM1	CO3	T1,T2 & R3	
183.	Preparation , properties & applications of Bakelite, PMMA	1	05/11/19		TLM1	CO3	T1,T2 & R3	
184.	Conducting polymers	1	06/11/19		TLM1	CO3	T1,T2 & R3	
185.	FRPs and processing of natural rubber, vulcanization, advantages	1	07/11/19		TLM1	CO3	T1,T2 & R3	
186.	Preparation , properties & applications of Thiokol and BUNA-S	1	08/11/19		TLM1	CO3	T1,T2 & R3	
187.	**Tutorial-2**	1	11/11/19		TLM3	CO3	T1,T2 & R3	

188.	Quiz questions	1	12/11/19		Test	CO3		
189.	Assignment	1	13/11/19		Test	CO3	T1,T2 & R3	
No. of classes required to complete UNIT-III : 13					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
190.	Definition, differences between thermal and photo chemical reactions	1	14/11/19		TLM1	CO4	T1, T2 & R1	
191.	Grothers-Droper law, Stark-Einstein law and Quantum efficiency(Definition only).	1	15/11/19		TLM1	CO4	T1, T2 & R1	
192.	Fluorescence, phosphorescence – applications	1	19/11/19		TLM1	CO4	T1, T2 & R1	
193.	chemiluminiscence, bio-luminescence and Photo-sensitization.	1	20/11/19		TLM1	CO4	T1&T2	
194.	**Tutorial-1**	1	21/11/19		TLM3	CO4	T1&T2	
195.	Definition, Identification and structural aspects of molecules to form liquid crystals	1	22/11/19		TLM1	CO4	T1&T2	
196.	Thermo tropic liquid crystals and types	1	25/11/19		TLM1	CO4	T1&T2	
197.	lyotropic liquid crystals and applications.	1	26/11/19		TLM1	CO4	T1&T2	
198.	**Tutorial-II**	1	27/11/19		TLM3	CO4	T1&T2	
199.	Quiz questions	1	28/11/19		Test	CO4		
200.	Assignment	1	29/11/19		Test	CO4		
No. of classes required to complete UNIT-IV : 12					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly

201.	Types of analysis, Analysis of physical characteristics, Gravimetric and volumetric analysis Analysis of physical characteristics.	1	02/12/19		TLM1	CO5	T1&T2	
202.	Electro analytical techniques – Introduction	1	03/12/19		TLM1	CO5	T1&T2	
203.	Strong acid - strong base and strong acid - weak base, weak acid -strong base and weak acid -weak base – advatages.	2	04/12/19 &05/12/19		TLM1	CO5	T1&T2	
204.	Acid-base and oxidation-reduction titrations-advantages	1	06/12/19		TLM1	CO5	T1&T2	
205.	**Tutorial-1**	1	09/12/19		TLM3	CO4	T1&T2	
206.	Principle and determination of Iron by using thiocynate as a reagent.	1	10/12/19		TLM1	CO5	T1&T2	
207.	Origin of electronic spectra, Types of spectra-emission and absorption spectra and Beer-Lambert's law	1	11/12/19 & 12/12/19		TLM1	CO5	T1&T2	
208.	Types of vibrations, factors influencing vibrational frequencies.	1	13/12/19 & 16/12/19		TLM1	CO5	T1&T2	
209.	Applications of IR-Spectroscopy.applications of IR-Spectroscopy.	1	17/12/19		TLM1	CO5	T1&T2	
210.	Types of electronic transitions, probability	1	18/12/19		TLM1	CO5	T1&T2	
211.	Chomophores, Auxochromes and applications of UV-Spectroscopy.	1	19/12/19		TLM1	CO5	T1&T2	
212.	**Tutorial-2**	1	20/12/19		TLM3	CO5	T1&T2	
213.	Quiz questions	1	23/12/19		TLM1	CO5		
214.	Assignment	1	24/12/19		TLM1	CO5	T1&T2	
No. of classes required to complete UNIT-IV : 14					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
3.	Batteries in present day technology		26/12/19 & 27/12/19		TLM1	CO1	T1 & T2	
4.	Applications of nano materials and liquid crystals				TLM5	CO3	Nptel biomedical nanotechnology	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAM OUTCOMES

Engineering Graduates will be able to:

49. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
50. **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.

51. **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.
52. **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.
53. **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.
54. **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.
55. **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.
56. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
57. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
58. **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.
59. **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.
60. **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 V Parvathi	Dr V Parvathi	Dr V Parvathi	Dr. A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech.I-Sem., CSE-C Section

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Engineering Chemistry (17FE15)

L-T-P STRUCTURE : 4-0-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : Mr.K. Jamili Reddy

COURSE COORDINATOR: Dr.V Parvathi

Pre-requisites : Knowledge of galvanic cell, working principle of battery, concept of polymerization, qualitative and quantitative analysis.

Course Educational Objective (CEOs) :

In this course, the students will learn the concepts and applications of chemistry in engineering. It aims at strengthening the students with fundamental concepts of chemistry. It makes the students to effectively use the knowledge of electrochemistry, battery technology, and corrosion science in engineering applications.

It makes the students to identify the interdisciplinary nature of nanotechnology and use of polymers. It enables the students to identify the significance of photochemical reactions and applications of liquid crystals in various fields. It also provides the basic the knowledge of spectroscopic and analytical techniques.

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

- CO1: Analyze different types of electrodes and batteries for technological applications.
- CO2: Apply principles of corrosion for design and effective maintenance of various equipments.
- CO3: Identify the importance of engineering materials like nano materials, plastics and rubbers.
- CO4: Analyze various photo chemical processes & applications of liquid crystals.
- CO5: Identify the importance of analytical and spectroscopic techniques in chemical analysis.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes											PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE15	CO1	3	3	3				2					2			
	CO2	3	2	3			2	1					2			
	CO3	2	2				2	1					2			
	CO4	3	3					1					2			
	CO5	2	3										1			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

BOS APPROVED TEXT BOOKS:

T1	Shikha Agarwal, "A Text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.
T2	Jain, Jain, "A textbook of Engineering Chemistry", Dhanpat Rai Publicating Company, New Delhi, 16th Edition, 2015.

BOS APPROVED REFERENCE BOOKS:

R1	Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.
R2	S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S.Chand Publications, New Delhi, 12th Edition, 2010.
R3	Y. Bharathi Kumari and Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I:

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
72.	Concept of electrode potential, SRP & SOP, EMF	2	26/8/19 & 28/8/19		TLM1	CO1	T1&T2	
73.	S.H.E and its drawbacks, Calomel electrode	2	29/8/19 & 30/8/19		TLM1	CO1	T1&T2	
74.	**Tutorial-1**	1	31/8/19		TLM3	CO1	T1&T2	
75.	Measurement of electrode potential, Electrochemical series &	2	04/9/19& 05/9/19		TLM1	CO1	T1&T2	

	applications							
76.	Nernst equation Derivation	2	06/9/19& 07/9/19		TLM1	CO1	T1&T2	
77.	Problems on Nernst equation	1	09/9/19		TLM	CO1	T1,T2 & R1	
78.	Primary, secondary &reserve batteries	2	11/9/19& 12/9/19		TLM1	CO1	T1,T2 & R1	
79.	Dry battery (leclanche cell), Nickel- Cadmium battery	1	13/9/19		TLM1	CO1	T1,T2 & R1	
80.	Magnesium – Copper reserve battery & Hydrogen – oxygen Fuel cell	1	16/9/19		TLM1	CO1	T1,T2 & R1	
81.	**Tutorial-2**	1	18/9/19		TLM1	CO1	T1,T2 & R1	
82.	Quiz	1	19/9/19		TLM3	CO1		
83.	Assignment	1	20/9/19		Test	CO1		
84.	Revision	2	21/9/19& 23/9/19		Test	CO1	T1,T2 & R1	
No. of classes required to complete UNIT-I : 19					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
85.	Corrosion definition examples, definition of dry corrosion, Oxidative corrosion	2	25/9/19& 26/9/19		TLM1	CO2	T1&T2	
86.	Corrosion by other gases, liquid metal corrosion, pilling Bed Worth rule	1	27/9/19		TLM1	CO2	T1&T2	
87.	Wet corrosion-mechanism	1	28/9/19		TLM1	CO2	T1&T2	
88.	Galvanic corrosion, Concentration cell corrosion	1	30/9/19		TLM1	CO2	T1&T2	
89.	**Tutorial-1**	1	03/10/19		TLM3	CO2	T1&T2	
90.	Passivity, Exceptions in E.C series, Galvanic	1	04/10/19		TLM1	CO2	T1&T2	

	series							
91.	Nature of metal, Nature of environment	1	05/10/19		TLM1	CO2	T1&T2	
92.	**Tutorial-2**	1	14/10/19		TLM1	CO2	T1&T2	
93.	Cathodic protection	1	16/10/19		TLM3	CO2	T1&T2	
94.	Electroplating& Metal cladding	1	17/10/19		TLM1	CO2		
95.	Quiz questions	1	18/10/19		TLM1	CO2	T1,T2&R2	
96.	Assignment	1	19/10/19		TLM1	CO2	T1&T2	
No. of classes required to complete UNIT-II : 13					No. of classes taken:			

UNIT-III :

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
97.	Introduction,definition of nano material, properties of nano materials.	1	28/10/19		TLM2	CO3	T1,T2 &R2	
98.	Preparation of nano materials (sol gel method)Method	1	30/10/19		TLM2	CO3	T1,T2 &R2	
99.	Applications of nano materials	1	31/10/19		TLM2	CO3	T1,T2 &R2	
100.	**Tutorial 1**	1	01/11/19		TLM3	CO3	T1,T2 &R2	
101.	Basic terminology of polymers	1	02/11/19		TLM1	CO3	T1,T2 & R3	
102.	Classification of polymers & Types of polymerisation	1	04/11/19		TLM1	CO3	T1,T2 & R3	
103.	Preparation , properties & applications of Bakelite, PMMA	1	06/11/19		TLM1	CO3	T1,T2 & R3	
104.	Conducting polymers	1	07/11/19		TLM1	CO3	T1,T2 & R3	
105.	FRPs and processing of natural rubber, vulcanization, advantages	1	08/11/19		TLM1	CO3	T1,T2 & R3	
106.	Preparation , properties & applications of Thiokol and	1	11/11/19		TLM1	CO3	T1,T2	

	BUNA-S						& R3	
107.	**Tutorial-2**	1	13/11/19		TLM3	CO3	T1,T2 & R3	
108.	Quiz questions	1	14/11/19		Test	CO3		
109.	Assignment	1	15/11/19		Test	CO3	T1,T2 & R3	
No. of classes required to complete UNIT-III : 13					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
110.	Definition, differences between thermal and photo chemical reactions	1	16/11/19		TLM1	CO4	T1, T2 & R1	
111.	Grothers-Droper law, Stark-Einstein law and Quantum efficiency(Definition only).	1	18/11/19		TLM1	CO4	T1, T2 & R1	
112.	Fluorescence, phosphorescence – applications	1	20/11/19		TLM1	CO4	T1, T2 & R1	
113.	chemiluminiscence, bio-luminescence and Photo-sensitization.	1	21/11/19		TLM1	CO4	T1&T2	
114.	**Tutorial-1**	1	22/11/19		TLM3	CO4	T1&T2	
115.	Definition, Identification and structural aspects of molecules to form liquid crystals	1	23/11/19		TLM1	CO4	T1&T2	
116.	Thermo tropic liquid crystals and types	1	25/11/19		TLM1	CO4	T1&T2	
117.	lyotropic liquid crystals and applications.	1	27/11/19		TLM1	CO4	T1&T2	
118.	**Tutorial-II**	1	28/11/19		TLM3	CO4	T1&T2	
119.	Quiz questions	1	29/11/19		Test	CO4		
120.	Assignment	1	30/11/19		Test	CO4		
No. of classes required to complete UNIT-IV : 11					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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Types of analysis, Analysis of physical characteristics, Gravimetric and volumetric analysis Analysis of physical characteristics.	1	02/12/19		TLM1	CO5	T1&T2	
2.	Electro analytical techniques – Introduction	1	04/12/19		TLM1	CO5	T1&T2	
3.	Strong acid - strong base and strong acid - weak base, weak acid -strong base and weak acid -weak base – advatages.	2	05/12/19& 06/12/19		TLM1	CO5	T1&T2	
4.	Acid-base and oxidation-reduction titrations-advantages	1	07/12/19		TLM1	CO5	T1&T2	
5.	**Tutorial-1**	1	09/12/19		TLM3	CO4	T1&T2	
6.	Principle and determination of Iron by using thiocynate as a reagent.	1	11/12/19		TLM1	CO5	T1&T2	
7.	Origin of electronic spectra, Types of spectra-emission and absorption spectra and Beer-Lambert's law	1	12/12/19		TLM1	CO5	T1&T2	
8.	Types of vibrations, factors influencing vibrational frequencies.	2	13/12/19& 16/12/19		TLM1	CO5	T1&T2	
9.	Applications of IR-Spectroscopy.applications of IR-Spectroscopy.	1	18/12/19		TLM1	CO5	T1&T2	
10.	Types of electronic transitions, probability	1	19/12/19		TLM1	CO5	T1&T2	
11.	Chomophores, Auxochromes and applications of UV-Spectroscopy.	1	20/12/19		TLM1	CO5	T1&T2	
12.	**Tutorial-2**	1	21/12/19		TLM3	CO5	T1&T2	
13.	Quiz questions	1	23/12/19		TLM1	CO5		
14.	Assignment	1	26/12/19		TLM1	CO5	T1&T2	

No. of classes required to complete UNIT-V : 16	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
5.	Batteries in present day technology	1	27/12/19		TLM1	CO1	T1 & T2	
6.	Applications of nano materials and liquid crystals	1	28/12/19		TLM5	CO3	Nptel biomedical nanotechnology	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAM OUTCOMES

Engineering Graduates will be able to:

61. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
62. **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.
63. **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.
64. **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.
65. **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.
66. **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.
67. **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.
68. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
69. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
70. **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.
71. **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.
72. **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.

Mr. K.Jamili Reddy	Dr V Parvathi	Dr V Parvathi	Dr. A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech., I-Sem., A/S CSE

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Computer Programming - 17CI01

L-T-P STRUCTURE : 2-2-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. A. Sree Rama Chandra Murthy

COURSE COORDINATOR : Mr.A. Sree Rama Chandra Murthy

COURSE OBJECTIVE:

In this course student will learn about the basic elements of C programming like data types, expressions, control statements, various I/O functions and to solve simple mathematical problems using control structures. The derived data types like arrays, strings, various operations on them. Modular programming using functions and Memory management using pointers. User defined structures and various operations on it. The basics of files and its I/O operations.

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

CO1: Identify basic elements of C programming structures like data types, expressions, control statements, various simple functions and in view of using them in problem solving.
CO2: Apply various operations on derived data types like arrays and strings in problem solving.
CO3: Design and Implement of modular Programming and memory management using pointers.
CO4: Implement user defined data structures used in specific applications.
CO5: Compare different file I/O operations on text and binary files.

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

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

BOS APPROVED TEXT BOOKS:

T1 Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers, 7th Edition, 2013

BOS APPROVED REFERENCE BOOKS:

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R4 PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011

R5 E Balagurusamy, Computer Programming, McGraw Hill Education, 1st Edition

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : Introduction to Problem solving through C-Programming, C-Programming Basics

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.	Fundamentals of Computers	1	26-08-2019		**TLM2**	CO1		
2.	Problem Solving through C-Programming (Problem Specification)	1	27-08-2019		**TLM4**	CO1		
3.	Algorithm/pseudo code, Flow charts with Examples	1	28-08-2019		**TLM4**	CO1		
4.	Introduction to c language - Structure of C Program	1	29-08-2019		**TLM1**	CO1		
5.	Identifiers, basic data types, Variables and Constants	1	30-08-2019		**TLM1**	CO1		
6.	Input-Output statements	1	03-09-2019		**TLM1**	CO1		
7.	A Simple C Program	1	04-09-2019		**TLM1**	CO1		
8.	Operators and Expressions	1	05-09-2019 06-09-2019		**TLM1**	CO1		
9.	Expression Evaluation	1	09-09-2019		**TLM1**	CO1		
10.	Type Conversions - Examples	1	11-09-2019		**TLM1**	CO1		
11.	Tutorial	1	12-09-2019		**TLM3**	CO1		
12.	Conditional Statements: If, If-Else	1	13-09-2019		**TLM1**	CO1		
13.	Conditional Statements: Else-If Ladder, Nestled If	1	16-09-2019		**TLM1**	CO1		
14.	Conditional Statements: Switch statements, Break, Goto	1	17-09-2019		**TLM1**	CO1		
15.	Loops: While statement	1	18-09-2019		**TLM1**	CO1		
16.	Loops: Do-While statement	1	19-09-2019		**TLM1**	CO1		
17.	Loops: For statement, Continue	1	20-09-2019		**TLM1**	CO1		

18.	Tutorial	1	23-09-2019		**TLM3**	CO1		
No. of classes required to complete UNIT-I		18			No. of classes taken:			

UNIT-II : Array and Strings

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
19.	One-Dimensional Array: Declaration, Initialization, Assignment	1	24-09-2019		**TLM2**	CO2		
20.	One-Dimensional Array: Accessing Elements	2	25-09-2019, 26-09-2019,		**TLM1**	CO2		
21.	Two- dimensional arrays, Accessing elements	2	27-09-2019, 30-09-2019		**TLM1**	CO2		
22.	Multi-dimensional arrays, applications of arrays.	1	01-10-2019		**TLM1**	CO2		
23.	Tutorial	1	03-10-2019		**TLM3**	CO2		
24.	Strings: Declaration, Initialization, Accessing	2	04-10-2019, 14-10-2019		**TLM1**	CO2		
25.	String Handling Functions	3	15-10-2019, 16-10-2019, 17-10-2019		**TLM1**	CO2		
26.	Tutorial	1	18-10-2019		**TLM3**	CO2		
No. of classes required to complete UNIT-II		13			No. of classes taken:			

UNIT-III : Functions and Pointers

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.	Pointers: Declaration and initialization of pointer variables	1	28-10-2019		**TLM2**	CO3		
28.	Pointer Expressions, Address Arithmetic	1	29-10-2019		**TLM1**	CO3		
29.	Pointers and Arrays	1	01-11-2019		**TLM1**	CO3		
30.	Pointer and Strings	1	04-11-2019		**TLM1**	CO3		
31.	Pointer to Pointer, Pre-Processor Directives and Macros	1	05-11-2019		**TLM1**	CO3		
32.	Tutorial	1	06-11-2019		**TLM3**	CO3		
33.	Functions: Basics, categories of Functions	1	07-11-2019		**TLM2**	CO3		
34.	Parameter Passing Techniques	1	08-11-2019		**TLM1**	CO3		
35.	Arrays as Parameters, Strings as Parameters and Pointers as Parameters	1	11-11-2019		**TLM1**	CO3		
36.	Recursive Functions - Comparison with Iteration	1	12-11-2019		**TLM1**	CO3		
37.	Storage Classes	1	13-11-2019		**TLM1**	CO3		
38.	Dynamic Memory Management Functions	1	14-11-2019		**TLM1**	CO3		

39.	Command Line Arguments	1	15-11-2019		**TLM1**	CO3		
40.	Tutorial	1	18-11-2019		**TLM3**	CO3		
No. of classes required to complete UNIT-III		14			No. of classes taken:			

UNIT-IV : Derived Types

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
41.	Structures	2	19-11-2019, 20-11-2019		**TLM2**	CO4		
42.	Arrays of Structures	1	21-11-2019		**TLM1**	CO4		
43.	Structures and Functions	2	22-11-2019, 25-11-2019		**TLM1**	CO4		
44.	Pointers to structures	1	26-11-2019		**TLM1**	CO4		
45.	Self-referential structures	1	27-11-2019		**TLM1**	CO4		
46.	Unions	2	28-11-2019, 29-11-2019		**TLM1**	CO4		
47.	Typedef, Enum	1	02-12-2019		**TLM1**	CO4		
48.	Tutorial	1	03-12-2019		**TLM3**	CO4		
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V : Files

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.	File Concept, text files, reading & writing	2	04-12-2019, 05-12-2019		**TLM2**	CO5		
50.	binary files, modes of operation	1	06-12-2019		**TLM1**	CO5		
51.	Standard I/O operations	1	09-12-2019		**TLM1**	CO5		
52.	Formatted I/O operations	1	10-12-2019		**TLM1**	CO5		
53.	File I/O operations	1	11-12-2019		**TLM1**	CO5		
54.	Error handling functions	1	12-12-2019		**TLM2**	CO5		
55.	Programs on file creation	2	13-12-2019, 16-12-2019		**TLM1**	CO5		
56.	Programs on file accessing	2	17-12-2019, 18-12-2019		**TLM1**	CO5		
57.	Programs on file reading and writing data	2	19-12-2019, 20-12-2019		**TLM1**	CO5		
58.	Programs on file handling functions	3	23-12-2019, 24-12-2019, 26-12-2019		**TLM1**	CO5		
59.	Tutorial	1	27-12-2019		**TLM3**	CO5		
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
60.	Implementing Searching Techniques				**TLM4**			
61.	Implementing Sorting Techniques				**TLM4**			

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 and Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	26-08-2019	05-10-20019	6
VIJAYA DASAMI Holidays	07-10-2019	12-10-2019	1
I Phase of Instructions-II	14-10-2019	19-10-2019	1
I Mid Examinations	21-10-2019	26-10-2019	1
II Phase of Instructions	28-10-2019	28-12-2019	9
II Mid Examinations	30-12-2019	04-01-2019	1
Preparation and Practicals	06-01-2020	18-01-2020	2
Semester End Examinations	20-01-2020	31-01-2020	2

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. T Udaya Kumar	Mrs. K. Naga Prasanthi	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana
Signature				

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

COURSE HANDOUT

PROGRAM : B.Tech., I-Sem., B/S CSE

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Computer Programming - 17CI01

L-T-P STRUCTURE : 2-2-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. A. Sree Rama Chandra Murthy

COURSE COORDINATOR : Mr.A. Sree Rama Chandra Murthy

COURSE OBJECTIVE:

In this course student will learn about the basic elements of C programming like data types, expressions, control statements, various I/O functions and to solve simple mathematical problems using control structures. The derived data types like arrays, strings, various operations on them. Modular programming using functions and Memory management using pointers. User defined structures and various operations on it. The basics of files and its I/O operations.

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CO1: Identify basic elements of C programming structures like data types, expressions, control statements, various simple functions and in view of using them in problem solving.
CO2: Apply various operations on derived data types like arrays and strings in problem solving.
CO3: Design and Implement of modular Programming and memory management using pointers.
CO4: Implement user defined data structures used in specific applications.
CO5: Compare different file I/O operations on text and binary files.

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

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

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R5 E Balagurusamy, Computer Programming, McGraw Hill Education, 1st Edition

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : Introduction to Problem solving through C-Programming, C-Programming Basics

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.	Fundamentals of Computers	1	26-08-2019		**TLM2**	CO1		
2.	Problem Solving through C-Programming (Problem Specification)	1	27-08-2019		**TLM4**	CO1		
3.	Algorithm/pseudo code, Flow charts with Examples	1	29-08-2019		**TLM4**	CO1		
4.	Introduction to c language - Structure of C Program	1	30-08-2019		**TLM1**	CO1		
5.	Identifiers, basic data types, Variables and Constants	1	31-08-2019		**TLM1**	CO1		
6.	Input-Output statements	1	03-09-2019		**TLM1**	CO1		
7.	A Simple C Program	1	05-09-2019		**TLM1**	CO1		
8.	Operators and Expressions	1	06-09-2019 07-09-2019		**TLM1**	CO1		
9.	Expression Evaluation	1	09-09-2019		**TLM1**	CO1		
10.	Type Conversions - Examples	1	12-09-2019		**TLM1**	CO1		
11.	Tutorial	1	13-09-2019		**TLM3**	CO1		
12.	Conditional Statements: If, If-Else	1	14-09-2019		**TLM1**	CO1		
13.	Conditional Statements: Else-If Ladder, Nestled If	1	16-09-2019		**TLM1**	CO1		
14.	Conditional Statements: Switch statements, Break, Goto	1	17-09-2019		**TLM1**	CO1		
15.	Loops: While statement	1	19-09-2019		**TLM1**	CO1		
16.	Loops: Do-While statement	1	20-09-2019		**TLM1**	CO1		
17.	Loops: For statement, Continue	1	21-09-2019		**TLM1**	CO1		
18.	Tutorial	1	23-09-2019		**TLM3**	CO1		
No. of classes required to complete UNIT-I		18			No. of classes taken:			

UNIT-II : Array and Strings

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
19.	One-Dimensional Array: Declaration, Initialization, Assignment	1	24-09-2019		**TLM2**	CO2		
20.	One-Dimensional Array: Accessing Elements	2	26-09-2019, 27-09-2019,		**TLM1**	CO2		
21.	Two- dimensional arrays, Accessing elements	2	28-09-2019, 30-09-2019		**TLM1**	CO2		
22.	Multi-dimensional arrays, applications of arrays.	1	01-10-2019		**TLM1**	CO2		
23.	Tutorial	1	03-10-2019		**TLM3**	CO2		
24.	Strings: Declaration, Initialization, Accessing	2	04-10-2019, 05-10-2019		**TLM1**	CO2		
25.	String Handling Functions	3	14-10-2019, 15-10-2019, 17-10-2019		**TLM1**	CO2		
26.	Tutorial	1	18-10-2019		**TLM3**	CO2		
No. of classes required to complete UNIT-II		13			No. of classes taken:			

UNIT-III : Functions and Pointers

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.	Pointers: Declaration and initialization of pointer variables	1	28-10-2019		**TLM2**	CO3		
28.	Pointer Expressions, Address Arithmetic	1	29-10-2019		**TLM1**	CO3		
29.	Pointers and Arrays	1	31-10-2019		**TLM1**	CO3		
30.	Pointer and Strings	1	01-11-2019		**TLM1**	CO3		
31.	Pointer to Pointer, Pre-Processor Directives and Macros	1	02-11-2019		**TLM1**	CO3		
32.	Tutorial	1	04-11-2019		**TLM3**	CO3		
33.	Functions: Basics, categories of Functions	1	05-11-2019		**TLM2**	CO3		
34.	Parameter Passing Techniques	1	07-11-2019		**TLM1**	CO3		
35.	Arrays as Parameters, Strings as Parameters and Pointers as Parameters	1	08-11-2019		**TLM1**	CO3		
36.	Recursive Functions - Comparison with Iteration	1	09-11-2019		**TLM1**	CO3		
37.	Storage Classes	1	11-11-2019		**TLM1**	CO3		
38.	Dynamic Memory Management Functions	1	12-11-2019		**TLM1**	CO3		
39.	Command Line Arguments	1	14-11-2019		**TLM1**	CO3		
40.	Tutorial	1	15-11-2019		**TLM3**	CO3		
No. of classes required to complete UNIT-III		14			No. of classes taken:			

UNIT-IV : Derived Types

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
41.	Structures	2	16-11-2019, 18-11-2019		**TLM2**	CO4		
42.	Arrays of Structures	1	19-11-2019		**TLM1**	CO4		
43.	Structures and Functions	2	21-11-2019, 22-11-2019		**TLM1**	CO4		
44.	Pointers to structures	1	23-11-2019		**TLM1**	CO4		
45.	Self-referential structures	1	25-11-2019		**TLM1**	CO4		
46.	Unions	2	26-11-2019, 28-11-2019		**TLM1**	CO4		
47.	Typedef, Enum	1	29-11-2019		**TLM1**	CO4		
48.	Tutorial	1	30-11-2019		**TLM3**	CO4		
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V : Files

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.	File Concept, text files, reading & writing	2	02-12-2019, 03-12-2019		**TLM2**	CO5		
50.	binary files, modes of operation	1	05-12-2019		**TLM1**	CO5		
51.	Standard I/O operations	1	06-12-2019		**TLM1**	CO5		
52.	Formatted I/O operations	1	07-12-2019		**TLM1**	CO5		
53.	File I/O operations	1	09-12-2019		**TLM1**	CO5		
54.	Error handling functions	2	10-12-2019, 12-12-2019		**TLM2**	CO5		
55.	Programs on file creation	2	13-12-2019, 14-12-2019		**TLM1**	CO5		
56.	Programs on file accessing	2	16-12-2019, 17-12-2019		**TLM1**	CO5		
57.	Programs on file reading and writing data	2	19-12-2019, 20-12-2019		**TLM1**	CO5		
58.	Programs on file handling functions	4	21-12-2019, 23-12-2019, 24-12-2019, 26-12-2019		**TLM1**	CO5		
59.	Tutorial	1	27-12-2019		**TLM3**	CO5		
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
60.	Implementing Searching Techniques				**TLM4**			
61.	Implementing Sorting Techniques				**TLM4**			

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 and Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	26-08-2019	05-10-20019	6
VIJAYA DASAMI Holidays	07-10-2019	12-10-2019	1
I Phase of Instructions-II	14-10-2019	19-10-2019	1
I Mid Examinations	21-10-2019	26-10-2019	1
II Phase of Instructions	28-10-2019	28-12-2019	9
II Mid Examinations	30-12-2019	04-01-2019	1
Preparation and Practicals	06-01-2020	18-01-2020	2
Semester End Examinations	20-01-2020	31-01-2020	2

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. A.S.R.C.MURTHY	Mr.A.S.R.C.MURTHY	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech., I-Sem., C/S CSE

ACADEMIC YEAR : 2019-19

COURSE NAME & CODE : Computer Programming - 17CI01

L-T-P STRUCTURE : 2-2-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. T Udaya Kumar

COURSE COORDINATOR : Mr. A S R C Murthy

COURSE OBJECTIVE :

In this course student will learn about the basic elements of C programming like data types, expressions, control statements, various I/O functions and to solve simple mathematical problems using control structures. The derived data types like arrays, strings, various operations on them. Modular programming using functions and Memory management using pointers. User defined structures and various operations on it. The basics of files and its I/O operations.

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

CO1: Identify basic elements of C programming structures like data types, expressions, control statements, various simple functions and in view of using them in problem solving.

CO2: Apply various operations on derived data types like arrays and strings in problem solving.

CO3: Design and Implement of modular Programming and memory management using pointers.

CO4: Implement user defined data structures used in specific applications.

CO5: Compare different file I/O operations on text and binary files.

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

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

BOS APPROVED TEXT BOOKS:

T1 Jeri R.Hanly, Elliot B.Koffman, Problem Solving and Program Design in C, Pearson Publishers, 7th Edition, 2013

BOS APPROVED REFERENCE BOOKS:

R1 ReemaThareja, Programming in C, Oxford University Press, 2nd Edition, 2015

R2 N.B.Venkateswarlu and E.V.Prasad, C and Data Structures, S.Chand Publishing, 1st Edition, 2010.

R3 Stephen G.Kochan, Programming in C, Pearson Education, 3rd Edition, 2005

R4 PradeepDey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011

R5 E Balagurusamy, Computer Programming, McGraw Hill Education, 1st Edition

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : Introduction to Problem solving through C-Programming, C-Programming Basics

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.	Fundamentals of Computers	1	26-08-2019		**TLM2**	CO1		
2.	Problem Solving through C-Programming (Problem Specification)	1	28-08-2019		**TLM4**	CO1		
3.	Algorithm/pseudo code, Flow charts with Examples	1	29-08-2019		**TLM4**	CO1		
4.	Introduction to c language - Structure of C Program	1	30-08-2019		**TLM2**	CO1		
5.	Identifiers, basic data types, Variables and Constants	1	31-08-2019		**TLM2**	CO1		
6.	Input-Output statements	1	04-09-2019		**TLM1**	CO1		
7.	Operators and Expressions	1	05-09-2019		**TLM1**	CO1		
8.	Expression Evaluation	1	06-09-2019		**TLM1**	CO1		
9.	Type Conversions - Examples	1	07-09-2019		**TLM1**	CO1		
10.	Conditional Statements: If, If-Else	1	09-09-2019		**TLM1/ TLM2**	CO1		
11.	Else-If Ladder, Nestled If	1	11-09-2019		**TLM1/ TLM2**	CO1		
12.	Tutorial-1	1	12-09-2019		**TLM3**	CO1		
13.	Conditional Statements: Switch statements, Break, Goto	1	13-09-2019		**TLM1/ TLM2**	CO1		
14.	Loops: While statement	1	16-09-2019		**TLM1/ TLM2**	CO1		
15.	Loops: Do-While statement	1	18-09-2019		**TLM1/ TLM2**	CO1		
16.	Tutorial-2	1	19-09-2019		**TLM3**	CO1		
17.	Loops: For statement, Continue	1	20-09-2019		**TLM1/ TLM2**	CO1		
No. of classes required to complete UNIT-I		17			No. of classes taken:			

UNIT-II : Array and Strings

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
18.	One-Dimensional Array: Declaration, Initialization, Assignment	1	21-09-2019		**TLM1/ TLM2**	CO2		
19.	One Dimentional Array: Input and Output Values of Array	1	23-09-2019		**TLM1/ TLM2**	CO2		
20.	One-Dimensional Array: Accessing Elements	1	25-09-2019		**TLM1/ TLM2**	CO2		
21.	Tutorial-3	1	26-09-2019		**TLM3**	CO2		
22.	One Dimentional Array: Example Programs	1	27-09-2019		**TLM1/ TLM2**	CO2		
23. .	Two-Dimensional Array: Declaration, Initialization, Assignment	1	28-09-2019		**TLM1/ TLM2**	CO2		
24.	Two- dimensional arrays, Accessing elements	1	30-09-2019		**TLM1/ TLM2**	CO2		
25.	Tutorial-4	1	03-10-2019		**TLM3**	CO2		
26.	Multi-dimensional arrays, applications of arrays.	1	04-10-2019		**TLM1/ TLM2**	CO2		
27.	Tutorial-5	1	10-10-2019		**TLM3**	CO2		
28.	Strings: Declaration, Initialization and Assignment	1	11-10-2019		**TLM1/ TLM2**	CO2		
29.	Strings: Accessing Stings	1	14-10-2019		**TLM1/ TLM2**	CO2		
30.	String Handling Functions: Part1	1	16-10-2019		**TLM1/ TLM2**	CO2		
31.	Tutorial-6	1	17-10-2019		**TLM3**	CO2		
32.	String Handling Functions: Part2	1	18-10-2019		**TLM1/ TLM2**	CO2		
33.	String Handling Functions: Part3	1	19-10-2019		**TLM1/ TLM2**	CO2		
No. of classes required to complete UNIT-II		16			No. of classes taken:			

UNIT-III : Functions and Pointers

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
34.	Pointers: Declaration and initialization of pointer variables	1	28-10-2019		**TLM1/ TLM2**	CO3		
35.	Pointer Expressions, Address Arithmetic	1	30-10-2019		**TLM1/ TLM2**	CO3		
36.	**Tutorial-7**	1	31-10-2019		**TLM3**	CO3		
37.	Pointers and Arrays	1	01-11-2019		**TLM1/ TLM2**			
38.	Pointer and Strings	1	02-11-2019		**TLM1/ TLM2**	CO3		
39.	Pointer to Pointer, Pre-Processor Directives and Macros	1	04-11-2019		**TLM1/ TLM2**	CO3		
40.	Functions: Basics, categories of Functions	1	06-11-2019		**TLM1/ TLM2**	CO3		
41.	**Totorial-8**	1	07-11-2019		**TLM3**	CO3		
42.	Parameter Passing Techniques	1	08-11-2019		**TLM1/ TLM2**	CO3		
43.	Arrays as Parameters, Strings as Parameters and Pointers as Parameters	1	11-11-2019		**TLM1/ TLM2**	CO3		
44.	Recursive Functions - Comparison with Iteration	1	13-11-2019		**TLM1/ TLM2**	CO3		
45.	Storage Classes	1	14-11-2019		**TLM1/ TLM2**			
46.	Dynamic Memory Management Functions	1	15-11-2019		**TLM1/ TLM2**	CO3		
47.	Command Line Arguments	1	16-11-2019		**TLM1/ TLM2**	CO3		
No. of classes required to complete UNIT-III		14			No. of classes taken:			

UNIT-IV : Derived Types

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
48.	Structures	1	18-11-2019		**TLM1/ TLM2**	CO4		
49.	Arrays of Structures	1	20-11-2019		**TLM1/ TLM2**			
50.	Tutorial-9	1	21-11-2019		**TLM3**	CO4		
51.	Structures and Functions	1	22-11-2019		**TLM1/ TLM2**	CO4		
52.	Pointers to structures	1	23-11-2019		**TLM1/ TLM2**	CO4		
53.	Pointers to structures	1	25-11-2019		**TLM1/ TLM2**	CO4		
54.	Self-referential structures	1	27-11-2019		**TLM1/ TLM2**	CO4		
55.	Tutorial-10	1	28-11-2019		**TLM3**	CO4		
56.	Unions	1	29-11-2019		**TLM1/ TLM2**	CO4		
57.	Typedef, Enum	1	30-11-2019		**TLM1/ TLM2**	CO4		
No. of classes required to complete UNIT-IV		09			No. of classes taken:			

UNIT-V : Files

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
58.	File Concept, text files, reading & writing	1	02-12-2019		**TLM1/ TLM2**	CO5		
59.	binary files, modes of operation	1	04-12-2019		**TLM1/ TLM2**	CO5		
60.	Standard I/O operations	1	05-12-2019		**TLM1/ TLM2**	CO5		
61.	Tutorial-11	1	06-12-2019		**TLM3**	CO5		
62.	Formatted I/O operations	1	07-12-2019		**TLM1/ TLM2**	CO5		
63.	File I/O operations	1	09-12-2019		**TLM1/ TLM2**	CO5		
64.	Error handling functions	1	11-12-2019		**TLM1/ TLM2**	CO5		
65.	Programs on file creation	1	12-12-2019		**TLM1/ TLM2**	CO5		
66.	Tutorial-12	1	13-12-2019		**TLM3**	CO5		
67.	Programs on file accessing	1	16-12-2019		**TLM1/ TLM2**	CO5		
68.	Programs on file reading and writing data	1	18-12-2019		**TLM1/ TLM2**	CO5		
69.	Programs on file handling functions	1	19-12-2019		**TLM3**	CO5		
70.	Tutorial-13	1	19-12-2019		**TLM3**	CO5		
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
71.	Implementing Searching Techniques	1	20-12-2019		**TLM4**			
72.	Implementing Sorting Techniques	1	21-12-2019		**TLM4**			

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 and Quiz	**TLM9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	26-08-2019	19-10-2019	8
I Mid Examinations	21-10-2019	26-10-2019	1
II Phase of Instructions	28-10-2019	28-12-2019	9
II Mid Examinations	30-12-2019	04-01-2020	1
Preparation and Practical	06-01-2020	18-01-2020	2
Semester End Examinations	20-01-2020	01-02-2020	2

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	Mr. T Udaya Kumar	Mr. A S R C Murthy	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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NAAC Accredited , Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech. I-Sem., CSE,A-SEC

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Electronic Devices and Circuits – 17EC02

L-T-P STRUCTURE : 2-2-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. P.Rakesh Kumar, Sr Assistant Professor

COURSE COORDINATOR :Dr G. Srinivasulu, Professor

Pre-requisites: Fundamentals of Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides the knowledge on basic electronic devices like Diodes, Transistors and FETs operation. The course also gives the idea about design of biasing techniques required for transistors and rectifiers using diodes.

COURSE OUTCOMES (CO)

CO1 : Identify the transport phenomena of charge carriers in semiconductors.

CO2 : Understand the operation of Diode, Bipolar Junction Transistors and Field Effect Transistors.

CO3 : Analyze the operation and characteristics of Bipolar Junction Transistors and Field Effect Transistors.

CO4 : Create Rectifier, filter, Regulator and Amplifier circuits to meet the needs of real time electronic circuit applications.

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	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
CO2	1	1	-	-	-	-	-	-	-	-	-	1	-	1	-
CO3	2	3	-	-	-	-	-	-	-	-	-	2	-	2	-
CO4	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-

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

BOS APPROVED TEXT BOOKS:

1 Jacob Millman, Christos C Halkias, “Electronic Devices and Circuits”, Tata McGraw Hill, Publishers, New Delhi.

BOS APPROVED REFERENCE BOOKS:

1 R.L. Boylestad and Louis Nashelsky, Electronic Devices and Circuits, Pearson/Prentice Hall Publishers.

2 Thomas L.Floyd, Electronic Devices, Pearson Education Publishers.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): CSE,A Sec

UNIT-I: Semiconductor Physics

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
121.	Introduction to Subject, Course Outcomes, Introduction to UNIT-I	1	27-08-19		TLM1	CO1	T1,R1	
122.	Energy band theory of crystals, Insulators, Conductors and Semiconductors	1	28-08-19		TLM1	CO1	T1,R1	
123.	Mobility and Conductivity, Energy distribution of electrons	1	29-08-19		TLM1	CO1	T1,R1	
124.	**TUTORIAL-1**	1	31-08-19		TLM3,4	CO1	T1,R1	
125.	Electrons and Holes in an Intrinsic Semiconductors	1	03-09-19		TLM1	CO1	T1,R1	
126.	Donor and Acceptor Impurities	1	04-09-19		TLM1	CO1	T1,R1	
127.	Mass Action Law, Charge densities in semiconductor	1	05-09-19		TLM1	CO1	T1,R1	
128.	**TUTORIAL-2**	1	07-09-19		TLM3,4	CO1	T1,R1	
129.	Fermi level in intrinsic semiconductor	1	11-09-19		TLM1	CO1	T1,R1	
130.	Fermi level in extrinsic semiconductor	1	12-09-19		TLM1	CO1	T1,R1	
131.	Drift and Diffusion currents, Carrier Life time	1	14-09-19		TLM1	CO1	T1,R1	
132.	Continuity Equation, Hall Effect	1	17-09-19		TLM1	CO1	T1,R1	
133.	**TUTORIAL-3**	1	18-09-19		TLM3,4	CO1	T1,R1	
134.	Assignment/Quiz	1	19-09-19		TLM6	CO1	T1,R1	
No. of classes required to complete UNIT-I		**13**			**No. of classes taken:**			

UNIT-II: Semiconductor Diode Characteristics and Special Diodes

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
135.	Qualitative theory of PN Junction,PN junction as a Diode	1	21-09-19		TLM1	CO2	T1,R1	
136.	Band Structure of an open circuited PN junction, Current components in a PN Diode	1	24-09-19		TLM1	CO2	T1,R1	
137.	PN Junction diode operation, Qualitative theory of diode currents, Diode current equation	1	25-09-19		TLM3,4	CO2	T1,R1	
138.	Volt Ampere Characteristics of Diode,	1	26-09-19		TLM1	CO2	T1,R1	

	Temperature dependence of Diode, Diode Resistance							
139.	**TUTORIAL-4**	1	28-09-19		TLM3,4	CO2	T1,R1	
140.	Transition Capacitance, Diffusion Capacitance	1	03-10-19		TLM1	CO2	T1,R1	
141.	Zener Diode, Tunnel Diode	1	04-10-19		TLM1	CO2	T1,R1	
142.	Varactor Diode, Photo Diode, Avalanche Photo Diode	1	05-10-19		TLM2	CO2	T1,R1	
143.	**TUTORIAL-5**	1	14-10-19		TLM3,4	CO2	T1,R1	
144.	LASER,LED, PIN Diode	1	17-10-19		TLM2	CO2	T1,R1	
145.	Liquid crystal display, Solar Cell	1	18-10-19		TLM2	CO2	T1,R1	
146.	**TUTORIAL-6**	1	19-10-19		TLM3,4	CO2	T1,R1	
147.	Assignment/Quiz	1	19-10-19		TLM 6	CO2	T1,R1	
No. of classes required to complete UNIT-II		**13**			**No. of classes taken:**			

UNIT-III: Rectifiers, Filters and Regulators

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
148.	Half wave rectifier operation and characteristics	1	29-10-19		TLM1	CO4	T1,R1	
149.	Full wave rectifier with center tap transformer and its characteristics	1	30-10-19		TLM1	CO4	T1,R1	
150.	Full Wave Rectifier with Bridge circuit and its characteristics	1	31-10-19		TLM1	CO4	T1,R1	
151.	Comparison of rectifiers, Harmonic components in a rectifier circuits.	1	02-11-19		TLM1	CO4	T1,R1	
152.	**TUTORIAL-7**	1	05-11-19		TLM3,4	CO4	T1,R1	
153.	Inductor Filter, Capacitor Filter	1	06-11-19		TLM 1	CO4	T1,R1	
154.	L-Section Filter, π-Section Filter, Multiple L-Section and Pi-Section Filters	1	07-11-19		TLM1	CO4	T1,R1	
155.	Voltage Regulation using Zener diode,Design of a Zener regulator (Series & Shunt)	1	09-11-19		TLM1	CO4	T1,R1	
156.	**TUTORIAL-8**	1	12-11-19		TLM3,4	CO4	T1,R1	
157.	Assignment/Quiz	1	13-11-19		TLM6	CO4	T1,R1	

No. of classes required to complete UNIT-III	11			No. of classes taken:

UNIT-IV: Bipolar Junction Transistors and Field Effect Transistors, Optical and power Electronic devices

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
158.	Introduction to Three terminal Devices, PNP and NPN Transistors	1	14-11-19		TLM1	CO2	T1,R1	
159.	Transistor Current components-Emitter Efficiency, Transport Factor, Large Signal Current Gain	1	16-11-19		TLM1	CO2	T1,R1	
160.	Input and output characteristics in CE, CB and CC	1	19-11-19		TLM1	CO2	T1,R1	
161.	Relation between α,β andγ, Ebers-Moll Model	1	20-11-19		TLM1	CO2	T1,R1	
162.	**TUTORIAL-9**	1	21-11-19		TLM3,4	CO2	T1,R1	
163.	JFET Construction, Operation, Classification, Drain and Transfer Characteristics of JFET and comparison	1	23-11-19		TLM1	CO3	T1,R1	
164.	Comparison between FET and BJT	1	26-11-19			CO3		
165.	MOSFET Characteristics-Enhancement, Depletion Mode	1	27-11-19		TLM1	CO2, CO3	T1,R1	
166.	Photo Transistor, Silicon Controlled Rectifier, Uni-junction Transistor	1	28-11-19		TLM1	CO2	T1,R1	
167.	**TUTORIAL-10**	1	30-11-19		TLM3,4	CO3	T1,R1	
168.	Assignment/Quiz	1	03-12-19		TLM6	CO2, CO3	T1,R1	
No. of classes required to complete UNIT-IV		**11**			**No. of classes taken:**			

UNIT-V: BJT Biasing and FET Biasing

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
169.	Transistor Biasing and Stability- DC load line, Operating Point, AC load line	1	04-12-19		TLM1	CO2, CO3	T1,R1	
170.	Thermal stability, Stability factors S,S' and S",calculation of stability factors for Fixed Bias	1	05-12-19		TLM1	CO2, CO3	T1,R1	

171.	Self Bias, Collector to Base Bias	1	07-12-19		TLM1	CO2, CO3	T1,R1	
172.	**TUTORIAL-11**	1	10-12-19		TLM3,4	CO3	T1,R1	
173.	Thermal Concepts- Thermal Runaway, Thermal Resistance,	1	11-12-19		TLM1	CO2, CO3	T1,R1	
174.	Thermal Stability, Condition to avoid Thermal Runaway	1	12-12-19		TLM1	CO2, CO3	T1,R1	
175.	Bias Compensation Techniques- Diode Compensation for VBE,	1	14-12-19		TLM1	CO2, CO3	T1,R1	
176.	Diode Compensation for I_{C0}, Thermistor and Sensistor compensation	1	17-12-19		TLM1	CO2, CO3	T1,R1	
177.	**TUTORIAL-12**	1	18-12-19		TLM3,4	CO3,	T1,R1	
178.	Different FET biasing methods (fixed, Self Bias	1	19-12-19		TLM1	CO2, CO3	T1,R1	
179.	Voltage divider Bias)	1	21-12-19		TLM6	CO2, CO3	T1,R1	
180.	Assignment/Quiz	1	24-12-19		TLM6	CO3	T1,R1	
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
181.	Diode applications	1	26-12-19		TLM1			
182.	Transistor act as amplifier	1	28-12-19		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

Part – C

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment – 1	1	A1=5
Assignment – 2	2	A2=5
Quiz – 1	1,2	B1=10
I-Mid Examination	1,2	C1=20
Assignment – 3	3	A3=5
Assignment – 4	4	A4=5
Assignment – 5	5	A5=5
Quiz – 2	3,4,5	B2=10
II-Mid Examination	3,4,5	C2=20
Evaluation of Assignment Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Quiz Marks: B= (B1+B2)/2	1,2,3,4,5	B=10

Evaluation of Mid Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=20
Attendance: D		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**A+B+C+D=40**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D=E	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.

PEO2: To Function professionally in the rapidly changing world with advances in technology

PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.

PEO4: To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner?

PROGRAMME OUTCOMES (POs):

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

PSO2: 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

PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Mr.P.Rakesh Kumar	Dr.G.Srinivasulu	Dr.G.Srinivasulu	Dr.Y.Amar Babu
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited , Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.**

COURSE HANDOUT

Part-A

PROGRAM : B.Tech. I-Sem., CSE,B-SEC

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Electronic Devices and Circuits – 17EC02

L-T-P STRUCTURE : 2-2-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. P.Rakesh Kumar, Sr Assistant Professor

COURSE COORDINATOR :Dr G. Srinivasulu, Professor

Pre-requisites: Fundamentals of Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides the knowledge on basic electronic devices like Diodes, Transistors and FETs operation. The course also gives the idea about design of biasing techniques required for transistors and rectifiers using diodes.

COURSE OUTCOMES (CO)

CO1 : Identify the transport phenomena of charge carriers in semiconductors.

CO2 : Understand the operation of Diode, Bipolar Junction Transistors and Field Effect Transistors.

CO3 : Analyze the operation and characteristics of Bipolar Junction Transistors and Field Effect Transistors.

CO4 : Create Rectifier, filter, Regulator and Amplifier circuits to meet the needs of real time electronic circuit applications.

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	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
CO2	1	1	-	-	-	-	-	-	-	-	-	1	-	1	-
CO3	2	3	-	-	-	-	-	-	-	-	-	2	-	2	-
CO4	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-

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

BOS APPROVED TEXT BOOKS:

2 Jacob Millman, Christos C Halkias, “Electronic Devices and Circuits”, Tata McGraw Hill, Publishers, New Delhi.

BOS APPROVED REFERENCE BOOKS:

1 R.L. Boylestad and Louis Nashelsky, Electronic Devices and Circuits, Pearson/Prentice Hall Publishers.

2 Thomas L.Floyd, Electronic Devices, Pearson Education Publishers.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): CSE,B Sec

UNIT-I: Semiconductor Physics

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
183.	Introduction to Subject, Course Outcomes, Introduction to UNIT-I	1	26-08-19		TLM1	CO1	T1,R1	
184.	Energy band theory of crystals, Insulators, Conductors and Semiconductors	1	29-08-19		TLM1	CO1	T1,R1	
185.	Mobility and Conductivity, Energy distribution of electrons	1	30-08-19		TLM1	CO1	T1,R1	
186.	**TUTORIAL-1**	1	31-08-19		TLM3,4	CO1	T1,R1	
187.	Electrons and Holes in an Intrinsic Semiconductors	1	05-09-19		TLM1	CO1	T1,R1	
188.	Donor and Acceptor Impurities	1	06-09-19		TLM1	CO1	T1,R1	
189.	Mass Action Law, Charge densities in semiconductor	1	07-09-19		TLM1	CO1	T1,R1	
190.	**TUTORIAL-2**	1	09-09-19		TLM3,4	CO1	T1,R1	
191.	Fermi level in intrinsic semiconductor	1	12-09-19		TLM1	CO1	T1,R1	
192.	Fermi level in extrinsic semiconductor	1	13-09-19		TLM1	CO1	T1,R1	
193.	Drift and Diffusion currents, Carrier Life time	1	14-09-19		TLM1	CO1	T1,R1	
194.	Continuity Equation, Hall Effect	1	16-09-19		TLM1	CO1	T1,R1	
195.	**TUTORIAL-3**	1	19-09-19		TLM3,4	CO1	T1,R1	
196.	Assignment/Quiz	1	20-09-19		TLM6	CO1	T1,R1	
No. of classes required to complete UNIT-I		**13**			**No. of classes taken:**			

UNIT-II: Semiconductor Diode Characteristics and Special Diodes

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
197.	Qualitative theory of PN Junction,PN junction as a Diode	1	21-09-19		TLM1	CO2	T1,R1	
198.	Band Structure of an open circuited PN junction, Current components in a PN Diode	1	23-09-19		TLM1	CO2	T1,R1	
199.	PN Junction diode operation, Qualitative theory of diode currents, Diode current equation	1	26-09-19		TLM3,4	CO2	T1,R1	
200.	Volt Ampere Characteristics of Diode,	1	27-09-19		TLM1	CO2	T1,R1	

	Temperature dependence of Diode, Diode Resistance							
201.	**TUTORIAL-4**	1	28-09-19		TLM3,4	CO2	T1,R1	
202.	Transition Capacitance, Diffusion Capacitance	1	30-10-19		TLM1	CO2	T1,R1	
203.	Zener Diode, Tunnel Diode	1	03-10-19		TLM1	CO2	T1,R1	
204.	Varactor Diode, Photo Diode, Avalanche Photo Diode	1	04-10-19		TLM2	CO2	T1,R1	
205.	**TUTORIAL-5**	1	05-10-19		TLM3,4	CO2	T1,R1	
206.	LASER,LED, PIN Diode	1	14-10-19		TLM2	CO2	T1,R1	
207.	Liquid crystal display, Solar Cell	1	17-10-19		TLM2	CO2	T1,R1	
208.	**TUTORIAL-6**	1	18-10-19		TLM3,4	CO2	T1,R1	
209.	Assignment/Quiz	1	19-10-19		TLM 6	CO2	T1,R1	
No. of classes required to complete UNIT-II		**13**			**No. of classes taken:**			

UNIT-III: Rectifiers, Filters and Regulators

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
210.	Half wave rectifier operation and characteristics	1	28-10-19		TLM1	CO4	T1,R1	
211.	Full wave rectifier with center tap transformer and its characteristics	1	31-10-19		TLM1	CO4	T1,R1	
212.	Full Wave Rectifier with Bridge circuit and its characteristics	1	01-11-19		TLM1	CO4	T1,R1	
213.	Comparison of rectifiers, Harmonic components in a rectifier circuits.	1	02-11-19		TLM1	CO4	T1,R1	
214.	**TUTORIAL-7**	1	04-11-19		TLM3,4	CO4	T1,R1	
215.	Inductor Filter, Capacitor Filter	1	07-11-19		TLM 1	CO4	T1,R1	
216.	L-Section Filter, π-Section Filter, Multiple L-Section and Pi-Section Filters	1	08-11-19		TLM1	CO4	T1,R1	
217.	Voltage Regulation using Zener diode,Design of a Zener regulator (Series & Shunt)	1	09-11-19		TLM1	CO4	T1,R1	
218.	**TUTORIAL-8**	1	11-11-19		TLM3,4	CO4	T1,R1	
219.	Assignment/Quiz	1	14-11-19		TLM6	CO4	T1,R1	

No. of classes required to complete UNIT-III	11			No. of classes taken:

UNIT-IV: Bipolar Junction Transistors and Field Effect Transistors, Optical and power Electronic devices

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
220.	Introduction to Three terminal Devices, PNP and NPN Transistors	1	15-11-19		TLM1	CO2	T1,R1	
221.	Transistor Current components-Emitter Efficiency, Transport Factor, Large Signal Current Gain	1	16-11-19		TLM1	CO2	T1,R1	
222.	Input and output characteristics in CE, CB and CC	1	18-11-19		TLM1	CO2	T1,R1	
223.	Relation between α,β andγ, Ebers-Moll Model	1	21-11-19		TLM1	CO2	T1,R1	
224.	**TUTORIAL-9**	1	22-11-19		TLM3,4	CO2	T1,R1	
225.	JFET Construction, Operation, Classification, Drain and Transfer Characteristics of JFET and comparison	1	23-11-19		TLM1	CO3	T1,R1	
226.	Comparison between FET and BJT	1	25-11-19			CO3		
227.	MOSFET Characteristics-Enhancement, Depletion Mode	1	28-11-19		TLM1	CO2, CO3	T1,R1	
228.	Photo Transistor, Silicon Controlled Rectifier, Uni-junction Transistor	1	29-11-19		TLM1	CO2	T1,R1	
229.	**TUTORIAL-10**	1	02-12-19		TLM3,4	CO3	T1,R1	
230.	Assignment/Quiz	1	05-12-19		TLM6	CO2, CO3	T1,R1	
No. of classes required to complete UNIT-IV		**11**			**No. of classes taken:**			

UNIT-V: BJT Biasing and FET Biasing

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
231.	Transistor Biasing and Stability- DC load line, Operating Point, AC load line	1	06-12-19		TLM1	CO2, CO3	T1,R1	
232.	Thermal stability, Stability factors S,S' and S",calculation of stability factors for Fixed Bias	1	07-12-19		TLM1	CO2, CO3	T1,R1	
233.	Self Bias, Collector to Base Bias	1	09-12-19		TLM1	CO2,	T1,R1	

						CO3		
234.	**TUTORIAL-11**	1	12-12-19		TLM3,4	CO3	T1,R1	
235.	Thermal Concepts- Thermal Runaway, Thermal Resistance,	1	13-12-19		TLM1	CO2, CO3	T1,R1	
236.	Thermal Stability, Condition to avoid Thermal Runaway	1	14-12-19		TLM1	CO2, CO3	T1,R1	
237.	Bias Compensation Techniques- Diode Compensation for VBE,	1	16-12-19		TLM1	CO2, CO3	T1,R1	
238.	Diode Compensation for I_{C0}, Thermistor and Sensistor compensation	1	19-12-19		TLM1	CO2, CO3	T1,R1	
239.	**TUTORIAL-12**	1	20-12-19		TLM3,4	CO3,	T1,R1	
240.	Different FET biasing methods (fixed, Self Bias	1	21-12-19		TLM1	CO2, CO3	T1,R1	
241.	Voltage divider Bias)	1	23-12-19		TLM6	CO2, CO3	T1,R1	
242.	Assignment/Quiz	1	26-12-19		TLM6	CO3	T1,R1	
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
243.	Diode applications	1	27-12-19		TLM1			
244.	Transistor act as amplifier	1	28-12-19		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

Part – C

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment – 1	1	A1=5
Assignment – 2	2	A2=5
Quiz – 1	1,2	B1=10
I-Mid Examination	1,2	C1=20
Assignment – 3	3	A3=5
Assignment – 4	4	A4=5
Assignment – 5	5	A5=5
Quiz – 2	3,4,5	B2=10
II-Mid Examination	3,4,5	C2=20
Evaluation of Assignment Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Quiz Marks: B= (B1+B2)/2	1,2,3,4,5	B=10
Evaluation of Mid Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=20
Attendance: D		D=5

Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**A+B+C+D=40**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D=E	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.

PEO2: To Function professionally in the rapidly changing world with advances in technology

PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.

PEO4: To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner?

PROGRAMME OUTCOMES (POs):

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, andenvironmental considerations.

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PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

PSO2: 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

PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Mr.P.Rakesh Kumar	Dr.G.Srinivasulu	Dr.G.Srinivasulu	Dr.Y.Amar Babu
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, Accredited by NAAC & NBA, Certified by ISO 9001:2015)

L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech. I-Sem., CSE-C

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Electronic Devices and Circuits – 17EC02

L-T-P STRUCTURE : 2-2-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr.Ch.Siva Rama Krishna, Assistant Professor,

COURSE COORDINATOR : Dr.G.Srinivasulu, Professor

Pre-requisites: Fundamentals of Physics

COURSE EDUCATIONAL OBJECTIVES (CEOs): This course provides the knowledge on basic electronic devices like Diodes, Transistors and FETs operation. The course also gives the idea about design of biasing techniques required for transistors and rectifiers using diodes.

COURSE OUTCOMES (CO)

CO1 : Identify the transport phenomena of charge carriers in semiconductors.

CO2 : Understand the operation of Diode, Bipolar Junction Transistors and Field Effect Transistors.

CO3 : Analyze the operation and characteristics of Bipolar Junction Transistors and Field Effect Transistors.

CO4 : Create Rectifier, filter, Regulator and Amplifier circuits to meet the needs of real time electronic circuit applications.

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	1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
CO2	1	1	-	-	-	-	-	-	-	-	-	1	-	1	-
CO3	2	3	-	-	-	-	-	-	-	-	-	2	-	2	-
CO4	2	3	3	-	-	-	-	-	-	-	-	2	-	3	-

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

BOS APPROVED TEXT BOOKS:

3 Jacob Millman, Christos C Halkias, "Electronic Devices and Circuits", Tata McGraw Hill, Publishers, New Delhi.

BOS APPROVED REFERENCE BOOKS:

1 R.L. Boylestad and Louis Nashelsky, Electronic Devices and Circuits, Pearson/Prentice Hall Publishers.

2 Thomas L.Floyd, Electronic Devices, Pearson Education Publishers.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): CSE-C

UNIT-I: Semiconductor Physics

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
245.	Introduction to Subject, Course Outcomes, Introduction to UNIT-I	1	27-08-19		TLM1	CO1	T1,R1	
246.	Energy band theory of crystals, Insulators, Conductors and Semiconductors	1	28-08-19		TLM1	CO1	T1,R1	
247.	Mobility and Conductivity, Energy distribution of electrons	1	30-08-19		TLM1	CO1	T1,R1	
248.	**TUTORIAL-1**	1	31-08-19		TLM3,4	CO1	T1,R1	
249.	Electrons and Holes in an Intrinsic Semiconductors	1	03-09-19		TLM1	CO1	T1,R1	
250.	Donor and Acceptor Impurities	1	04-09-19		TLM1	CO1	T1,R1	
251.	Mass Action Law, Charge densities in semiconductor	1	06-09-19		TLM1	CO1	T1,R1	
252.	**TUTORIAL-2**		07-09-19		TLM3,4	CO1	T1,R1	
253.	Fermi level in intrinsic, extrinsic semiconductor	1	11-09-19		TLM4	CO1	T1,R1	
254.	Drift and Diffusion currents, Carrier Life time	1	13-09-19		TLM1	CO1	T1,R1	
255.	Continuity Equation, Hall Effect	1	17-09-19		TLM1	CO1	T1,R1	
256.	**TUTORIAL-3**	1	18-09-19		TLM3,4	CO1	T1,R1	
257.	Assignment/Quiz	1	20-09-19		TLM6	CO1	T1,R1	
No. of classes required to complete UNIT-I		**13**			**No. of classes taken:**			

UNIT-II: Semiconductor Diode Characteristics and Special Diodes

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
258.	Qualitative theory of PN Junction,PN junction as a Diode		21-09-19		TLM1	CO2	T1,R1	
259.	Band Structure of an open circuited PN junction, Current components in a PN Diode	1	24-09-19		TLM1	CO2	T1,R1	
260.	PN Junction diode operation, Qualitative theory of diode currents, Diode current equation	1	25-09-19		TLM1	CO2	T1,R1	
261.	**TUTORIAL- 4**	1	27-09-19		TLM3,4	CO2	T1,R1	
262.	V-I Characteristics of Diode, Temperature dependence of Diode, Diode Resistance	1	28-08-09		TLM3	CO2	T1,R1	

263.	Transition Capacitance, Diffusion Capacitance	1	01-10-19		TLM1	CO2	T1,R1	
264.	Zener Diode, Tunnel Diode	1	04-10-19		TLM1	CO2	T1,R1	
265.	**TUTORIAL-5**	1	05-10-19		TLM3,4	CO2	T1,R1	
266.	Varactor Diode, Photo Diode, Avalanche Photo Diode	1	15-10-19		TLM1	CO2	T1,R1	
267.	LASER,LED, PIN Diode Liquid crystal display, Solar Cell	1	16-10-19		TLM1	CO2	T1,R1	
268.	**TUTORIAL-6**	1	18-10-19		TLM3,4	CO2	T1,R1	
269.	Assignment/Quiz	1	19-10-19		TLM6	CO2	T1,R1	
No. of classes required to complete UNIT-II		**12**			**No. of classes taken:**			

UNIT-III: Rectifiers, Filters and Regulators

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
270.	Half wave rectifier operation and characteristics	1	29-10-19		TLM1	CO4	T1,R1	
271.	Full wave rectifier with center tap transformer and its characteristics	1	30-10-19		TLM1	CO4	T1,R1	
272.	Full Wave Rectifier with Bridge circuit and its characteristics	1	01-11-19		TLM1	CO4	T1,R1	
273.	Comparison of rectifiers, Harmonic components in a rectifier circuits.	1	02-11-19		TLM1	CO4	T1,R1	
274.	**TUTORIAL-7**	1	05-11-19		TLM3,4	CO4	T1,R1	
275.	Inductor Filter, Capacitor Filter	1	06-11-19		TLM 1	CO4	T1,R1	
276.	L-Section Filter, π-Section Filter, Multiple L-Section and Pi-Section Filters	1	08-11-19		TLM1	CO4	T1,R1	
277.	Voltage Regulation using Zener diode.	1	12-11-19		TLM1	CO4	T1,R1	
278.	Design of a Zener regulator (Series & Shunt)		13-11-19		TLM1	CO4	T1,R1	
279.	**TUTORIAL-8**	1	15-11-19		TLM3,4	CO4	T1,R1	
280.	Assignment/Quiz	1	16-11-19		TLM6	CO4	T1,R1	
No. of classes required to complete UNIT-III		**11**			**No. of classes taken:**			

UNIT-IV: Bipolar Junction Transistors and Field Effect Transistors, Optical and power Electronic devices

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
281.	Introduction to Three terminal Devices, PNP and NPN Transistors	1	19-11-19		TLM1	CO2	T1,R1	
282.	Transistor Current components-Emitter Efficiency, Transport Factor, Large Signal Current Gain	1	20-11-19		TLM1	CO2	T1,R1	
283.	Input and output characteristics in CE, CB and CC, Relation between α,β andγ	1	22-11-19		TLM1	CO2	T1,R1	
284.	**TUTORIAL-9**	1	23-11-19		TLM3,4	CO2	T1,R1	
285.	Ebers-Moll Model, JFET Construction, Operation, Classification	1	26-11-19		TLM1	CO2	T1,R1	
286.	Drain and Transfer Characteristics of JFET and Comparison between FET and BJT	1	27-11-19		TLM1	CO3	T1,R1	
287.	**TUTORIAL-10**	1	29-11-19		TLM3,4	CO3	T1,R1	
288.	MOSFET Characteristics	1	30-11-19		TLM1	CO2,CO3	T1,R1	
289.	Photo Transistor, Silicon Controlled Rectifier, Uni-junction Transistor	1	03-12-19		TLM1	CO2	T1,R1	
290.	**TUTORIAL-11**	1	04-12-19		TLM3,4	CO3	T1,R1	
291.	Assignment/Quiz	1	06-12-19		TLM6	CO2,CO3	T1,R1	
No. of classes required to complete UNIT-IV		**11**			**No. of classes taken:**			

UNIT-V: BJT Biasing and FET Biasing

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
292.	Transistor Biasing and Stability- DC load line, Operating Point, AC load line	1	07-12-19		TLM1	CO2,CO3	T1,R1	
293.	Thermal stability, Stability factors S,S' and S",calculation of stability factors for Fixed Bias	1	10-12-19		TLM1	CO2,CO3	T1,R1	
294.	Self Bias, Collector to Base Bias	1	11-12-19		TLM1	CO2,CO3	T1,R1	
295.	**TUTORIAL-12**	1	13-12-19		TLM3,4	CO3	T1,R1	
296.	Thermal Runaway, Thermal Resistance,	1	17-12-19		TLM1	CO2, CO3	T1,R1	

	Thermal Stability, Condition to avoid Thermal Runaway							
297.	Bias Compensation Techniques- Diode Compensation for VBE, I_{C0}, Thermistor and Sensistor compensation	1	18-12-19		TLM1	CO2,CO3	T1,R1	
298.	**TUTORIAL-13**	1	20-12-19		TLM3,4	CO2,CO3	T1,R1	
299.	Different FET biasing methods (fixed, Self & Voltage divider Bias)	1	21-12-19		TLM1	CO2,CO3	T1,R1	
300.	Assignment/Quiz	1	24-12-19		TLM6	CO2,CO3	T1,R1	
No. of classes required to complete UNIT-V		**09**			**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
301.	Diode applications	1	27-12-19		TLM1			
302.	Transistor act as amplifier	1	28-12-19		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

Part – C

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Assignment – 1	1	A1=5
Assignment – 2	2	A2=5
Quiz – 1	1,2	B1=10
I-Mid Examination	1,2	C1=20
Assignment – 3	3	A3=5
Assignment – 4	4	A4=5
Assignment – 5	5	A5=5
Quiz – 2	3,4,5	B2=10
II-Mid Examination	3,4,5	C2=20
Evaluation of Assignment Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Quiz Marks: B= (B1+B2)/2	1,2,3,4,5	B=10
Evaluation of Mid Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=20
Attendance: D		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**A+B+C+D=40**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D=E	**1,2,3,4,5**	**100**

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO1: To Attain a solid foundation in Electronics & Communication Engineering fundamentals with an attitude to pursue continuing education.

PEO2: To Function professionally in the rapidly changing world with advances in technology

PEO3: To Contribute to the needs of the society in solving technical problems using Electronics & Communication Engineering principles, tools and practices.

PEO4: To Exercise leadership qualities, at levels appropriate to their experience, which addresses issues in a responsive, ethical, and innovative manner?

PROGRAMME OUTCOMES (POs):

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO1: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.

PSO2: 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

PSO3: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Date: 24.08.2019

Mr. Ch. Siva Rama Krishna	Dr. G.Srinivasulu	Dr.G.Srinivasulu	Dr.Y.Amar Babu
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

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COURSE HANDOUT

Part-A

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

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Engineering Chemistry Lab - 17FE65

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : Dr.T.V.Nagalakshmi

COURSE COORDINATOR : Dr.V.Parvathi

Pre-Requisites : Knowledge of volumetric titration.

Course Educational Objective: The primary objective of Engineering Chemistry is to make the students analyze water sample for alkalinity. It makes the students to perform and distinguish different types of volumetric titrations. It also provides them with an overview of preparation of polymers and analytical techniques like conductometry, potentiometry and colorimetry.

Course Outcomes : After completion of the course, the students will be able to

CO1: Estimate alkalinity of water and the amount of dissolved salt in a given solution by using the procedure given.

CO2: Distinguish different types of titrations in quantitative analysis and acquire practical knowledge to prepare polymers.

CO3: Improve skills in report writing, individual and team work with ethical values.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE65	CO1	3	3	3	2		3	1					1			
	CO2	2	2	1			1	1					1			
	CO3								2	2	2		1			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
185.	Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc	4	31/8/19 & 07/9/19		TLM4	CO4	
186.	Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality	2	21/9/19		TLM4	CO4	
187.	Preparation of Urea formaldehyde resin. Preparation of Phenol formaldehyde resin.	2	28/9/19		TLM4	CO2, CO4	
188.	Determination of pH of the given sample solution using pH meter	2	05/10/19		TLM4	CO1	
189.	Model experiment - Determination of HCl using standard Na_2CO_3 solution.	2	19/10/19		TLM4	CO2, CO4	
190.	Determination of alkalinity of water sample	2	26/10/19		TLM4	CO2, CO4	
191.	Estimation of $Mg^{+2}/Zn^{+2}/Ca^{+2}$ in given solution by using standard EDTA solution.	2	02/11/19		TLM4	CO2, CO4	
192.	Estimation of Mohr's salt by using potassium permanganate	2	16/11/19		TLM4	CO2, CO4	
193.	Estimation of Mohr's salt by using potassium dichromate.	2	23/11/19		TLM4	CO2, CO4	
194.	Estimation of $KMnO_4$ by using Oxalic acid.	2	30/11/19		TLM4	CO2, CO4	
195.	Estimation of amount of HCl conduct metrically using standard NaOH solution	2	07/12/19		TLM4	CO2, CO4	

196.	Estimation of amount of HCl potentiometrically using NaOH solution	2	21/12/19		TLM4	CO2, CO4	
197.	Additional experiment	2	28/12/19		TLM4	CO2, CO4	
198.	Additional experiment	2	04/01/20		TLM4	CO2, CO4	
Total							

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

Part - C

EVALUATION PROCESS:

According to Academic Regulations of R17 Distribution and Weightage of Marks For Laboratory Courses is as follows.

(a) Continuous Internal Evaluation (CIE):

- ✓ The continuous internal evaluation for laboratory courses (including Computer aided engineering drawing, computer aided engineering graphics, Computer aided machine drawing etc.) is based on the following parameters:

Parameter		**Marks**
Day – to – Day Work	Observation	10 Marks
	Record	10 Marks
Internal Test		10 Marks
Attendance		05 Marks
Viva – Voce During Regular Lab Sessions		05 Marks
Total		**40 Marks**

(b) Semester End Examinations (SEE):

- ✓ The performance of the student in laboratory courses shall be evaluated jointly by internal and external examiners for 3 hours duration as per the parameters indicated below:

Parameter	Marks
Aim. apparatus, chemicals	05
Basic principle	05
Procedure	10
Observations	10
Calculations	10
Precautions	05
Result	05
Viva - Voice	10
Total	60 Marks

% of Attendance	Marks
≥ 95	05 Marks
90 to < 95	04 Marks
85 to < 90	03 Marks
80 to < 85	02 Marks
75 to < 80	01 Mark

Rubrics For Evaluation of Engineering Chemistry Labaratory	
Day-To-Day Lab (Observation) Performance Evaluation (R-17)	**Record Performance Evaluation (R-17)**

S. No	Criteria	Poor	Average	Good	Criteria	Poor	Average	Good
1	Procedure & Viva-Voce **(4 Marks)**	✓ Missing important experimental procedure ✓ Few questions answered **(2 Marks)**	✓ Written the procedure but some data is missing ✓ Could not answer all questions. **(3 Marks)**	✓ Well-written ✓ All experimental details are covered ✓ All questions are answered. **(4 Marks)**	Aim,apparatus,chemicals. principle (4 Marks)	✓ Aim,apparatus, chemicals given are correct. ✓ Information provided in principle is wrong. **(2 Marks)**	✓ Aim,apparatus,chemicals given are correct. ✓ Some information is provided inprinciple. ✓ Important information is missing . **(3 Marks)**	✓ Aim,apparatus,chemicals given are correct. ✓ Complete information is provided for basic principle. **(4 Marks)**
2	Observations & conduction of Experiment **(4 Marks)**	✓ Unable to Perform the titration without assistance ✓ Poor conduction of experiment. **(2 Marks)**	✓ Some observations are not given ✓ Conduction of experiment is not up to the mark of procedure **(3 Marks)**	✓ All observations are given as per theprocedure given. ✓ Conduction of experiment is done as per procedure. **(4 Marks)**	Observations, Calculations and Graphs **(4 Marks)**	✓ None of the observations tabulated are correct ✓ Calculations are not shown ✓ Graphs contain errors or poorly drawn . **(2 Marks)**	✓ Some of the observations tabulated are correct ✓ Some calculations are shown ✓ Graphs are drawn but some important information is missing **(3 Marks)**	✓ All observations are tabulated correctly. ✓ All calculations are shown ✓ All graphs are drawn correctly. **(4 Marks)**
3	Results and Inferences **(2 Ma**	✓ Figures, graphs, tables contain errors and/	✓ Most figures, graphs, tables OK, some still missing some important or	✓ All figures, graphs, tables are correctly drawn and	Grammar& Neatness **(2 Mark)**	✓ Frequent grammar and/or spelling errors, writing style is rough and	---	✓ No grammar/ spelling corrections are found and well-written **(2 Marks)**

	rks)	or poorly drawn and missing titles, captions ✓ Conclusions missing or missing the important points **(0 Marks)**	required features. **(1 Mark)**	contain titles/ captions. ✓ All important conclusions have been clearly made, student shows good understanding of experiment. **(2 Marks)**		immature **(1 Mark)**		

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

73. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
74. **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.
75. **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.
76. **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.
77. **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.
78. **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.
79. **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.
80. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and

norms of the engineering practice.

81. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
82. **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.
83. **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.
84. **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 T.V.Nagalakshmi	Dr V Parvathi	Dr V Parvathi	Dr. A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

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COURSE HANDOUT

Part-A

PROGRAM : B.Tech. I-Sem., CSE –B Section

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Engineering Chemistry Lab - 17FE65

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : Dr.V.Parvathi

COURSE COORDINATOR : Dr.V.Parvathi

Pre-Requisites : Knowledge of volumetric titration.

Course Educational Objective : The primary objective of Engineering Chemistry is to make the students analyze water sample for alkalinity. It makes the students to perform and distinguish different types of volumetric titrations. It also provides them with an overview of preparation of polymers and analytical techniques like conductometry, potentiometry and colorimetry.

Course Outcomes : After completion of the course, the students will be able to

CO1: Estimate alkalinity of water and the amount of dissolved salt in a given solution by using the procedure given.

CO2: Distinguish different types of titrations in quantitative analysis and acquire practical knowledge to prepare polymers.

CO3: Improve skills in report writing, individual and team work with ethical values.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE65	CO1	3	3	3	2		3	1					1			
	CO2	2	2	1			1	1					1			
	CO3								2	2	2		1			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
215.	Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality	2	27-8-19		TLM4	CO4	
216.	Preparation of Urea formaldehyde resin	2	3-9-19				
217.	Preparation of Phenol formaldehyde resin	2	17-9-19		TLM4	CO4	
218.	Model experiment - Determination of HCl using standard Na_2CO_3 solution.	2	24-9-19		TLM4	CO2, CO4	
219.	Determination of alkalinity of water sample	2	1-10-19		TLM4	CO1	
220.	Estimation of $Mg^{+2}/Zn^{+2}/Ca^{+2}$ in given solution by using standard EDTA solution.	2	15-10-19		TLM4	CO2, CO4	
221.	Estimation of Mohr's salt by using potassium permanganate	2	29-10-19		TLM4	CO2, CO4	
222.	Estimation of Mohr's salt by using potassium dichromate.	2	5-11-19		TLM4	CO2, CO4	
223.	Estimation of $KMnO_4$ by using Oxalic acid.	2	12-11-19		TLM4	CO2, CO4	
224.	Determination of pH of the given sample solution using pH meter	2	19-11-19		TLM4	CO2, CO4	
225.	Estimation of amount of HCl conduct metrically using standard NaOH solution	2	26-11-19		TLM4	CO2, CO4	

226.	Estimation of amount of HCl potentiometrically using NaOH solution	2	3-12-19		TLM4	CO2, CO4	
227.	Revision	2	10-12-19		TLM4	CO2, CO4	
228.	Additional experiment	2	17-12-19		TLM4	CO2, CO4	
229.	Additional experiment	2	24-12-19				
Total		30					

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

Part - C

EVALUATION PROCESS:

According to Academic Regulations of R17 Distribution and Weightage of Marks For Laboratory Courses is as follows.

(a) Continuous Internal Evaluation (CIE):

- ✓ The continuous internal evaluation for laboratory courses (including Computer aided engineering drawing, computer aided engineering graphics, Computer aided machine drawing etc.) is based on the following parameters:

Parameter		**Marks**
Day – to – Day Work	Observation	10 Marks
	Record	10 Marks
Internal Test		10 Marks
Attendance		05 Marks
Viva – Voce During Regular Lab Sessions		05 Marks
Total		**40 Marks**

(b) Semester End Examinations (SEE):

- ✓ The performance of the student in laboratory courses shall be evaluated jointly by internal and external examiners for 3 hours duration as per the parameters indicated below:

Parameter	Marks
Aim. apparatus, chemicals	05
Basic principle	05
Procedure	10
Observations	10
Calculations	10
Precautions	05
Result	05
Viva - Voice	10
Total	60 Marks

% of Attendance	Marks
≥ 95	05 Marks
90 to < 95	04 Marks
85 to < 90	03 Marks
80 to < 85	02 Marks
75 to < 80	01 Mark

Rubrics For Evaluation of Engineering Chemistry Labaratory								
Day-To-Day Lab (Observation) Performance Evaluation (R-17)					Record Performance Evaluation (R-17)			
S. No	Criteri	Poor	Average	Good	Criteria	Poor	Average	Good

	a							
1	Procedure & Viva-Voce **(4 Marks)**	✓ Missing important experimental procedure ✓ Few questions answered **(2 Marks)**	✓ Written the procedure but some data is missing ✓ Could not answer all questions. **(3 Marks)**	✓ Well-written ✓ All experimental details are covered ✓ All questions are answered. **(4 Marks)**	Aim,apparatus,chemicals. principle (4 Marks)	✓ Aim,apparatus, chemicals given are correct. ✓ Information provided in principle is wrong. **(2 Marks)**	✓ Aim,apparatus,chemicals given are correct. ✓ Some information is provided inprinciple. ✓ Important information is missing . **(3 Marks)**	✓ Aim,apparatus,chemicals given are correct. ✓ Complete information is provided for basic principle. **(4 Marks)**
2	Observations & conduction of Experiment **(4 Marks)**	✓ Unable to Perform the titration without assistance ✓ Poor conduction of experiment. **(2 Marks)**	✓ Some observations are not given ✓ Conduction of experiment is not up to the mark of procedure **(3 Marks)**	✓ All observations are given as per theprocedure given. ✓ Conduction of experiment is done as per procedure. **(4 Marks)**	Observations, Calculations and Graphs **(4 Marks)**	✓ None of the observations tabulated are correct ✓ Calculations are not shown ✓ Graphs contain errors or poorly drawn . **(2 Marks)**	✓ Some of the observations tabulated are correct ✓ Some calculations are shown ✓ Graphs are drawn but some important information is missing **(3 Marks)**	✓ All observations are tabulated correctly. ✓ All calculations are shown ✓ All graphs are drawn correctly. **(4 Marks)**
3	Results and Inferences **(2 Marks**	✓ Figures, graphs, tables contain errors and/or poorly	✓ Most figures, graphs, tables OK, some still missing some important or required features	✓ All figures, graphs, tables are correctly drawn and contain titles/	Grammar& Neatness **(2 Mark)**	✓ Frequent grammar and/or spelling errors, writing style is rough and immature **(1**	---	✓ No grammar/ spelling corrections are found and well-written **(2 Marks)**

	)	drawn and missing titles, captions ✓ Conclusions missing or missing the important points **(0 Marks)**	. **(1 Mark)**	captions. ✓ All important conclusions have been clearly made, student shows good understanding of experiment. **(2 Marks)**		**Mark)**		

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

85. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
86. **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.
87. **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.
88. **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.
89. **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.
90. **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.
91. **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.
92. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
93. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

94. **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.
95. **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.
96. **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 V Parvathi	Dr V Parvathi	Dr V Parvathi	Dr. A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
FRESHMAN ENGINEERING DEPARTMENT
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech. I-Sem., CSE- –C Section

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : Engineering Chemistry Lab - 17FE65

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr.K.Jamili Reddy

COURSE COORDINATOR : Dr.V.Parvathi

Pre-Requisites : Knowledge of volumetric titration.

Course Educational Objective : The primary objective of Engineering Chemistry is to make the students analyze water sample for alkalinity. It makes the students to perform and distinguish different types of volumetric titrations. It also provides them with an overview of preparation of polymers and analytical techniques like conductometry, potentiometry and colorimetry.

Course Outcomes : After completion of the course, the students will be able to

CO1: Estimate alkalinity of water and the amount of dissolved salt in a given solution by using the procedure given.

CO2: Distinguish different types of titrations in quantitative analysis and acquire practical knowledge to prepare polymers.

CO3: Improve skills in report writing, individual and team work with ethical values.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE65	CO1	3	3	3	2		3	1					1			
	CO2	2	2	1			1	1					1			
	CO3								2	2	2		1			
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

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

Bos Approved Lab Manual

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
303.	Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc	4	26/8/19& 09/9/19		TLM4	CO4	
304.	Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality	2	16/9/19		TLM4	CO4	
305.	Preparation of Urea formaldehyde resin. Preparation of Phenol formaldehyde resin.	2	23/9/19		TLM4	CO2, CO4	
306.	Determination of pH of the given sample solution using pH meter	2	30/09/19		TLM4	CO1	
307.	Model experiment - Determination of HCl using standard Na_2CO_3 solution.	2	14/10/19		TLM4	CO2, CO4	
308.	Determination of alkalinity of water sample	2	28/10/19		TLM4	CO2, CO4	
309.	Estimation of $Mg^{+2}/Zn^{+2}/Ca^{+2}$ in given solution by using standard EDTA solution.	2	04/11/19		TLM4	CO2, CO4	
310.	Estimation of Mohr's salt by using potassium permanganate	2	11/11/19		TLM4	CO2, CO4	
311.	Estimation of Mohr's salt by using potassium dichromate.	2	18/11/19		TLM4	CO2, CO4	
312.	Estimation of $KMnO_4$ by using Oxalic acid.	2	25/11/19		TLM4	CO2, CO4	
313.	Estimation of amount of HCl conduct metrically using standard NaOH solution	2	02/12/19		TLM4	CO2, CO4	

314.	Estimation of amount of HCl potentiometrically using NaOH solution	2	09/12/19		TLM4	CO2, CO4	
315.	Additional experiment	2	16/12/19		TLM4	CO2, CO4	
316.	Additional experiment	2	23/12/19		TLM4	CO2, CO4	
Total		30					

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:

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(a) Continuous Internal Evaluation (CIE):

- ✓ The continuous internal evaluation for laboratory courses (including Computer aided engineering drawing, computer aided engineering graphics, Computer aided machine drawing etc.) is based on the following parameters:

Parameter		**Marks**
Day – to – Day Work	Observation	10 Marks
	Record	10 Marks
Internal Test		10 Marks
Attendance		05 Marks
Viva – Voce During Regular Lab Sessions		05 Marks
Total		**40 Marks**

(b) Semester End Examinations (SEE):

- ✓ The performance of the student in laboratory courses shall be evaluated jointly by internal and external examiners for 3 hours duration as per the parameters indicated below:

Parameter	Marks
Aim. apparatus, chemicals	05
Basic principle	05
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Observations	10
Calculations	10
Precautions	05
Result	05
Viva - Voice	10
Total	60 Marks

% of Attendance	Marks
≥ 95	05 Marks
90 to < 95	04 Marks
85 to < 90	03 Marks
80 to < 85	02 Marks
75 to < 80	01 Mark

Rubrics For Evaluation of Engineering Chemistry Labaratory	
Day-To-Day Lab (Observation)	**Record Performance Evaluation (R-17)**

Performance Evaluation (R-17)								
S. No	**Criteria**	**Poor**	**Average**	**Good**	**Criteria**	**Poor**	**Average**	**Good**
1	Procedure & Viva-Voce **(4 Marks)**	✓ Missing important experimental procedure ✓ Few questions answered **(2 Marks)**	✓ Written the procedure but some data is missing ✓ Could not answer all questions. **(3 Marks)**	✓ Well-written ✓ All experimental details are covered ✓ All questions are answered. **(4 Marks)**	Aim,apparatus,chemicals. principle (4 Marks)	✓ Aim,apparatus, chemicals given are correct. ✓ Information provided in principle is wrong. **(2 Marks)**	✓ Aim,apparatus,chemicals given are correct. ✓ Some information is provided inprinciple. ✓ Important information is missing . **(3 Marks)**	✓ Aim,apparatus,chemicals given are correct. ✓ Complete information is provided for basic principle. **(4 Marks)**
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PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

97. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
98. **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.
99. **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.
100. **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.

101. **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.
102. **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.
103. **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.
104. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
105. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
106. **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.
107. **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.
108. **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.

Mr.K.Jamili Reddy	Dr V Parvathi	Dr V Parvathi	Dr. A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (A)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.**

COURSE HANDOUT

PROGRAM : B.Tech., I-Sem.

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : COMPUTER PROGRAMMING LAB – 17CI60

L-T-P STRUCTURE : 2-0-0

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr. A.S.R.C.MURTHY/ Mr. T.U.KUMAR

COURSE COORDINATOR : Mr.A.S.R.C.MURTHY

MODULE COORDINATOR: Dr. D. Veeraiah

PRE-REQUISITE: NIL

COURSE OBJECTIVE:

In this course, the student will learn about:

Software Development tools like algorithm, pseudo codes and programming structure. Basic elements of C Programming Structures like Data Types, Expressions, Control Statements, Various I/O Functions and how to solve simple mathematical problems using control structures. Design and Implementation of various software components which solve real world problems.

COURSE OUTCOMES (CO):

CO1: Apply and practice logical formulations to solve some simple problems leading to specific applications.

CO2: Demonstrate C programming development environment, compiling, debugging, linking and executing a program using the development environment.

CO3: Design effectively the required programming components that efficiently solve computing problems in real world.

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	2	3	1	-	-	-	-	-	1	1		2	3	1	1
CO2	2	3	1	-	-	-	-	-	1	1		2	3	1	1
CO3	2	3	1	-	-	-	-	-	1	1		2	3	1	1

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

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
199.	Cycle - I	3	30/08/2019		
200.		3	06/09/2019		
201.	Cycle – II	3	13/09/2019		
202.		3	20/09/2019		
203.	Cycle – III	3	27/09/2019		
204.		3	04/10/2019		
205.	Cycle – IV	3	18/10/2019		
206.		3	25/10/2019		
207.	Cycle – V	3	01/11/2019		
208.		3	08/11/2019		
209.	Cycle – VI	3	15/11/2019		
210.		3	22/11/2019		
211.	Cycle – VII	3	29/11/2019		
212.		3	06/12/2019		
213.	Cycle - VIII	3	13/12/2019		
214.		3	20/12/2019		
215.	***LAB INTERNAL EXAM***	3	***27/12/2019***		

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. A.S.R.C.MURTHY	Mr. A.S.R.C.MURTHY	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana
Signature				

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	Cycle - I	3	28/08/2019		
2.		3	04/09/2019		
3.	Cycle – II	3	11/09/2019		
4.		3	18/09/2019		
5.	Cycle – III	3	25/09/2019		
6.		3	16/10/2019		
7.	Cycle – IV	3	23/10/2019		
8.		3	30/10/2019		
9.	Cycle – V	3	06/11/2019		
10.		3	13/11/2019		
11.	Cycle – VI	3	20/11/2019		
12.		3	27/11/2019		
13.	Cycle – VII	3	29/11/2019		
14.		3	04/12/2019		
15.	Cycle - VIII	3	11/12/2019		
16.	***LAB INTERNAL EXAM***	3	18/12/2019		

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. A.S.R.C.MURTHY	Mr. A.S.R.C.MURTHY	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana
Signature				

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

109. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
110. **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.
111. **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.
112. **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.
113. **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.
114. **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.
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119. **Project management and finance**: Demonstrate knowledge and understanding of the engineer**ing 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.
120. **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):

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. A.S.R.C.MURTHY	Mr.A.S.R.C.MURTHY	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
Accredited by NAAC & NBA (Under Tier - I) and 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.
http://www.lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222933, Fax: 08659-222931
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM : B.Tech., I-Sem.

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE : COMPUTER PROGRAMMING LAB – 17CI60

L-T-P STRUCTURE : 2-0-0

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr. T Udaya Kumar/ Mr. A.S.R.C.MURTHY

COURSE COORDINATOR : Mr. A S R C MURTHY

MODULE COORDINATOR: Dr. D. Veeraiah

PRE-REQUISITE: NIL

COURSE OBJECTIVE:

In this course, the student will learn about:

Software Development tools like algorithm, pseudo codes and programming structure. Basic elements of C Programming Structures like Data Types, Expressions, Control Statements, Various I/O Functions and how to solve simple mathematical problems using control structures. Design and Implementation of various software components which solve real world problems.

COURSE OUTCOMES (CO):

CO1: Apply and practice logical formulations to solve some simple problems leading to specific applications.

CO2: Demonstrate C programming development environment, compiling, debugging, linking and executing a program using the development environment.

CO3: Design effectively the required programming components that efficiently solve computing problems in real world.

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	2	3	1	-	-	-	-	-	1	1		2	3	1	1
CO2	2	3	1	-	-	-	-	-	1	1		2	3	1	1
CO3	2	3	1	-	-	-	-	-	1	1		2	3	1	1

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

COURSE DELIVERY PLAN (LESSON PLAN): Section-C

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
216.	Cycle - I	3	05-09-2019		
217.		3	12-09-2019		
218.	Cycle – II	3	19-09-2019		
219.		3	26-09-2019		
220.	Cycle – III	3	03-10-2019		
221.		3	10-10-2019		
222.	Cycle – IV	3	17-10-2019		
223.		3	31-10-2019		
224.	Cycle – V	3	07-11-2019		
225.		3	14-11-2019		
226.	Cycle – VI	3	21-11-2019		
227.		3	28-11-2019		
228.	Cycle – VII	3	05-12-2019		
229.		3	12-12-2019		
230.	Cycle - VIII	3	19-12-2019		
231.		3	26-12-2019		

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	Mr. T Udaya Kumar	Mr. A.S.R.C.MURTHY	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

121. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
122. **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.
123. **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.
124. **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.
125. **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.
126. **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.
127. **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.
128. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
129. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
130. **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.
131. **Project management and finance**: Demonstrate knowledge and understanding of the engineer**ing 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.
132. **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):

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	Mr. T Udaya Kumar	Mr.A.S.R.C.MURTHY	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

**(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.**

COURSE HANDOUT

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

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Electronic Devices and Circuits Lab –17EC61

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr.P.Rakesh Kumar, Sr Assistant Professor

COURSE COORDINATOR : Mr.P.Rakesh Kumar, Sr Assistant Professor

COURSE OBJECTIVE:

This course provides the Practical knowledge on basic electronic devices Diodes, Transistors and FETs operation. The course also gives the idea about designing of rectifiers using diodes.

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

CO1	Demonstrate the characteristics of Diodes, BJT, FET and UJT
CO2	Analyze the electrical behaviour and circuit operation of Diodes
CO3	Create Rectifier circuits using Diode.
CO4	Adapt effective Communication, presentation and report writing skills

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	-	-	2	1	-	-	-	-	-	-	-	-	2	-
CO2	1	2	-	2	2	-	-	-	-	-	-	-	-	2	-
CO3	2	2	3	2	2	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	-	-	-	-	1	2	3	-	1	-	-	-

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

LAB SCHEDULE (LESSON PLAN): CSE,Sec A

LIST OF EXPERIMENTS

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly

	CYCLE-1 (Hardware)						
1.	Study of functionality basic devices and lab equipment's.	2	28-08-19		**TLM8**	**COs 2,4**	
2.	Measurement of signal characteristics using CRO.	2	04-09-19		**TLM4**	**COs 2,4**	
3.	PN Junction diode Volt-Ampere characteristics.	2	11-09-19		**TLM4**	**COs 1,2,4**	
4.	Zener diode Volt-Ampere characteristics.	2	18-09-19		**TLM4**	**COs 1,2,4**	
5.	Half wave rectifier with and without filter.	2	25-09-19		**TLM4**	**COs 3,4**	
6.	Full wave rectifier with and without filter.	2	16-10-19		**TLM4**	**COs 3,4**	
7.	Transistor Characteristics under CB configuration	2	30-10-19		**TLM4**	**COs 1,4**	
8.	Drain and Transfer Characteristics of Field Effect Transistor.	2	06-11-19		**TLM4**	**COs 1,4**	
	CYCLE-2 (Software)						
9.	Introduction to Lab view/ Signal generation by using lab view	2	13-11-19		**TLM8**	**COs 2,4**	
10.	Half wave rectifier with/ without filter using Virtual Instruments.	2	20-11-19		**TLM4**	**COs 3,4**	
11.	Full wave Rectifier with/without	2	27-09-19		**TLM4**	**COs 3,4**	

	filter using Virtual Instruments						
12.	Frequency Response of CE amplifier (**EXPERIMENT BEYOND THE SYLLABUS**))	2	04-12-19		**TLM4**	**COs 2,4**	
13.	REVISION	2	11-12-19		**TLM4**	**COs 1,2,3,4**	
14.	Internal Lab Exam	2	18-12-19				
No. of classes required to complete:		28					

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	26-08-2019	05-10-2019	6 W
Vijaya Dasami Holidays	07-10-2019	12-10-2019	1W
I Phase of Instructions-1(Contd.)	14-10-2019	19-10-2019	1W
I Mid Examinations	21-10-2019	26-10-2019	1W
II Phase of Instructions	28-10-2019	28-12-2019	9W
II Mid Examinations	30-12-2019	04-01-2020	1W
Preparation and Practicals	06-01-2020	18-01-2020	2W
Semester End Examinations	20-01-2020	31-01-2020	2W

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Day to Day work	1,2,3,4	A1=20
Attendance (>95%=5, 90-95%=4,85-90%=3,80-85%=2,75-80%=1)		A2=5
Viva-Voce	1,2,3,4	A3=5
Internal Lab Examination	1,2,3,4	B=10
Total Internal Marks(A1+A2+A3+B)		**C=40**
Semester End Examinations	1,2,3,4	**D=60**
Total Marks: C+D	1,2,3,4	**100**

Mr.P.Rakesh Kumar	Mr.P.Rakesh Kumar	Dr.G.Srinivasulu	Dr.Y.Amar Babu
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech. I-Sem.,CSE –Section B

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Electronic Devices and Circuits Lab –17EC61

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr.P.Rakesh Kumar, Sr Assistant Professor

COURSE COORDINATOR : Mr.P.Rakesh Kumar, Sr Assistant Professor

COURSE OBJECTIVE:
This course provides the Practical knowledge on basic electronic devices Diodes, Transistors and FETs operation. The course also gives the idea about designing of rectifiers using diodes.

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

CO1	Demonstrate the characteristics of Diodes, BJT, FET and UJT
CO2	Analyze the electrical behaviour and circuit operation of Diodes
CO3	Create Rectifier circuits using Diode.
CO4	Adapt effective Communication, presentation and report writing skills

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	-	-	2	1	-	-	-	-	-	-	-	-	2	-
CO2	1	2	-	2	2	-	-	-	-	-	-	-	-	2	-
CO3	2	2	3	2	2	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	-	-	-	-	1	2	3	-	1	-	-	-

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

LAB SCHEDULE (LESSON PLAN): CSE,Sec B

LIST OF EXPERIMENTS

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
	CYCLE-1 (Hardware)						
1.	Study of functionality basic devices and lab equipment's.	2	30-08-19		**TLM8**	**COs 2,4**	
2.	Measurement of signal characteristics using CRO.	2	06-09-19		**TLM4**	**COs 2,4**	
3.	PN Junction diode Volt-Ampere characteristics.	2	13-09-19		**TLM4**	**COs 1,2,4**	
4.	Zener diode Volt-Ampere characteristics.	2	20-09-19		**TLM4**	**COs 1,2,4**	
5.	Half wave rectifier with and without filter.	2	27-09-19		**TLM4**	**COs 3,4**	
6.	Full wave rectifier with and without filter.	2	04-10-19		**TLM4**	**COs 3,4**	
7.	Transistor Characteristics under CB configuration	2	18-10-19		**TLM4**	**COs 1,4**	
8.	Drain and Transfer Characteristics of Field Effect Transistor.	2	01-11-19		**TLM4**	**COs 1,4**	
	CYCLE-2 (Software)						
9.	Introduction to Lab view/ Signal generation by using lab view	2	08-11-19		**TLM8**	**COs 2,4**	

10.	Half wave rectifier without filter using Virtual Instruments.	2	15-11-19		**TLM4**	**COs 3,4**	
11.	Half wave rectifier with/ without filter using Virtual Instruments.	2	22-09-19		**TLM4**	**COs 3,4**	
12.	Full wave Rectifier without filter using Virtual Instruments	2	29-12-19		**TLM4**	**COs 3,4**	
13.	Full wave Rectifier with filter using Virtual Instruments		06-12-19		**TLM4**	**COs 3,4**	
14.	Frequency Response of CE amplifier (EXPERIMENT BEYOND THE SYLLABUS)	2	13-12-19		**TLM4**	**COs 1,4**	
15.	REVISION	2	20-12-19		**TLM4**	**COs 1,2,3,4**	
16.	Internal Lab Exam	2	27-12-19				
No. of classes required to complete:		32					

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	26-08-2019	05-10-2019	6 W
Vijaya Dasami Holidays	07-10-2019	12-10-2019	1W
I Phase of Instructions-1(Contd.)	14-10-2019	19-10-2019	1W
I Mid Examinations	21-10-2019	26-10-2019	1W
II Phase of Instructions	28-10-2019	28-12-2019	9W

II Mid Examinations	30-12-2019	04-01-2020	1W
Preparation and Practicals	06-01-2020	18-01-2020	2W
Semester End Examinations	20-01-2020	31-01-2020	2W

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Day to Day work	1,2,3,4	A1=20
Attendance (>95%=5, 90-95%=4,85-90%=3,80-85%=2,75-80%=1)		A2=5
Viva-Voce	1,2,3,4	A3=5
Internal Lab Examination	1,2,3,4	B=10
Total Internal Marks(A1+A2+A3+B)		**C=40**
Semester End Examinations	1,2,3,4	**D=60**
Total Marks: C+D	1,2,3,4	**100**

Mr.P.Rakesh Kumar	Mr.P.Rakesh Kumar	Dr.G.Srinivasulu	Dr.Y.Amar Babu
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

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L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech. I-Sem.,CSE –Section C

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Electronic Devices and Circuits Lab –17EC61

L-T-P STRUCTURE : 0-0-2

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr.Ch.Siva Rama Krishna, Assistant Professor,

COURSE COORDINATOR : Dr.G.Srinivasulu, Professor

COURSE OBJECTIVE:
This course provides the Practical knowledge on basic electronic devices Diodes, Transistors and FETs operation. The course also gives the idea about designing of rectifiers using diodes.

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

CO1	Demonstrate the characteristics of Diodes, BJT, FET and UJT
CO2	Analyze the electrical behaviour and circuit operation of Diodes
CO3	Create Rectifier circuits using Diode.
CO4	Adapt effective Communication, presentation and report writing skills

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	-	-	2	1	-	-	-	-	-	-	-	-	2	-
CO2	1	2	-	2	2	-	-	-	-	-	-	-	-	2	-
CO3	2	2	3	2	2	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	-	-	-	-	1	2	3	-	1	-	-	-

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

LAB SCHEDULE (LESSON PLAN): CSE,Sec C

LIST OF EXPERIMENTS

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
	CYCLE-1 (Hardware)						
1.	Study of functionality basic devices and lab equipment's.	2	31-08-19		**TLM8**	**COs 2,4**	
2.	Measurement of signal characteristics using CRO.	2	07-09-19		**TLM4**	**COs 2,4**	
3.	PN Junction diode Volt-Ampere characteristics.	2	14-09-19		**TLM4**	**COs 1,2,4**	
4.	Zener diode Volt-Ampere characteristics.	2	21-09-19		**TLM4**	**COs 1,2,4**	
5.	Half wave rectifier with and without filter.	2	28-09-19		**TLM4**	**COs 3,4**	
6.	Full wave rectifier with and without filter.	2	12-10-19		**TLM4**	**COs 3,4**	
7.	Transistor Characteristics under CB configuration	2	19-10-19		**TLM4**	**COs 1,4**	
8.	Drain and Transfer Characteristics of Field Effect Transistor.	2	26-10-19		**TLM4**	**COs 1,4**	
	CYCLE-2 (Software)						
9.	Introduction to Lab view/ Signal generation by using lab view	2	02-11-19		**TLM8**	**COs 2,4**	

10.	Half wave rectifier without filter using Virtual Instruments.	2	09-11-19		**TLM4**	**COs 3,4**	
11.	Half wave rectifier with/ without filter using Virtual Instruments.	2	16-11-19		**TLM4**	**COs 3,4**	
12.	Full wave Rectifier without filter using Virtual Instruments	2	23-11-19		**TLM4**	**COs 3,4**	
13.	Full wave Rectifier with filter using Virtual Instruments		30-11-19		**TLM4**	**COs 3,4**	
14.	Frequency Response of CE amplifier (EXPERIMENT BEYOND THE SYLLABUS)	2	07-12-19		**TLM4**	**COs 1,4**	
15.	REVISION	2	14-12-19		**TLM4**	**COs 1,2,3,4**	
16.	Internal Lab Exam	2	21-12-19				
No. of classes required to complete:		32					

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	26-08-2019	05-10-2019	6 W
Vijaya Dasami Holidays	07-10-2019	12-10-2019	1W
I Phase of Instructions-1(Contd.)	14-10-2019	19-10-2019	1W
I Mid Examinations	21-10-2019	26-10-2019	1W
II Phase of Instructions	28-10-2019	28-12-2019	9W

II Mid Examinations	30-12-2019	04-01-2020	1W
Preparation and Practicals	06-01-2020	18-01-2020	2W
Semester End Examinations	20-01-2020	31-01-2020	2W

EVALUATION PROCESS:

Evaluation Task	**COs**	**Marks**
Day to Day work	1,2,3,4	A1=20
Attendance (>95%=5, 90-95%=4,85-90%=3,80-85%=2,75-80%=1)		A2=5
Viva-Voce	1,2,3,4	A3=5
Internal Lab Examination	1,2,3,4	B=10
Total Internal Marks(A1+A2+A3+B)		**C=40**
Semester End Examinations	1,2,3,4	**D=60**
Total Marks: C+D	1,2,3,4	**100**

Mr. .Ch.Siva Rama Krishna,	Dr.G.Srinivasulu, Professor	Dr.G.Srinivasulu	Dr.Y.Amar Babu
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAM : B. Tech., I-Sem., CSE
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : ITWS LAB- 17CI61
L-T-P STRUCTURE : 1-0-0
COURSE CREDITS : **2**
COURSE INSTRUCTOR : **Mr.N V NAIK**
COURSE COORDINATOR : **Mr.K NAGA PRASANTHI**

PRE-REQUISITE:

Course Educational Objectives (CEOs):

After completing this course, students will be able to identify the basic peripherals, understand the process of assembling a personal computer and installation of the system software like MS Windows, Create professional word documents using LaTeX, excel spread sheets and power point presentations and work with visual programming development environment based on flow charts using RAPTOR Interpreter.

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

COs	Statement
CO1	Develop skill in S/W and H/W trouble shooting, and solve the problems of assembling and OS installation.
CO2	Develop skill in using office suite.
CO3	Develop skill in using tools like RAPTOR, LaTeX and adobe Photoshop.
CO4	Improve individual / team work skills, communication & report writing skills with ethical values.

Course Articulation Matrix:

COs	POs												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	1	-	-	1	-	-	-	-	-	-	-	2	1	-	-
CO2	2	-	-	1	3	-	-	-	-	-	-	2	2	2	-
CO3	1	-	-	1	3	-	-	-	-	-	-	2	2	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Course Delivery Plan: A-SECTION

S.NO	TOPIC TO BE COVERED	No.of Classes		Taken Date	DM
		As per the Schedule	Date		
1	Introduction to Computer	1	05/09/19		1,2
2	Introduction to Computer contd	1	12/09/19		1,2
3	Week 1: PC Hardware.	1	19/09/19		1,2
4	Week 2: Disassembling and Assembling.	1	26/09/19		1,2
5	Week 3: OS Installation.	1	03/10/19		1,2
6	Week 4: Word Orientation.	1	10/10/19		1,2
7	Week 4: Word Orientation contd	1	14/10/19		1,2
8	Week 5: Creating a Newsletter.	1	17/10/19		1,2
9	Week 6: LaTeX Documentation.	1	24/10/19		1,2
10	Week 7: Excel Orientation.	1	31/10/19		1,2
11	Week 8: Create Cricket Score	1	14/11/19		1,2
12	Week 9: PowerPoint	1	21/11/19		1,2
13	Week 10: photo shop	1	28/11/19		1,2
14	Week 11: RAPTOR Tool.	1	05/12/19		1,2
15	Week 12: Tips and tricks.	1	12/12/19		1,2
16	Tutorial	1	19/12/18		3
17	Tutorial	1	26/12/19		3

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

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 engine**ering 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

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyse, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**N V NAIK**	**K NAGA PRASANTHI**	**Dr. D Veeraiah**	**Dr. Ch Venkata Narayana**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAM : B. Tech., I-Sem., CSE-B SEC
ACADEMIC YEAR : 2019-20
COURSE NAME & CODE : ITWS LAB- 17CI61
L-T-P STRUCTURE : 1-0-0
COURSE CREDITS : **2**
COURSE INSTRUCTOR : **Mr. T.N.V.S PRAVEEN**
COURSE COORDINATOR : **Mr. K.NAGA PRASANTHI**
PRE-REQUISITE:

Course Educational Objectives (CEOs):

In this course student will learn about

After completing this course, students will be able to identify the basic peripherals, understand the process of assembling a personal computer and installation of the system software like MS Windows, Create professional word documents using LaTeX, excel spread sheets and power point presentations and work with visual programming development environment based on flow charts using RAPTOR Interpreter.

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

COs	Statement
CO1	Develop skill in S/W and H/W trouble shooting, and solve the problems of assembling and OS installation.
CO2	Develop skill in using office suite.
CO3	Develop skill in using tools like RAPTOR, LaTeX and adobe Photoshop.
CO4	Improve individual / team work skills, communication & report writing skills with ethical values.

Course Articulation Matrix:

COs	POs												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	1	-	-	1	-	-	-	-	-	-	-	2	1	-	-
CO2	2	-	-	1	3	-	-	-	-	-	-	2	2	2	-
CO3	1	-	-	1	3	-	-	-	-	-	-	2	2	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Course Delivery Plan: B-SECTION

S.NO	TOPIC TO BE COVERED	No.of Classes		Taken Date	DM
		As per the Schedule	Date		
1	Introduction to Computer	1	26/08/19		1,2
	Introduction about ITWS Lab	1	09/09/19		
3	Week 1: PC Hardware.	1	16/09/19		1,2
	Week 1: PC Hardware.	1	23/09/19		
4	Week 2: Disassembling and Assembling.	1	30/09/19		1,2
5	Week 3: OS Installation.	1	14/10/19		1,2
6	Week 4: Word Orientation.	1	21/10/19		1,2
7	Week 5: Creating a Newsletter.	1	28/10/19		1,2
8	Week 6: LaTeX Documentation.	1	04/11/19		1,2
9	Week 7: Excel Orientation.	1	11/11/19		1,2
10	Week 8: Create Cricket Score	1	18/11/19		1,2
11	Week 9: PowerPoint	1	25/11/19		1,2
12	Week 10: photo shop	1	02/12/19		1,2
13	Week 11: RAPTOR Tool.	1	09/12/19		1,2
14	Week 12: Tips and tricks.	1	16/12/19		1,2
15	Tutorial	1	23/12/19		3

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

Engineering Graduates will be able to:

13. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
14. **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.
15. **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.
16. **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.
17. **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.
18. **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.
19. **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.
20. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
21. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
22. **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.
23. **Project management and finance**: Demonstrate knowledge and understanding of the engine**ering 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.

24. 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

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyse, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**T.N.V.S PRAVEEN**	**K.NAGA PRASANTHI**	**Dr. D Veeraiah**	**Dr. Ch Venkata Narayana**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAM : B. Tech., I-Sem., CSE-C SEC
ACADEMIC YEAR : 2019-20
COURSE NAME & CODE : ITWS LAB- 17CI61
L-T-P STRUCTURE : 1-0-0
COURSE CREDITS : **2**
COURSE INSTRUCTOR : **Mrs. K.NAGA PRASANTHI**
COURSE COORDINATOR : **Mrs. K.NAGA PRASANTHI**
PRE-REQUISITE:

Course Educational Objectives (CEOs):

In this course student will learn about

After completing this course, students will be able to identify the basic peripherals, understand the process of assembling a personal computer and installation of the system software like MS Windows, Create professional word documents using LaTeX, excel spread sheets and power point presentations and work with visual programming development environment based on flow charts using RAPTOR Interpreter.

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

COs	Statement
CO1	Develop skill in S/W and H/W trouble shooting, and solve the problems of assembling and OS installation.
CO2	Develop skill in using office suite.
CO3	Develop skill in using tools like RAPTOR, LaTeX and adobe Photoshop.
CO4	Improve individual / team work skills, communication & report writing skills with ethical values.

Course Articulation Matrix:

COs	POs												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	1	-	-	1	-	-	-	-	-	-	-	2	1	-	-
CO2	2	-	-	1	3	-	-	-	-	-	-	2	2	2	-
CO3	1	-	-	1	3	-	-	-	-	-	-	2	2	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Course Delivery Plan: B-SECTION

S.NO	TOPIC TO BE COVERED	No.of Classes		Taken Date	DM
		As per the Schedule	Date		
1	Introduction to Computer	1	28-8-19		1,2
	Introduction about ITWS Lab	1	4-9-19		
3	Week 1: PC Hardware.	1	18-9-19		1,2
4	Week 2: Disassembling and	1	25-9-19		
5	Week 3: OS Installation.	1	2-10-19		1,2
6	Week 4: Word Orientation.	1	16-10-19		1,2
7	Week 5: Creating a Newsletter.	1	30-10-19		1,2
8	Week 6: LaTeX Documentation.	1	6-11-19		1,2
9	Week 7: Excel Orientation.	1	13-11-19		1,2
10	Week 8: Create Cricket Score	1	20-11-19		1,2
11	Week 9: PowerPoint	1	27-11-19		1,2
12	Week 10: photo shop	1	4-12-19		1,2
13	Week 11: RAPTOR Tool.	1	11-12-19		1,2
14	Week 12: Tips and tricks.	1	18-12-19		1,2

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

Engineering Graduates will be able to:

25. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
26. **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.
27. **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.
28. **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.
29. **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.
30. **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.
31. **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.
32. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
33. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
34. **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.
35. **Project management and finance**: Demonstrate knowledge and understanding of the engine**ering 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.

36. 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

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyse, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**K.NAGA PRASANTHI**	**K.NAGA PRASANTHI**	**Dr. D Veeraiah**	**Dr. Ch Venkata Narayana**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAM : B. Tech., I-Sem., CSE
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : ITWS LAB- 17CI61
L-T-P STRUCTURE : 0-0-2
COURSE CREDITS : **2**
COURSE INSTRUCTOR : **Mr.N V NAIK**
COURSE COORDINATOR : **Mr.K NAGA PRASANTHI**
PRE-REQUISITE:

Course Educational Objectives (CEOs):

After completing this course, students will be able to identify the basic peripherals, understand the process of assembling a personal computer and installation of the system software like MS Windows, Create professional word documents using LaTeX, excel spread sheets and power point presentations and work with visual programming development environment based on flow charts using RAPTOR Interpreter.

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

COs	Statement
CO1	Develop skill in S/W and H/W trouble shooting, and solve the problems of assembling and OS installation.
CO2	Develop skill in using office suite.
CO3	Develop skill in using tools like RAPTOR, LaTeX and adobe Photoshop.
CO4	Improve individual / team work skills, communication & report writing skills with ethical values.

Course Articulation Matrix:

COs	POs												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	1	-	-	1	-	-	-	-	-	-	-	2	1	-	-
CO2	2	-	-	1	3	-	-	-	-	-	-	2	2	2	-
CO3	1	-	-	1	3	-	-	-	-	-	-	2	2	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Course Delivery Plan: A-SECTION (ITWS LAB)

S.NO	TOPIC TO BE COVERED	No.of Classes		Taken Date	DM
		As per the Schedule	Date		
1	Introduction to Computer	2	26/08/19		2,5
2	Week 1: PC Hardware.	2	09/09/19		2,5
3	Week 2: Disassembling and Assembling.	2	16/09/19		2,5
4	Week 3: OS Installation.	2	23/09/19		2,5
5	Week 4: Word Orientation.	2	30/09/19		2,5
6	Week 5: Creating a Newsletter.	2	14/10/19		2,5
7	Week 6: LaTeX Documentation.	2	28/10/19		2,5
8	Week 7: Excel Orientation.	2	04/11/19		2,5
9	Week 8: Create Cricket Score	2	11/11/19		2,5
10	Week 9: PowerPoint	2	18/11/19		2,5
11	Week 10: photo shop	2	25/11/19		2,5
12	Week 11: RAPTOR Tool.	2	02/12/19		2,5
13	Week 12: Tips and tricks.	2	09/12/19		2,5
14	Practice Session	2	16/12/19		5,6
15	Practice Session	2	23/12/19		5,6

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

Engineering Graduates will be able to:

37. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
38. **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.
39. **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.
40. **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.
41. **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.
42. **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.
43. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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47. **Project management and finance**: Demonstrate knowledge and understanding of the engine**ering 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.

48. 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

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyse, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**N V NAIK**	**K NAGA PRASANTHI**	**Dr. D Veeraiah**	**Dr. Ch Venkata Narayana**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAM : B. Tech., I-Sem., CSE-B Sec
ACADEMIC YEAR : 2019-20
COURSE NAME & CODE : ITWS LAB- 17CI61
L-T-P STRUCTURE : 0-0-2
COURSE CREDITS : **2**
COURSE INSTRUCTOR : **Mr. T.N.V.S PRAVEEN**
COURSE COORDINATOR : **Mr. K.NAGA PRASANTHI**
PRE-REQUISITE:

Course Educational Objectives (CEOs):

After completing this course, students will be able to identify the basic peripherals, understand the process of assembling a personal computer and installation of the system software like MS Windows, Create professional word documents using LaTeX, excel spread sheets and power point presentations and work with visual programming development environment based on flow charts using RAPTOR Interpreter.

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

COs	Statement
CO1	Develop skill in S/W and H/W trouble shooting, and solve the problems of assembling and OS installation.
CO2	Develop skill in using office suite.
CO3	Develop skill in using tools like RAPTOR, LaTeX and adobe Photoshop.
CO4	Improve individual / team work skills, communication & report writing skills with ethical values.

Course Articulation Matrix:

COs	POs												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	1	-	-	1	-	-	-	-	-	-	-	2	1	-	-
CO2	2	-	-	1	3	-	-	-	-	-	-	2	2	2	-
CO3	1	-	-	1	3	-	-	-	-	-	-	2	2	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Course Delivery Plan: B-SECTION (ITWS LAB)

S.NO	TOPIC TO BE COVERED	No.of Classes		Taken Date	DM
		As per the Schedule	Date		
1	Introduction to Computer	2	31/08/19		2,5
2	Week 1: PC Hardware.	2	07/09/19		2,5
3	Week 2: Disassembling and Assembling.	2	21/09/19		2,5
4	Week 3: OS Installation.	2	28/09/19		2,5
5	Week 4: Word Orientation.	2	12/10/19		2,5
6	Week 5: Creating a Newsletter.	2	19/10/19		2,5
7	Week 6: LaTeX Documentation.	2	26/10/19		2,5
8	Week 7: Excel Orientation.	2	02/11/19		2,5
9	Week 8: Create Cricket Score	2	09/11/19		2,5
10	Week 9: PowerPoint	2	16/11/19		2,5
11	Week 10: photo shop	2	23/11/19		2,5
12	Week 11: RAPTOR Tool.	2	30/11/19		2,5
13	Week 12: Tips and tricks.	2	14/12/19		2,5
14	Practice Session	2	16/12/19		5,6
15	Practice Session	2	28/12/19		5,6

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

Engineering Graduates will be able to:

49. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
50. **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.
51. **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.
52. **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.
53. **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.
54. **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.
55. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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59. **Project management and finance**: Demonstrate knowledge and understanding of the engine**ering 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.

60. 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

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyse, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**T.N.V.S PRAVEEN**	**K.NAGA PRASANTHI**	**Dr. D Veeraiah**	**Dr. Ch Venkata Narayana**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)
Accredited by NAAC and NBA ISO 9001:2015 Certified Institution
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROGRAM : B. Tech., I-Sem., CSE-C Sec
ACADEMIC YEAR : 2019-20
COURSE NAME & CODE : ITWS LAB- 17CI61
L-T-P STRUCTURE : 0-0-2
COURSE CREDITS : **2**
COURSE INSTRUCTOR : **Mrs. K.NAGA PRASANTHI**
COURSE COORDINATOR : **Mrs. K.NAGA PRASANTHI**
PRE-REQUISITE:

Course Educational Objectives (CEOs):

After completing this course, students will be able to identify the basic peripherals, understand the process of assembling a personal computer and installation of the system software like MS Windows, Create professional word documents using LaTeX, excel spread sheets and power point presentations and work with visual programming development environment based on flow charts using RAPTOR Interpreter.

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

COs	Statement
CO1	Develop skill in assembling and disassembling PC, OS installation.
CO2	Develop skill in using office suite.
CO3	Develop skill in using tools like RAPTOR, LaTeX and adobe Photoshop.
CO4	Improve individual / team work skills, communication & report writing skills with ethical values.

Course Articulation Matrix:

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	1	-	-	1	-	-	-	-	-	-	-	2	1	-	-
CO2	2	-	-	1	3	-	-	-	-	-	-	2	2	2	-
CO3	1	-	-	1	3	-	-	-	-	-	-	2	2	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Course Delivery Plan: B-SECTION (ITWS LAB)

S.NO	TOPIC TO BE COVERED	No.of Classes		Taken Date	DM
		As per the Schedule	Date		
1	Introduction to Computer	2	27-8-19		2,5
2	Week 1: PC Hardware.	2	3-9-19		2,5
3	Week 2: Disassembling and Assembling.	2	17-9-19		2,5
4	Week 3: OS Installation.	2	24-9-19		2,5
5	Week 4: Word Orientation.	2	1-10-19		2,5
6	Week 5: Creating a Newsletter.	2	15-10-19		2,5
7	Week 6: LaTeX Documentation.	2	29-10-19		2,5
8	Week 7: Excel Orientation.	2	5-11-19		2,5
9	Week 8: Create Cricket Score	2	12-11-19		2,5
10	Week 9: PowerPoint	2	19-11-19		2,5
11	Week 10: photo shop	2	26-11-19		2,5
12	Week 11: RAPTOR Tool.	2	3-12-19		2,5
13	Week 12: Tips and tricks.	2	10-12-19		2,5
14	Practice Session	2	17-12-19		5,6
15	Practice Session	2	24-12-19		5,6

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

Engineering Graduates will be able to:

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	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**K.NAGA PRASANTHI**	**K.NAGA PRASANTHI**	**Dr. D Veeraiah**	**Dr. Ch Venkata Narayana**