

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF INFORMATION TECHNOLOGY
(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

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 differential 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 NO.	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	10/07/18		TLM1			
2.	Course Outcomes	1	10/07/18		TLM1			
UNIT-I : Differential Equations of First Order and First Degree								
3.	Introduction to UNIT-I	1	11/07/18		TLM1	CO1	T1,T2	
4.	Formation of Differential Equations	1	13/07/18		TLM1	CO1	T1,T2	
5.	Exact DE	1	17/07/18		TLM1	CO1	T1,T2	
6.	Non-exact DE Type I	1	17/07/18		TLM1	CO1	T1,T2	
7.	Non-exact DE Type II	1	18/07/18		TLM1	CO1	T1,T2	
8.	Non-exact DE Type III	1	20/07/18		TLM1	CO1	T1,T2	
9.	TUTORIAL 1	1	21/07/18		TLM3	CO1	T1,T2	
10.	Non-exact DE Type IV	1	24/07/18		TLM1	CO1	T1,T2	
11.	Orthogonal Trajectories (Cartesian)	1	24/07/18		TLM1	CO1	T1,T2	
12.	Orthogonal Trajectories (polar)	1	25/07/18		TLM1	CO1	T1,T2	
13.	Newton’s Law of Cooling	1	27/07/18		TLM1	CO1	T1,T2	
14.	TUTORIAL 2	1	28/07/18		TLM3	CO1	T1,T2	
15.	Law of Growth	1	31/07/18		TLM1	CO1	T1,T2	
16.	Law of Decay	1	31/07/18		TLM1	CO1	T1,T2	
17.	Assignment/Quiz	1	01/08/18		TLM6	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
18.	Introduction to UNIT II	1	03/08/18		TLM1	CO2	T1,T2	
19.	Solving a homogeneous DE	1	04/08/18		TLM1	CO2	T1,T2	
20.	Finding Particular Integral	1	07/08/18		TLM1	CO2	T1,T2	
21.	P.I when $Q(x)=e^{ax}$	1	07/08/18		TLM1	CO2	T1,T2	
22.	P.I when $Q(x)=e^{ax}$	1	08/08/18		TLM1	CO2	T1,T2	
23.	TUTORIAL-3	1	10/08/18		TLM3	CO2	T1,T2	
24.	P.I when $Q(x)=\sin bx$ or $\cos bx$	1	11/08/18		TLM1	CO2	T1,T2	
25.	P.I when $Q(x)=x^k$	1	14/08/18		TLM1	CO2	T1,T2	
26.	P.I when $Q(x)=e^{ax}v(x)$	2	14/08/18 17/08/18		TLM1	CO2	T1,T2	
27.	TUTORIAL-4	1	18/08/18		TLM3	CO2	T1,T2	
28.	P.I when $Q(x)=e^{ax}v(x)$	1	21/08/18		TLM1	CO2	T1,T2	
29.	P.I when $Q(x)=x^m.v(x)$	1	21/08/18		TLM1	CO2	T1,T2	
30.	Method of Variation of parameters	1	24/08/18		TLM1	CO2	T1,T2	
31.	Assignment/Quiz	1	25/08/18		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		15			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
32.	Introduction to UNIT III	1	01/09/18		TLM1	CO3	T1,T2	
33.	Generalized Mean Value Theorem	1	04/09/18		TLM1	CO3	T1,T2	
34.	Taylor's series	1	04/09/18		TLM1	CO3	T1,T2	
35.	Maclaurin's series	1	05/09/18		TLM1	CO3	T1,T2	
36.	Functions of several variables	1	07/09/18		TLM1	CO3	T1,T2	
37.	Jacobians (polar, cylindrical, spherical coordinates)	1	08/09/18		TLM1	CO3	T1,T2	
38.	Functional dependence	1	11/09/18		TLM1	CO3	T1,T2	

39.	TUTORIAL-5	1	11/09/18		TLM3	CO3	T1,T2		
40.	Formation of PDE by elimination of arbitrary constants	1	12/09/18		TLM1	CO3	T1,T2		
41.	Formation of PDE by elimination of arbitrary functions	1	14/09/18		TLM1	CO3	T1,T2		
42.	Lagrange's method.	1	15/09/18		TLM1	CO3	T1,T2		
43.	Assignment/Quiz	1	18/09/18		TLM6	CO3	T1,T2		
44.	TUTORIAL-6	1	18/09/18		TLM3	CO3	T1,T2		
No. of classes required to complete UNIT-III		13			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	
45.	Introduction to UNIT IV	1	19/09/18		TLM1	CO4	T1,T2		
46.	Formation of PDE by eliminating arbitrary constants	1	22/09/18		TLM1	CO4	T1,T2		
47.	Formation of PDE by eliminating arbitrary constants	1	25/09/18		TLM1	CO4	T1,T2		
48.	Tutorial-7	1	25/09/18		TLM1	CO4	T1,T2		
49.	Formation of PDE by eliminating arbitrary constants	1	26/09/18		TLM3	CO4	T1,T2		
50.	Formation of PDE by eliminating arbitrary functions	1	28/09/18						
51.	Formation of PDE by eliminating arbitrary functions	1	29/09/18		TLM1	CO4	T1,T2		
52.	Tutorial-8	1	03/10/18		TLM1	CO4	T1,T2		
53.	Formation of PDE by eliminating arbitrary functions	1	05/10/18		TLM3	CO4	T1,T2		
54.	Solution of linear PDE - Lagranze's method	1	06/10/18		TLM1	CO4	T1,T2		
55.	Solution of linear PDE - Lagranze's method	1	09/10/18		TLM1	CO4	T1,T2		
56.	Solution of linear PDE - Lagranze's method	1	09/10/18		TLM1	CO4	T1,T2		
57.	Assignment/Quiz - 4	1	10/10/18		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
58.	Introduction to UNIT V	1	12/10/18		TLM1	CO5	T1,T2	
59.	Taylor's series method	1	13/10/18		TLM1	CO5	T1,T2	
60.	Taylor's series method	1	16/10/18		TLM1	CO5	T1,T2	
61.	Picard's method	1	16/10/18		TLM3	CO5	T1,T2	
62.	Tutorial-9	1	19/10/18		TLM1	CO5	T1,T2	
63.	Euler's method	1	20/10/18		TLM1	CO5	T1,T2	
64.	Modified Euler's method	1	23/10/18		TLM1	CO5	T1,T2	
65.	R-K method	1	23/10/18		TLM1	CO5	T1,T2	
66.	R-K method	1	24/10/18		TLM3	CO5	T1,T2	
67.	Tutorial-10	1	26/10/18		TLM3	CO5	T1,T2	
68.	Assignment/Quiz - 5	1	27/10/18		TLM6	CO5	T1,T2	
69.	Revision	2	30/10/18 30/10/18		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
70.	Comparing the Numerical and Analytic solutions of O.D.E	1	02/11/18 03/11/18		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: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	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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COURSE HANDOUT

Part-A

PROGRAM : B. Tech. I-Sem., MECH - B
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : Professional Communication - I (17FE01)
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr.B.Sreenivasa Reddy
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	10-07-2018		TLM1			
2.	Presidential Address – Dr. A.P.J. Abdul Kalam	1	12-07-2018		TLM1	CO1	T1	
3.	Word formation: Prefixes & suffixes	1	14-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
4.	Word formation: Compound Collocations	1	17-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
5.	Punctuation	1	19-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
6.	Parts of Speech	1	21-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
7.	Double Angels - David Scott	1	24-07-2018		TLM1	CO1	T1	

8.	Sentence structure; Paragraph writing	1	26-07-2018		TLM1, TLM2	CO1	T1,R2,R4	
9.	Dialogue writing	1	28-07-2018		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	31-07-2018		TLM1, TLM6	CO2	T2	
11.	Words often confused- Homonyms	2	02-08-2018 04-08-2018		TLM1, TLM6	CO2	T2,R2,R4	
12.	Words often confused - Homophones	2	07-08-2018 09-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
13.	Words often confused- Homographs	1	11-08-2018		TLM1, TLM6	CO2	T2	
14.	Types of verbs	1	14-08-2018		TLM1, TLM6	CO2	T2,R2,R4	
15.	Types of sentences	1	16-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
16.	'The Road Not Taken' by Robert Frost	2	18-08-2018 21-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
17.	Letter Writing: Official Letters	2	23-08-2018 25-08-2018		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
18.	Technology with a Human Face	1	01.09.18		TLM1	CO3	T1	
19.	Synonyms & Antonyms	1	04.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R2, R4	
20.	commonly misspelt words	1	06.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
21.	Tenses: Types & Uses	1	08.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
22.	'Preface' to Lyrical Ballads	1	11.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
23.	E-mails	1	15.09.18		TLM1, TLM6	CO3	T1	
24.	Memo drafting	1	18.09.18		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
25.	Listening Skills	1	20-09-2018		TLM1, TLM6	CO4	T2	
26.	The boy who broke the bank	1	22-09-2018		TLM1, TLM6	CO4	T2,R2,R4	
27.	Understanding the story, People, Places and Events	1	25-09-2018		TLM1, TLM6	CO4	T2,R2,R4	
28.	Understanding Places &	1	27-09-2018		TLM1, TLM6	CO4	T2,R2,R4	

	Events							
29.	Exercises on Prefixes & suffixes	1	29-09-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R2,R4	
30.	Active Listening	1	04-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
31.	Proverbial expansion on Listening	1	06-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
32.	Listening Skills	1	09-10-2018		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
33.	Interview Skills	1	11-10-2018		TLM1, TLM6	CO5	T2	
34.	The lighthouse keeper of Aspinwall	1	13-10-2018		TLM1, TLM6	CO5	T2,R2,R4	
35.	Understanding the story, People & World	1	16-10-2018		TLM1, TLM6	CO5	T2,R2,R4	
36.	Conjunctions	1	20-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
37.	Résumé with covering letter	1	23-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3	
38.	Proverbial expansion on Interview Skills	2	25-10-2018 27-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
39.	Interview	2	30-10-2018 01-11-2018		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
40.	Verbal Reasoning	1	03-11-2018		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: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	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

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.

Mr. B. Sreenivasa Reddy	Prof. B. Samrajya Lakshmi	Prof. B.Samrajya Lakshmi	Prof. 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 - A
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : Professional Communication - I (17FE01)
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr.B.Sreenivasa Reddy
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	09-07-2018		TLM1			
2.	Presidential Address – Dr. A.P.J. Abdul Kalam	1	10-07-2018		TLM1	CO1	T1	
3.	Word formation: Prefixes & suffixes	1	13-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
4.	Word formation: Compound Collocations	1	15-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
5.	Punctuation	1	16-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
6.	Parts of Speech	1	20-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
7.	Double Angels - David Scott	1	23-07-2018		TLM1	CO1	T1	

8.	Sentence structure; Paragraph writing	1	24-07-2018		TLM1, TLM2	CO1	T1,R2,R4	
9.	Dialogue writing	1	27-07-2018		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	30-07-2018		TLM1, TLM6	CO2	T2	
11.	Words often confused- Homonyms	2	31-07-2018 03-08-2018		TLM1, TLM6	CO2	T2,R2,R4	
12.	Words often confused - Homophones	2	06-08-2018 07-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
13.	Words often confused- Homographs	1	10-08-2018		TLM1, TLM6	CO2	T2	
14.	Types of verbs	1	13-08-2018		TLM1, TLM6	CO2	T2,R2,R4	
15.	Types of sentences	1	14-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
16.	'The Road Not Taken' by Robert Frost	2	17-08-2018 20-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
17.	Letter Writing: Official Letters	2	21-08-2018 24-08-2018		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
18.	Technology with a Human Face	1	04.09.18		TLM1	CO3	T1	
19.	Synonyms & Antonyms	1	07.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R2, R4	
20.	commonly misspelt words	1	10.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
21.	Tenses: Types & Uses	1	11.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
22.	'Preface' to Lyrical Ballads	1	14.09.18		TLM1, TLM2, TLM5, TLM6	CO3	T1, R1, R3	
23.	E-mails	1	17.09.18		TLM1, TLM6	CO3	T1	
24.	Memo drafting	1	18.09.18		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
25.	Listening Skills	1	24-09-2018		TLM1, TLM6	CO4	T2	
26.	The boy who broke the bank	1	25-09-2018		TLM1, TLM6	CO4	T2,R2,R4	
27.	Understanding the story, People, Places and Events	1	28-09-2018		TLM1, TLM6	CO4	T2,R2,R4	
28.	Understanding Places &	1	01-10-2018		TLM1, TLM6	CO4	T2,R2,R4	

	Events							
29.	Exercises on Prefixes & suffixes	1	05-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R2,R4	
30.	Active Listening	1	08-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
31.	Proverbial expansion on Listening	1	09-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
32.	Listening Skills	1	12-10-2018		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
33.	Interview Skills	1	15-10-2018		TLM1, TLM6	CO5	T2	
34.	The lighthouse keeper of Aspinwall	1	16-10-2018		TLM1, TLM6	CO5	T2,R2,R4	
35.	Understanding the story, People & World	1	19-10-2018		TLM1, TLM6	CO5	T2,R2,R4	
36.	Conjunctions	1	22-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
37.	Résumé with covering letter	1	23-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3	
38.	Proverbial expansion on Interview Skills	1	26-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
39.	Interview	2	30-10-2018 31-10-2018		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
40.	Verbal Reasoning	1	02-11-2018		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: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	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

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.
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4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
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Course Instructor	Course Coordinator	Module Coordinator	HOD

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COURSE HANDOUT

Part-A

PROGRAM : B.Tech. I-Sem., MECH -B
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : ENGLISH COMMUNICATION SKILLS LAB - 17FE60
L-T-P STRUCTURE : 0-0-2
COURSE CREDITS : 1
COURSE INSTRUCTOR : Mr. B. Sreenivasa Reddy
COURSE COORDINATOR : Dr.B.Samrajya Lakshmi
Pre-Requisites : Students should have fundamental knowledge in making sentences and be with readiness to speak

Course Educational Objective : Improve the proficiency of students in English with an emphasis on better communication in formal and informal situations; Develop speaking skills required for expressing their knowledge and abilities and to face interviews with confidence.

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

- CO1 : Articulate English with good pronunciation.
- CO2 : Manage skillfully through group discussions.
- CO3 : Communicate with the people effectively.
- CO4 : Collect and interpret data aptly.

Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17FE60	CO1				3					3	3		2			
	CO2				3					3	3		2			
	CO3				3					3	3		2			
	CO4				3					3	3		2			
	CO5				3					3	3		2			
		1 = Slight (Low)				2 = Moderate (Medium)				3-Substantial(High)						

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

Bos Approved Lab Manual:

- Board of Editors, “ELCS Lab Manual – A Workbook of CALL and ICS Lab Activities”, Orient Black Swan Pvt. Ltd., Hyderabad, 2016.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Activity	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction	2	11-07-2018		TLM4		
2.	Self Introduction	2	18-07-2018		TLM4	CO3	
3.	JAM- I	2	25-07-2018		TLM4	CO3	
4.	JAM-II	2	01-08-2018		TLM4	CO3	
5.	JAM-III	2	08-08-2018		TLM4	CO3	
6.	Role Play-I	2	05-09-2018		TLM4	CO3	
7.	Role Play-II	2	12-09-2018		TLM4	CO3	
8.	Role Play-III	2	19-09-2018		TLM4	CO3	
9.	Data Interpretation-I	2	26-09-2018		TLM2, TLM4	CO4	
10.	Data Interpretation-II	2	03-10-2018		TLM2, TLM4	CO4	
11.	Group Discussion-I	2	10-10-2018		TLM4, TLM6	CO2	
12.	Group Discussion-II	2	24-10-2018		TLM4, TLM6	CO2	
13.	Introduction to Phonetics	2	31-10-2018		TLM4, TLM6	CO2	
14.	Internal Lab Exam	2	01-11-2018		TLM1, TLM2	CO1	
15.	Total	28					

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

% 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

(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
Phonemes	05 Marks
Short answers on phonetics	05 Marks
Transcription	10 Marks
Dialogue writing	10 Marks
Presentation	10 Marks
Interview	20 Marks
Total	60 Marks

Rubrics For Evaluation of Laboratory Courses								
Day-To-Day Lab (Observation) Performance Evaluation (R-17)				Record Performance Evaluation (R-17)				
S.N	Criteria	Poor	Average	Good	Criteria	Poor	Average	Good
1	Language suitability (4 Marks)	Wrong usage of words Grammatical errors (2 Marks)	Some points are missing from the data written Wrong usage of grammar & vocabulary. (3 Marks)	Well-written & spoken Language is error free (4 Marks)	Language (4 Marks)	Language used is not suitable Full of incorrect vocabulary (2 Marks)	Some words are inappropriately used / wrongly spelt (3 Marks)	Language used is good No word/spelling errors (4 Marks)
2	Content (4 Marks)	Unable to Deliver all the points Delivering Irrelevant point (2 Marks)	Some points are not given Point analysis is not upto the mark (3 Marks)	All the points are analysed properly More content was delivered. (4 Marks)	Content (4 Marks)	Very less points were written Points were not analysed properly (2 Marks)	Some of the points were missing Some points are not properly analysed (3 Marks)	Complete information is provided for the topic Important information is provided with illustrations/ examples (4 Marks)
3	Style of Presentation (2 Marks)	Inappropriate body language Improper presentation (0 Marks)	Presentation is not upto the mark (1 Mark)	Presented well with appropriate etiquett All important conclusions have been clearly made, student shows good understanding of the topic. (2 Marks)	Grammar & Neatness (2 Mark)	Frequent grammar and/r spelling errors writing style is rough and immature (1/2 Mark)	Some grammatical errors (1 Marks)	No grammar/spelling corrections are found and well-written (2 Marks)

PROGRAMME OUTCOMES (POs):

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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.
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Course Instructor	Course Coordinator	Module Coordinator	HOD



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COURSE HANDOUT

Part-A

PROGRAM	: B.Tech.I-Sem., CSE -B
ACADEMIC YEAR	: 2018-19
COURSE NAME & CODE	: Engineering Chemistry (17FE15)
L-T-P STRUCTURE	: 4-0-0
COURSE CREDITS	: 4
COURSE INSTRUCTOR	: S.Vijaya Dasaradha
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, 1 st Edition, 2015.
T2	Jain, Jain, "A textbook of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 16 th Edition, 2015.

BOS APPROVED REFERENCE BOOKS:

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT-I : ELECTRO CHEMISTRY AND BATTERIES

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.	Concept of electrode potential, SRP & SOP, EMF	2	9/7/18 & 10/7/18		TLM1	CO1	T1 & T2	
2.	S.H.E and its drawbacks, Calomel electrode	2	11/7/18 & 12/7/18		TLM1	CO1	T1 & T2	
3.	Tutorial-1	1	16/7/18		TLM3	CO1	T1 & T2	
4.	Measurement of electrode potential, Electrochemical	2	17/7/18& 18/7/18		TLM1	CO1	T1 & T2	

	series & applications							
5.	Nernst equation Derivation	1	19/7/18		TLM1	CO1	T1 , T2 & R3	
6.	Tutorial-2	1	21/7/18		TLM3	CO1	T1 & T2	
7.	Problems on Nernst equation	2	23/7/18 & 25/7/18		TLM1	CO1	T1 & T2	
8.	Primary, secondary & reserve batteries	1	26/7/18		TLM1 & TLM2	CO1	T1 & T2	
9.	Dry battery (leclanche cell), Nickel- Cadmium battery	2	28/7/18 & 30/7/18		TLM1 & TLM2	CO1	T1 & T2	
10.	Magnesium – Copper reserve battery	1	31/7/18		TLM1 & TLM2	CO1	T1 & T2	
11.	Hydrogen – oxygen Fuel cell	1	1/8/18		TLM1 & TLM2	CO1	T1 & T2	
12.	Quiz questions	1	2/8/18		Test	CO1	T1 & T2	
13.	Assignment	1	4/8/18		Test	CO1	T1 & T2	
No. of classes required to complete UNIT-I : 18					No. of classes taken:			

UNIT-II: SCIENCE OF CORROSION

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
14.	Corrosion definition examples, definition of dry corrosion.	1	6/8/18		TLM1	CO2	T1 & T2	
15.	Oxidative. Corrosion by other gases	1	7/8/18		TLM1	CO2	T1 & T2	
16.	Liquid metal corrosion, Pilling bed worth rule	1	8/8/18		TLM1	CO2	T1 & T2	
17.	Wet corrosion-mechanism	1	9/8/18		TLM1	CO2	T1 & T2	
18.	Tutorial-1	1	11/8/18		TLM3	CO2	T1 & T2	
19.	Galvanic corrosion	1	13/8/18		TLM1	CO2	T1 & T2	

20.	Concentration cell corrosion	2	14/8/18		TLM1	CO2	T1 & T2	
21.	Passivity, Exceptions in E.C series, Galvanic series	1	16/8/18		TLM1	CO2	T1 & T2	
22.	Nature of metal, Nature of environment	1	18/8/18		TLM1	CO2	T1 & T2	
23.	Tutorial-2	1	20/8/18		TLM3	CO2	T1 & T2	
24.	Cathodic protection & metal cladding	1	21/8/18		TLM1	CO2	T1 & T2	
25.	Electroplating	1	23/8/18		TLM1	CO2	T1 & T2	
26.	Quiz questions	1	25/8/18		TLM1. Test	CO2	T1 & T2	
27.	Assignment	1	25/8/18		Test	CO2	T1 & T2	
No. of classes required to complete UNIT-II : 14					No. of classes taken:			

UNIT-III: CHEMISTRY OF ENGINEERING MATERIALS

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
28.	Definition of nanomaterial	1	1/9/18		TLM1	CO3	T1 & T2, R2	
29.	Properties of nano materials	1	3/9/18		TLM1 & TLM2	CO3	T1 & T2, R2	
30.	Preparation of nano materials (sol gel Method)	1	4/9/18		TLM1 & TLM2	CO3	T1 & T2, R2	
31.	Applications of nano materials	1	5/9/18		TLM1 & TLM2	CO3	T1 & T2, R2	
32.	Tutorial-1	1	6/9/18		TLM3	CO3	T1 & T2	
33.	Basic terminology of polymers Classification of polymers	1	8/9/18		TLM1	CO3	T1 & T2	
34.	Types of polymerization, Bakelite preparation, properties and	1	10/9/18		TLM1	CO3	T1 & T2	

	applications							
35.	Preparation, , properties applications of PMMA	1	11/9/18		TLM1	CO3	T1 & T2	
36.	Conducting polymers	1	12/9/18		TLM1	CO3	T1 & T2	
37.	FRPs & Tutorial-2	1	15/9/18		TLM1 TLM3	CO3	T1 & T2	
38.	Processing of natural rubber, vulcanization ,advantages , Preparation , properties & applications of Thiokol and BUNA-S	1	17/9/18		TLM1	CO3	T1 & T2	
39.	Assignment	1	18/9/18	Test	Test	CO3	T1 & T2	
40.	Quiz	1	19/9/18	Test	Test			
No. of classes required to complete UNIT-III : 13					No. of classes taken:			

UNIT-IV : PHOTO CHEMISTRY AND LIQUID CRYSTALS

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.	Definition, differences between thermal and photo chemical reactions	1	20/9/18		TLM1	CO4	T1 & T2	
42.	Grothers-Droper law, Stark-Einstein law and Quantum efficiency (Definition only).	1	22/9/18		TLM1	CO4	T1 & T2	
43.	Fluorescence, phosphorescence – applications	1	24/9/18		TLM1	CO4	T1 & T2	
44.	Chemiluminescence, bio-luminescence and Photo-sensitization.	1	25/9/18		TLM1	CO4	T1 & T2	
45.	Tutorial-1	1	26/9/18		TLM3	CO4	T1 & T2	
46.	Definition, Identification and structural aspects of molecules to form liquid crystals	1	27/9/18		TLM1	CO4	T1 & T2	

47.	Thermo tropic liquid crystals and types	1	29/9/18		TLM1	CO4	T1 & T2	
48.	lyotropic liquid crystals and applications.	1	1/10/18		TLM1	CO4	T1 & T2	
49.	Tutorial-II	1	3/10/18		TLM3	CO4	T1 & T2	
50.	Quiz questions	1	4/10/18	Test	Test	CO4	T1 & T2	
51.	Assignment	1	6/10/18	Test	Test	CO4	T1 & T2	
No. of classes required to complete UNIT-IV : 11					No. of classes taken:			

UNIT-V : ANALYTICAL TECHNIQUES AND SPECTROSCOPY

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
52.	Types of analysis, Analysis of physical characteristics, Gravimetric and volumetric analysis (basic concept only). Analysis of physical characteristics.	1	8/10/18		TLM1	CO5	T1 & T2	
53.	Electro analytical techniques – Introduction	1	9/10/18		TLM1	CO5	T1 & T2	
54.	Strong acid - strong base and strong acid - weak base, weak acid -strong base and weak acid -weak base – advantages.	1	10/10/18		TLM1	CO5	T1 & T2	
55.	Acid-base and oxidation-reduction titrations- advantages	1	11/10/18		TLM1	CO5	T1 & T2	
56.	Tutorial-1	1	13/10/18			CO4	T1 & T2	
57.	Principle and determination of Iron by using thiocyanate as a reagent.	1	15/10/18		TLM1	CO5	T1 & T2	
58.	Origin of electronic spectra, Types of spectra-emission and absorption spectra and Beer-Lambert's law	2	20/10/18 & 22/10/18		TLM1	CO5	T1 & T2	
59.	Types of vibrations, factors influencing vibrational frequencies.	1	23/10/18		TLM1	CO5	T1 & T2	

60.	Applications of IR-Spectroscopy. Applications of IR-Spectroscopy.	1	24/10/18		TLM1	CO5	T1 & T2	
61.	Types of electronic transitions, probability	1	25/10/18		TLM1	CO5	T1 & T2	
62.	Chomophores, Auxochromes and applications of UV-Spectroscopy.	1	27/10/18		TLM1	CO5	T1 & T2	
63.	Tutorial-II	1	29/10/18		TLM3	CO5	T1 & T2	
64.	Assignment	1	30/10/18		Test	CO5	T1 & T2	
65.	Quiz questions	1	31/10/18		Test	CO5	T1 & T2	
No. of classes required to complete UNIT-IV : 15					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
66.	Batteries in current technology	1	1/11/18		TLM1		T1 & T2	
67.	Applications of nanomaterials	1	3/11/18		TLM1		T1 & T2	
68.	Applications of liquid crystals	1	3/11/18		TLM1		T1 & T2	

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: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	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

PROGRAM OUTCOMES

Engineering Graduates will be able to:

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

S.Vijayadasaradha	Dr V Paravathi	Dr V Parvathi	Dr .A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKKIREDDY 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

PROGRAM : B.Tech., I-Sem., B/S CSE
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : Computer Programming - 17CI01
L-T-P STRUCTURE : 2-2-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr. T Udaya Kumar
COURSE COORDINATOR : Mrs. K Naga Prasanthi

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	10-07-2018		TLM2	CO1		
2.	Problem Solving through C-Programming (Problem Specification)	1	11-07-2018		TLM4	CO1		
3.	Algorithm/pseudo code, Flow charts with Examples	1	12-07-2018		TLM4	CO1		
4.	Introduction to c language - Structure of C Program	1	13-07-2018		TLM1	CO1		
5.	Identifiers, basic data types, Variables and Constants	1	17-07-2018		TLM1	CO1		
6.	Input-Output statements	1	18-07-2018		TLM1	CO1		
7.	A Simple C Program	1	19-07-2018		TLM1	CO1		
8.	Operators and Expressions	1	20-07-2018		TLM1	CO1		
9.	Expression Evaluation	1	21-07-2018		TLM1	CO1		
10.	Type Conversions - Examples	1	24-07-2018		TLM1	CO1		
11.	Tutorial	1	25-07-2018		TLM3	CO1		
12.	Conditional Statements: If, If-Else	1	26-07-2018		TLM1	CO1		
13.	Conditional Statements: Else-If Ladder, Nestled If	1	27-07-2018		TLM1	CO1		
14.	Conditional Statements: Switch statements, Break, Goto	1	28-07-2018		TLM1	CO1		
15.	Loops: While statement	1	31-07-2018		TLM1	CO1		
16.	Loops: Do-While statement	1	01-08-2018		TLM1	CO1		
17.	Loops: For statement, Continue	1	02-08-2018		TLM1	CO1		
18.	Tutorial	1	03-08-2018		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	04-08-2018		TLM2	CO2		
20.	One-Dimensional Array: Accessing Elements	2	05-08-2018, 07-08-2018		TLM1	CO2		
21.	Two- dimensional arrays, Accessing elements	2	08-08-2018, 09-08-2018		TLM1	CO2		
22.	Multi-dimensional arrays, applications of arrays.	1	10-08-2018		TLM1	CO2		
23.	Tutorial	1	11-08-2018		TLM3	CO2		
24.	Strings: Declaration, Initialization, Accessing	1	14-08-2018		TLM1	CO2		
25.	String Handling Functions	3	17-08-2018, 18-08-2018, 21-08-2018		TLM1	CO2		
26.	Tutorial	1	23-08-2018		TLM3	CO2		
No. of classes required to complete UNIT-II		11			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	01-09-2018		TLM2	CO3		
28.	Pointer Expressions, Address Arithmetic	1	04-09-2018		TLM1	CO3		
29.	Pointers and Arrays	1	05-09-2018		TLM1	CO3		
30.	Pointer and Strings	1	06-09-2018		TLM1	CO3		
31.	Pointer to Pointer, Pre-Processor Directives and Macros	1	07-09-2018		TLM1	CO3		
32.	Tutorial	1	08-09-2018		TLM3	CO3		
33.	Functions: Basics, categories of Functions	1	11-09-2018		TLM2	CO3		
34.	Parameter Passing Techniques	1	12-09-2018		TLM1	CO3		
35.	Arrays as Parameters, Strings as Parameters and Pointers as Parameters	1	14-09-2018		TLM1	CO3		
36.	Recursive Functions - Comparison with Iteration	1	15-09-2018		TLM1	CO3		
37.	Storage Classes	1	18-09-2018		TLM1	CO3		
38.	Dynamic Memory Management Functions	1	19-09-2018		TLM1	CO3		
39.	Command Line Arguments	1	20-09-2018		TLM1	CO3		
40.	Tutorial	1	22-09-2018		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	25-09-2018, 26-09-2018		TLM2	CO4		
42.	Arrays of Structures	1	27-09-2018		TLM1	CO4		
43.	Structures and Functions	2	28-09-2018, 29-09-2018		TLM1	CO4		
44.	Pointers to structures	1	03-10-2018		TLM1	CO4		
45.	Self-referential structures	1	04-10-2018		TLM1	CO4		
46.	Unions	2	05-10-2018, 06-10-2018		TLM1	CO4		
47.	Typedef, Enum	1	09-10-2018		TLM1	CO4		
48.	Tutorial	1	10-10-2018		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	1	11-10-2018		TLM2	CO5		
50.	binary files, modes of operation	1	12-10-2018			CO5		
51.	Standard I/O operations	1	13-10-2018			CO5		
52.	Formatted I/O operations	1	23-10-2018			CO5		
53.	File I/O operations	1	24-10-2018			CO5		
54.	Error handling functions	1	25-10-2018			CO5		
55.	Programs on file creation	2	26-10-2018, 27-10-2018			CO5		
56.	Programs on file accessing	1	30-10-2019, 31-10-2018			CO5		
57.	Programs on file reading and writing data	1	01-11-2018			CO5		
58.	Programs on file handling functions	1	02-11-2018			CO5		
59.	Tutorial	1	03-11-2018		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			
Sankranthi Holidays			
I Phase of Instructions-II			
I Mid Examinations			
II Phase of Instructions			
II Mid Examinations			
Preparation and Practicals			
Semester End Examinations			

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: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	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				

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: Understand the operation of regulated power supplies, function generators and CRO.
- CO2: Analyze the characteristics of different electronic devices such as diode and transistor.
- CO3: Design the rectifier circuits .

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

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

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

LAB SCHEDULE (LESSON PLAN): IT

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							
1.	LAB introduction and Calculation of resistance using color coding	2	21-07-18				
2.	Study of CRO	2	28-07-18				
3.	PN Junction diode characteristics	2	04-08-18				
4.	Zener Diode Characteristics	2	11-08-18				
5.	Half wave rectifier with and without filter	2	18-08-18				
6.	Full wave rectifier with and without filter	2	25-08-18				
7.	Transistor characteristics under CB configuration	2	01-09-18				
CYCLE-2							
8.	Transistor characteristics under CE configuration	3	01-09-18				
9.	Transistor characteristics under CC configuration	3	15-09-18				
10.	Drain characteristics of Field effect Transistor	3	22-09-18				
11.	Transfer characteristics of Field effect Transistor	3	29-09-18				
12.	Uni-junction Transistor characteristics	3	06-10-18				
13.	Experiments on LABVIEW	3	13-10-18				
14.	REVISION	3	27-10-18				
15.	Internal Lab Exam	3	03-10-18				
No. of classes required to complete:		45		03-11-18			

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	09-07-2018	25-08-2018	7 W
I Mid Examinations	27-08-2018	31-08-2018	1 W
II Phase of Instructions	01-09-2018	03-11-2018	9W
II Mid Examinations	05-11-2018	10-11-2018	1 W
Preparation and Practicals	12-11-2018	24-11-2018	2 W
Semester End Examinations	26-11-2018	08-12-2018	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	Mr.Y.Amar Babu
Course Instructor	Course Coordinator	Module Coordinator	BOS Chairman&HOD

LAKIREDDY 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.,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: Understand the operation of regulated power supplies, function generators and CRO.

CO2: Analyze the characteristics of different electronic devices such as diode and transistor.

CO3: Design the rectifier circuits .

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

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

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

LAB SCHEDULE (LESSON PLAN): IT

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							
1.	LAB introduction and Calculation of resistance using color coding	2	13-07-18				
2.	Study of CRO	2	20-07-18				
3.	PN Junction diode characteristics	2	27-07-18				
4.	Zener Diode Characteristics	2	03-08-18				
5.	Half wave rectifier with and without filter	2	10-08-18				
6.	Full wave rectifier with and without filter	2	17-08-18				
7.	Transistor characteristics under CB configuration	2	24-08-18				
CYCLE-2							
8.	Transistor characteristics under CE configuration	3	07-09-18				
9.	Transistor characteristics under CC configuration	3	14-09-18				
10.	Drain characteristics of Field effect Transistor	3	21-09-18				
11.	Transfer characteristics of Field effect Transistor	3	28-09-18				
12.	Uni-junction Transistor characteristics	3	05-10-18				
13.	Experiments on LABVIEW	3	12-10-18				
14.	REVISION	3	26-10-18				
15.	Internal Lab Exam	3	02-10-18				
No. of classes required to complete:		45			02-11-18		

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	09-07-2018	25-08-2018	7 W
I Mid Examinations	27-08-2018	31-08-2018	1 W
II Phase of Instructions	01-09-2018	03-11-2018	9W
II Mid Examinations	05-11-2018	10-11-2018	1 W
Preparation and Practicals	12-11-2018	24-11-2018	2 W
Semester End Examinations	26-11-2018	08-12-2018	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	Mr.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, Section -B
ACADEMIC YEAR	: 2018-19
COURSE NAME & CODE	: Electronic Devices and Circuits – 17EC02
L-T-P STRUCTURE	: 2-2-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: P.Rakesh Kumar, Sr Assistant Professor
COURSE COORDINATOR	: Mr.P.Rakesh Kumar, Sr Assistant Professor

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** : **Remember** the transport phenomena of charge carriers in a semiconductor.
- CO2** : **Understand** the operation of Diode , BJT and FET.
- CO3** : **Apply** different types of filters in AC to DC conversion.
- CO4** : **Analyze** the different types of diodes, operation and its characteristics.
- CO5** : **Evaluate** the different biasing techniques used in BJTs and FET.

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

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	--	--	--	--	--	--	--	--	--	2	2	--	3	--
CO2	3	--	--	3	--	2	--	--	--	--	2	2	2	3	--
CO3	3	--	--	3	--	2	--	--	--	--	2	2	2	3	2
CO4	3	--	3	2	--	--	--	--	--	--	2	2	1	3	2
CO5	3	--	3	2	--	2	--	--	--	--	2	2	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 Section -B****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
1.	Introduction to Subject, Course Outcomes, Introduction to UNIT-I	1	09-07-18		TLM1	CO1	T1,R1	
2.	Energy band theory of Insulators, Conductors, Semiconductors	1	11-07-18		TLM1	CO1	T1,R1	
3.	Mobility and Conductivity	1	12-07-18		TLM1	CO1	T1,R1	
4.	Energy distribution of electrons in metals	1	16-07-18		TLM1	CO1	T1,R1	
5.	Electrons and Holes in an Intrinsic Semiconductors	1	18-07-18		TLM1	CO1	T1,R1	
6.	Conductivity of a semiconductor	1	19-07-18		TLM1	CO1	T1,R1	
7.	Carrier concentration in an intrinsic Semiconductors	1	21-07-18		TLM1	CO1	T1,R1	
8.	Donor and Acceptor Impurities	1	23-07-18		TLM1	CO1	T1,R1	
9.	Mass Action Law, Charge densities in semiconductor	1	25-07-18		TLM1	CO1	T1,R1	
10.	Diffusion, Carrier Lifetime	1	26-07-18		TLM1	CO1	T2,R1	
11.	Continuity Equation, Hall Effect	1	28-07-18		TLM1	CO1	T1,R1	
12.	TUTORIAL-1	1	20-07-18		TLM3,4	CO1	T1,R1	
13.	TUTORIAL-2	1	27-07-18		TLM3,4	CO1	T1,R1	
14.	TUTORIAL-3	1	01-08-18		TLM3,4	CO1	T1,R1	
15.	Assignment/Quiz	1	30-07-18		TLM6	CO1	T1,R1	
No. of classes required to complete UNIT-I		15	No. of classes taken:					

UNIT-II: Junction Diode 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
16.	Qualitative theory of PN Junction	1	02-08-18		TLM1	CO2	T1,R1	
17.	Band Structure of an open circuited PN junction, Current components in a PN Diode	1	04-08-18		TLM1	CO2	T1,R1	
18.	PN Junction diode operation in Forward bias and Reverse bias	1	06-08-18		TLM1	CO2	T1,R1	
19.	Qualitative theory of the PN diode currents- Diode current equation	1	08-08-18		TLM1	CO2	T1,R1	
20.	Law of the junction ,Forward currents, Reverse Saturation Current	1	09-08-18		TLM1	CO2	T1,R1	
21.	Volt Ampere Characteristics of Diode, Temperature dependence of Diode, Diode Resistance, Diode Capacitance-Transition Capacitance	1	13-08-18		TLM1	CO2	T1,R1	
22.	Diffusion Capacitance, Laser, Zener Diode Tunnel Diode, Varactor Diode, Photo Diode, Avalanche Photo Diode	1	16-08-18		TLM1	CO2	T2,R1	

23.	LED, PIN Diode, Liquid crystal diode, Solar Cell	1	18-08-18		TLM1	CO2	T2,R1	
24.	TUTORIAL-4	1	11-08-18		TLM3,4	CO2	T1,R1	
25.	TUTORIAL-5	1	16-08-18		TLM3,4	CO2	T1,R1	
26.	TUTORIAL-6	1	22-08-18		TLM3,4	CO2	T1,R1	
27.	Assignment/Quiz	1	23-08-18		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
28.	Half wave rectifier with characteristics	1	01-09-18		TLM1	CO3	T1,R1	
29.	Full wave rectifier with center tap transformer and its characteristics	1	03-09-18		TLM1	CO3	T1,R1	
30.	Full Wave Rectifier with Bridge circuit and its characteristics	1	05-09-18		TLM1	CO3	T1,R1	
31.	Comparison of rectifiers, Harmonic components in a rectifier circuits.	1	06-09-18		TLM1	CO3	T1,R1	
32.	Inductor Filter, Capacitor Filter, L-Section Filter, π -Section Filter, Multiple L-Section and Pi-Section Filters	1	08-09-18		TLM1	CO3	T1,R1	
33.	Voltage Regulation using Zener diode	1	10-09-18		TLM1	CO3	T1,R1	
34.	design of a Zener regulator (Series & Shunt)	1	12-09-18		TLM1	CO3	T1,R1	
35.	TUTORIAL-7	1	06-09-18		TLM3,4	CO3	T1,R1	
36.	TUTORIAL-8	1	12-09-18		TLM3,4	CO3	T1,R1	
37.	TUTORIAL-9	1	17-09-18		TLM3,4	CO3	T1,R1	
38.	Assignment/Quiz	1	19-09-18		TLM6	CO3	T1,R1	
No. of classes required to complete UNIT-III		11	No. of classes taken:					

UNIT-IV: Bipolar Junction Transistors and Field Effect Transistors

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
39.	Introduction to Three terminal Devices, PNP and NPN Transistors	1	20-09-18		TLM1	CO4	T1,R1	
40.	Transistor Current components-Emitter Efficiency, Transport Factor, Large Signal Current Gain	1	22-09-18		TLM1	CO4	T1,R1	
41.	Common Base, Base width modulation, Common Emitter	1	24-09-18		TLM1	CO4	T1,R1	
42.	Common Collector, Ebers-Moll Model.	1	26-09-18		TLM1	CO4	T1,R1	
43.	Input and output characteristics in CE,CB and CC Comparison between FET and BJT	1	27-10-18		TLM1	CO4	T1,R1	

44.	JFET Construction, Operation, Classification, Drain and Transfer Characteristics of JFET, Uni-junction Transistor, UJT relaxation oscillator	1	29-10-18		TLM1	CO4	T1,R1	
45.	MOSFET Characteristics- Enhancement, Depletion Mode, Photo Transistor, Silicon Controlled Rectifier	1	01-10-18		TLM1	CO4	T1,R1	
46.	TUTORIAL-10	1	26-10-18		TLM3,4	CO4	T1,R1	
47.	TUTORIAL-11	1	04-10-18		TLM3,4	CO4	T1,R1	
48.	TUTORIAL-12	1	06-10-18		TLM3,4	CO4	T1,R1	
49.	Assignment/Quiz	1	08-10-18		TLM6	CO4	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
50.	Transistor Biasing and Stability- DC load line, Operating Point, AC load line	1	11-10-18		TLM1		T1,R1	
51.	Thermal Instability, Stability factors S_S AND S''	1	13-10-18		TLM1		T1,R1	
52.	Fixed Bias, Self Bias, Collector to Base Bias	1	15-10-18		TLM1		T1,R1	
53.	Thermal Concepts- Thermal Runaway, Thermal Resistance, Thermal Stability, Condition to avoid Thermal Runaway	1	17-10-18		TLM1		T1,R1	
54.	Bias Compensation Techniques- Diode Compensation for V_{BE} , Diode Compensation for I_{C0} , Thermistor and Sensistor compensation	1	22-10-18		TLM1		T1,R1	
55.	Different FET biasing methods(fixed, Self & Voltage divider Bias)	1	24-10-18		TLM1		T1,R1	
56.	TUTORIAL-13	1	25-10-18		TLM3,4		T1,R1	
57.	TUTORIAL-14	1	27-10-18		TLM3,4		T1,R1	
58.	TUTORIAL-15	1	29-10-18		TLM3,4		T1,R1	
59.	Assignment/Quiz	1	31-10-18		TLM6		T1,R1	
No. of classes required to complete UNIT-V		11	No. of classes taken:					

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
60.	Diode applications	1	03-11-18		TLM1		T1,R1	
61.	Transistor act as amplifier	1	03-11-18		TLM1		T1,R1	

Teaching Learning Methods

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

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 $\text{Max}(C1,C2)+25\%$ of $\text{Min}(C1,C2)$	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	Mr.P.Rakesh Kumar	Dr G.Srinivasulu	Mr.Y.Amar Babu
Course Instructor	Course Coordinator	Module Coordinator	BOS Chairman&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, Section -A
ACADEMIC YEAR	: 2018-19
COURSE NAME & CODE	: Electronic Devices and Circuits – 17EC02
L-T-P STRUCTURE	: 2-2-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: P.Rakesh Kumar, Sr Assistant Professor
COURSE COORDINATOR	: Mr.P.Rakesh Kumar, Sr Assistant Professor

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** : **Remember** the transport phenomena of charge carriers in a semiconductor.
- CO2** : **Understand** the operation of Diode ,BJT and FET.
- CO3** : **Apply** different types of filters in AC to DC conversion.
- CO4** : **Analyze** the different types of diodes, operation and its characteristics.
- CO5** : **Evaluate** the different biasing techniques used in BJTs and FET.

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

COs	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO	PSO	PSO
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	--	--	--	--	--	--	--	--	--	2	2	--	3	--
CO2	3	--	--	3	--	2	--	--	--	--	2	2	2	3	--
CO3	3	--	--	3	--	2	--	--	--	--	2	2	2	3	2
CO4	3	--	3	2	--	--	--	--	--	--	2	2	1	3	2
CO5	3	--	3	2	--	2	--	--	--	--	2	2	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-SECTION A****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
1.	Introduction to Subject, Course Outcomes, Introduction to UNIT-I	1	09-07-18		TLM1	CO1	T1,R1	
2.	Energy band theory of Insulators, Conductors, Semiconductors	1	10-07-18		TLM1	CO1	T1,R1	
3.	Mobility and Conductivity	1	13-07-18		TLM1	CO1	T1,R1	
4.	Energy distribution of electrons in metals	1	16-07-18		TLM1	CO1	T1,R1	
5.	Electrons and Holes in an Intrinsic Semiconductors	1	17-07-18		TLM1	CO1	T1,R1	
6.	Conductivity of a semiconductor	1	20-07-18		TLM1	CO1	T1,R1	
7.	Carrier concentration in an intrinsic Semiconductors	1	21-07-18		TLM1	CO1	T1,R1	
8.	Donor and Acceptor Impurities	1	23-07-18		TLM1	CO1	T1,R1	
9.	Mass Action Law, Charge densities in semiconductor	1	24-07-18		TLM1	CO1	T1,R1	
10.	Diffusion, Carrier Lifetime	1	25-07-18		TLM1	CO1	T1,R1	
11.	Continuity Equation, Hall Effect	1	30-07-18		TLM1	CO1	T1,R1	
12.	TUTORIAL-1	1	20-07-18		TLM3,4	CO1	T1,R1	
13.	TUTORIAL-2	1	27-07-18		TLM3,4	CO1	T1,R1	
14.	TUTORIAL-3	1	03-08-18		TLM3,4	CO1	T1,R1	
15.	Assignment/Quiz	1	25-07-18		TLM6	CO1	T1,R1	
No. of classes required to complete UNIT-I		15	No. of classes taken:					

UNIT-II: Junction Diode 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
16.	Qualitative theory of PN Junction	1	04-08-18		TLM1	CO2	T1,R1	
17.	Band Structure of an open circuited PN junction, Current components in a PN Diode	1	06-08-18		TLM1	CO2	T1,R1	
18.	PN Junction diode operation in Forward bias and Reverse bias	1	07-08-18		TLM1	CO2	T1,R1	
19.	Qualitative theory of the PN diode currents- Diode current equation	1	10-08-18		TLM1	CO2	T1,R1	
20.	Law of the junction ,Forward currents, Reverse Saturation Current	1	11-08-18		TLM1	CO2	T1,R1	
21.	Volt Ampere Characteristics of Diode, Temperature dependence of Diode, Diode Resistance, Diode Capacitance-Transition Capacitance	1	14-08-18		TLM1	CO2	T1,R1	
22.	Diffusion Capacitance, Laser, Zener Diode	1	17-08-18		TLM1	CO2	T1,R1	
23.	Tunnel Diode, Varactor Diode, Photo Diode, Avalanche Photo Diode	1	20-08-18		TLM1	CO2	T1,R1	

24.	LED, PIN Diode, Liquid crystal diode, Solar Cell	1	21-08-18		TLM2	CO2	T1,R1	
25.	TUTORIAL-4	1	11-08-18		TLM3,4	CO2	T1,R1	
26.	TUTORIAL-5	1	18-08-18		TLM3,4	CO2	T1,R1	
27.	TUTORIAL-6	1	24-08-18		TLM3,4	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
28.	Half wave rectifier with characteristics	1	03-09-18		TLM1	CO3	T1,R1	
29.	Full wave rectifier with center tap transformer and its characteristics	1	04-09-18		TLM1	CO3	T1,R1	
30.	Full Wave Rectifier with Bridge circuit and its characteristics	1	07-09-18		TLM1	CO3	T1,R1	
31.	Comparison of rectifiers, Harmonic components in a rectifier circuits.	1	08-09-18		TLM1	CO3	T1,R1	
32.	Inductor Filter, Capacitor Filter, L-Section Filter, π -Section Filter, Multiple L-Section and Pi-Section Filters	1	10-09-18		TLM1	CO3	T1,R1	
33.	Voltage Regulation using Zener diode	1	11-09-18		TLM1	CO3	T1,R1	
34.	design of a Zener regulator (Series & Shunt)	1	13-09-18		TLM1	CO3	T1,R1	
35.	TUTORIAL-7	1	14-09-18		TLM3,4	CO3	T1,R1	
36.	TUTORIAL-8	1	15-09-18		TLM3,4	CO3	T1,R1	
37.	TUTORIAL-9	1	17-09-18		TLM3,4	CO3	T1,R1	
38.	Assignment/Quiz	1	18-09-18		TLM6	CO3	T1,R1	
No. of classes required to complete UNIT-III		11	No. of classes taken:					

UNIT-IV: Bipolar Junction Transistors and Field Effect Transistors

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
39.	Introduction to Three terminal Devices, PNP and NPN Transistors	1	21-09-18		TLM1	CO4	T1,R1	
40.	Transistor Current components-Emitter Efficiency, Transport Factor, Large Signal Current Gain	1	22-09-18		TLM1	CO4	T1,R1	
41.	Common Base, Base width modulation, Common Emitter	1	24-09-18		TLM1	CO4	T1,R1	
42.	Common Collector, Ebers-Moll Model.	1	25-09-18		TLM1	CO4	T1,R1	
43.	Input and output characteristics in CE, CB and CC Comparison between FET and BJT	1	28-10-18		TLM1	CO4	T1,R1	
44.	JFET Construction, Operation, Classification, Drain and Transfer Characteristics of	1	29-10-18		TLM1	CO4	T1,R1	

	JFET							
45.	MOSFET Characteristics- Enhancement, Depletion Mode, Photo Transistor, Silicon Controlled Rectifier	1	01-10-18		TLM1	CO4	T1,R1	
46.	Uni-junction Transistor, UJT relaxation oscillator	1	05-10-18		TLM3,4	CO4	T1,R1	
47.	TUTORIAL-10	1	06-10-18		TLM3,4	CO4	T1,R1	
48.	TUTORIAL-11	1	08-10-18		TLM3,4	CO4	T1,R1	
49.	TUTORIAL-12	1	09-10-18		TLM3,4	CO4	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
50.	Transistor Biasing and Stability- DC load line, Operating Point, AC load line	1	15-10-18		TLM1		T1,R1	
51.	Thermal Instability, Stability factors S,S' AND S''	1	16-10-18		TLM1		T1,R1	
52.	Fixed Bias, Self Bias, Collector to Base Bias	1	22-10-18		TLM1		T1,R1	
53.	Thermal Concepts- Thermal Runaway, Thermal Resistance, Thermal Stability, Condition to avoid Thermal Runaway	1	24-10-18		TLM1		T1,R1	
54.	Bias Compensation Techniques- Diode Compensation for VBE, Diode Compensation for I _{C0} , Thermistor and Sensistor compensation	1	25-10-18		TLM1		T1,R1	
55.	Different FET biasing methods(fixed, Self & Voltage divider Bias)	1	30-10-18		TLM1		T1,R1	
56.	TUTORIAL-13	1	02-11-18		TLM3,4		T1,R1	
57.	TUTORIAL-14	1	09-11-18		TLM3,4		T1,R1	
58.	TUTORIAL-15	1	10-11-18		TLM3,4		T1,R1	
59.	Assignment/Quiz	1	03-11-18		TLM3,4		T1,R1	
No. of classes required to complete UNIT-V		11	No. of classes taken:					

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
60.	Diode applications	1	02-11-18		TLM1		T1,R1	
61.	Transistor act as amplifier	1	02-11-18		TLM1		T1,R1	

Teaching Learning Methods

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

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: $C=75\% \text{ of Max}(C1,C2)+25\% \text{ of Min}(C1,C2)$	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 interdisciplinary 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	Mr.P.Rakesh Kumar	Dr G.Srinivasulu	Mr.Y.Amar Babu
Course Instructor	Course Coordinator	Module Coordinator	BOS Chairman&HOD

	LAB SCHEDULE	Date:
	Sub Name: Engg. Chemistry Lab Class: I B.Tech CSE-A Semester: I	9/7/2017 To 10/11/2017

No. of Periods	Date	Lab Cycles	Signature
1.	10-07-17	Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc	
2.	17-07-17	Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality	
3.	31-07-17	Model experiment - Estimation of Na ₂ CO ₃ by using HCl solution.	
4.	07-08-17	Determination of alkalinity of a given water sample	
5.	14-08-17	Estimation of Mg ⁺² /Zn ⁺² /Ca ⁺² in given solution by using standard EDTA solution	
6.	21-08-17	Preparation of Urea formaldehyde resin. Preparation of Phenol formaldehyde resin.	
7.	04-09-17	Estimation of Mohr's salt by using potassium permanganate	
8.	11-09-17	Estimation of Mohr's salt by using potassium dichromate.	
9.	18-09-17	Estimation of KMnO ₄ by using Oxalic acid.	
10.	25-09-17	Estimation of amount of HCl conductometrically using standard NaOH solution.	
11.	09-10-17	Estimation of amount of HCl potentiometrically using NaOH solution.	
12.	23-10-17	Determination of pH of the given sample solution using pH meter.	
13.	30-10-17	Internal Examination (Batch-I&II)	

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	S.Vijaya dasaradha	Dr.V.Parvathi	Dr. V.Parvathi	Dr. A. Rami Reddy

	LAB SCHEDULE	Date:
	Sub Name: Engg. Chemistry Lab Class: I B.Tech CSE-B Semester: I	9/7/2017 To 10/11/2017

No. of Periods	Date	Lab Cycles	Signature
1.	11-07-17	Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc	
2.	18-07-17	Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality	
3.	25-07-17	Model experiment - Estimation of Na ₂ CO ₃ by using HCl solution.	
4.	01-08-17	Determination of alkalinity of a given water sample	
5.	08-08-17	Estimation of Mg ⁺² /Zn ⁺² /Ca ⁺² in given solution by using standard EDTA solution	
6.	05-09-17	Preparation of Urea formaldehyde resin. Preparation of Phenol formaldehyde resin.	
7.	12-09-17	Estimation of Mohr's salt by using potassium permanganate	
8.	19-09-17	Estimation of Mohr's salt by using potassium dichromate.	
9.	26-09-17	Estimation of KMnO ₄ by using Oxalic acid.	
10.	03-10-17	Estimation of amount of HCl conductometrically using standard NaOH solution.	
11.	10-10-17	Estimation of amount of HCl potentiometrically using NaOH solution.	
12.	24-10-17	Determination of pH of the given sample solution using pH meter.	
13.	31-10-17	Internal Examination (Batch-I&II)	

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	S.Vijaya dasaradha	Dr.V.Parvathi	Dr. V.Parvathi	Dr. A. Rami Reddy



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 (B)
ACADEMIC YEAR : 2018-19
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.
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	09-07-2018		TLM1			
2.	Presidential Address – Dr. A.P.J. Abdul Kalam	1	10-07-2018		TLM1	CO1	T1	
3.	Word formation: Prefixes & suffixes	1	13-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
4.	Word formation: Compound Collocations	1	16-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
5.	Punctuation	1	17-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
6.	Parts of Speech	1	20-07-2018		TLM1, TLM2, TLM5	CO1	T1,R1,R3	
7.	Double Angels - David Scott	1	23-07-2018		TLM1	CO1	T1	

8.	Sentence structure; Paragraph writing	1	24-07-2018		TLM1, TLM2	CO1	T1,R2,R4	
9.	Dialogue writing	1	27-07-2018		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	30-07-2018		TLM1, TLM6	CO2	T2	
11.	Words often confused- Homonyms	2	31-07-2018 03-08-2018		TLM1, TLM6	CO2	T2,R2,R4	
12.	Words often confused - Homophones	2	06-08-2018 07-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
13.	Words often confused- Homographs	2	10-08-2018 13-08-2018		TLM1, TLM6	CO2	T2	
14.	Types of verbs	1	14-08-2018		TLM1, TLM6	CO2	T2,R2,R4	
15.	Types of sentences	1	17-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
16.	'The Road Not Taken' by Robert Frost	2	20-08-2018 21-08-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
17.	Letter Writing: Official Letters	2	24-08-2018		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
18.	Technology with a Human Face	1	04-09-2018		TLM1	CO3	T1	
19.	Synonyms & Antonyms	1	07-09-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
20.	commonly misspelt words	1	10-09-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
21.	Tenses: Types & Uses	1	11-09-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
22.	'Preface' to Lyrical Ballads	1	14-09-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
23.	E-mails	1	17-09-2018		TLM1, TLM6	CO3	T1	
24.	Memo drafting	1	18-09-2018		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
25.	Listening Skills	1	24-09-2018		TLM1, TLM6	CO4	T2	
26.	The boy who broke the bank	1	25-09-2018		TLM1, TLM6	CO4	T2,R2,R4	
27.	Understanding the story, People, Places and Events	1	28-09-2018		TLM1, TLM6	CO4	T2,R2,R4	
28.	Understanding	1	01-10-2018		TLM1, TLM6	CO4	T2,R2,R4	

	Places & Events							
29.	Exercises on Prefixes & suffixes	1	05-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R2,R4	
30.	Active Listening	1	08-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
31.	Proverbial expansion on Listening	1	09-10-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
32.	Listening Skills	1	12-10-2018		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
33.	Interview Skills	1	15-10-2018		TLM1, TLM6	CO5	T2	
34.	The lighthouse keeper of Aspinwall	1	16-10-2018		TLM1, TLM6	CO5	T2,R2,R4	
35.	Understanding the story, People & World	1	19-10-2018		TLM1, TLM6	CO5	T2,R2,R4	
36.	Conjunctions	1	22-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	
37.	Résumé with covering letter	1	23-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3	
38.	Proverbial expansion on Interview Skills	2	26-10-2018 29-10-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4	

39.	Interview Skills	2	30-10-2018 02-11-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3	
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
40.	Verbal Reasoning	1	02-11-2018		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: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	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

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.

	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 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	: 2018-19
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, 1 st Edition, 2015.
T2	Jain, Jain, "A textbook of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 16 th Edition, 2015.

BOS APPROVED REFERENCE BOOKS:

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

Part-B

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

UNIT-I : ELECTRO CHEMISTRY AND BATTERIES

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.	Concept of electrode potential, SRP & SOP, EMF	2	9/7/18 & 11/7/18		TLM1	CO1	T1 & T2	
2.	S.H.E and its drawbacks, Calamel electrode	2	12/7/18 & 13/7/18		TLM1	CO1	T1 & T2	
3.	Tutorial-1	1	14/7/18		TLM3	CO1	T1 & T2	
4.	Measurement of electrode potential, Electrochemical	2	16/7/18& 18/7/18		TLM1	CO1	T1 & T2	

	series & applications							
5.	Nernst equation Derivation	1	19/7/18		TLM1	CO1	T1 , T2 & R3	
6.	Tutorial-2	1	20/7/18		TLM3	CO1	T1 & T2	
7.	Problems on Nernst equation	2	21/7/18 & 23/7/18		TLM1	CO1	T1 & T2	
8.	Primary, secondary & reserve batteries	1	25/7/18		TLM1 & TLM2	CO1	T1 & T2	
9.	Dry battery (leclanche cell), Nickel- Cadmium battery	2	26/7/18 & 27/7/18		TLM1 & TLM2	CO1	T1 & T2	
10.	Magnesium – Copper reserve battery	1	28/7/18		TLM1 & TLM2	CO1	T1 & T2	
11.	Hydrogen – oxygen Fuel cell	1	30/7/18		TLM1 & TLM2	CO1	T1 & T2	
12.	Quiz questions	1	1/8/18		Test	CO1	T1 & T2	
13.	Assignment	1	2/8/18		Test	CO1	T1 & T2	
No. of classes required to complete UNIT-I : 18					No. of classes taken:			

UNIT-II : SCIENCE OF CORROSION

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
14.	Corrosion definition examples, definition of dry corrosion.	1	3/8/18		TLM1	CO2	T1 & T2	
15.	Oxidative. Corrosion by other gases	1	4/8/18		TLM1	CO2	T1 & T2	
16.	Liquid metal corrosion, Pilling bed worth rule	1	6/8/18		TLM1	CO2	T1 & T2	
17.	Wet corrosion-mechanism	1	8/8/18		TLM1	CO2	T1 & T2	
18.	Tutorial-1	1	9/8/18		TLM3	CO2	T1 & T2	
19.	Galvanic corrosion	1	10/8/18		TLM1	CO2	T1 & T2	

20.	Concentration cell corrosion	2	11/8/18 & 13/8/18		TLM1	CO2	T1 & T2		
21.	Passivity, Exceptions in E.C series, Galvanic series	1	16/8/18		TLM1	CO2	T1 & T2		
22.	Nature of metal, Nature of environment	1	17/8/18		TLM1	CO2	T1 & T2		
23.	Tutorial-2	1	18/8/18		TLM3	CO2	T1 & T2		
24.	Cathodic protection & metal cladding	1	20/8/18		TLM1	CO2	T1 & T2		
25.	Electroplating	1	23/8/18		TLM1	CO2	T1 & T2		
26.	Quiz questions	1	24/8/18		TLM1. Test	CO2	T1 & T2		
27.	Assignment	1	25/8/18		Test	CO2	T1 & T2		
No. of classes required to complete UNIT-II : 15					No. of classes taken:				

UNIT-III : CHEMISTRY OF ENGINEERING MATERIALS

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
28.	Definition of nanomaterial	1	1/9/18		TLM1	CO3	T1 & T2, R2	
29.	Properties of nano materials	1	3/9/18		TLM1 & TLM2	CO3	T1 & T2, R2	
30.	Preparation of nano materials (sol gel Method)	1	5/9/18		TLM1 & TLM2	CO3	T1 & T2, R2	
31.	Applications of nano materials	1	6/9/18		TLM1 & TLM2	CO3	T1 & T2, R2	
32.	Tutorial-1	1	7/9/18		TLM3	CO3	T1 & T2	
33.	Basic terminology of polymers Classification of polymers	1	8/9/18		TLM1	CO3	T1 & T2	
34.	Types of polymerization, Bakelite preparation, properties and	1	10/9/18		TLM1	CO3	T1 & T2	

	applications							
35.	Preparation, , properties applications of PMMA	1	12/9/18		TLM1	CO3	T1 & T2	
36.	Conducting polymers	1	14/9/18		TLM1	CO3	T1 & T2	
37.	FRPs & Tutorial-2	1	15/9/18		TLM1 TLM3	CO3	T1 & T2	
38.	Processing of natural rubber,vulcanization ,advantages , Preparation , properties & applications of Thiokol and BUNA-S	1	17/9/18		TLM1	CO3	T1 & T2	
39.	Assignment	1	19/9/18	Test	Test	CO3	T1 & T2	
40.	Quiz	1	20/9/18	Test	Test			
No. of classes required to complete UNIT-III : 13					No. of classes taken:			

UNIT-IV : PHOTO CHEMISTRY AND LIQUID CRYSTALS

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.	Definition, differences between thermal and photo chemical reactions	1	21/9/18		TLM1	CO4	T1 & T2	
42.	Grothers-Droper law, Stark-Einstein law and Quantum efficiency(Definition only).	1	22/9/18		TLM1	CO4	T1 & T2	
43.	Fluorescence, phosphorescence – applications	1	24/9/18		TLM1	CO4	T1 & T2	
44.	Chemiluminescence, bio-luminescence and Photo-sensitization.	1	26/9/18		TLM1	CO4	T1 & T2	
45.	Tutorial-1	1	27/9/18		TLM3	CO4	T1 & T2	
46.	Definition, Identification and structural aspects of molecules to form liquid crystals	1	28/9/18		TLM1	CO4	T1 & T2	

47.	Thermo tropic liquid crystals and types	1	29/9/18		TLM1	CO4	T1 & T2	
48.	lyotropic liquid crystals and applications.	1	1/10/18		TLM1	CO4	T1 & T2	
49.	Tutorial-II	1	3/10/18		TLM3	CO4	T1 & T2	
50.	Quiz questions	1	4/10/18	Test	Test	CO4	T1 & T2	
51.	Assignment	1	5/10/18	Test	Test	CO4	T1 & T2	
No. of classes required to complete UNIT-IV : 11					No. of classes taken:			

UNIT-V : ANALYTICAL TECHNIQUES AND SPECTROSCOPY

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
52.	Types of analysis, Analysis of physical characteristics, Gravimetric and volumetric analysis (basic concept only). Analysis of physical characteristics.	1	6/10/18		TLM1	CO5	T1 & T2	
53.	Electro analytical techniques – Introduction	1	8/10/18		TLM1	CO5	T1 & T2	
54.	Strong acid - strong base and strong acid - weak base, weak acid -strong base and weak acid -weak base – advatages.	1	10/10/18		TLM1	CO5	T1 & T2	
55.	Acid-base and oxidation-reduction titrations-advantages	1	11/10/18		TLM1	CO5	T1 & T2	
56.	Tutorial-1	1	12/10/18			CO4	T1 & T2	
57.	Principle and determination of Iron by using thiocynate as a reagent.	1	13/10/18		TLM1	CO5	T1 & T2	
58.	Origin of electronic spectra, Types of spectra-emission and absorption spectra and Beer-Lambert's law	2	19/10/18 & 20/10/18		TLM1	CO5	T1 & T2	
59.	Types of vibrations, factors influencing vibrational frequencies.	1	22/10/18		TLM1	CO5	T1 & T2	

60.	Applications of IR-Spectroscopy.applications of IR-Spectroscopy.	1	24/10/18		TLM1	CO5	T1 & T2		
61.	Types of electronic transitions, probability	1	25/10/18		TLM1	CO5	T1 & T2		
62.	Chomophores, Auxochromes and applications of UV-Spectroscopy.	1	26/10/18		TLM1	CO5	T1 & T2		
63.	Tutorial-II	1	27/10/18		TLM3	CO5	T1 & T2		
64.	Assignment	1	29/10/18		Test	CO5	T1 & T2		
65.	Quiz questions	1	31/10/18		Test	CO5	T1 & T2		
No. of classes required to complete UNIT-IV : 15					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
66.	Batteries in current technology	1	1/11/18		TLM1		T1 & T2	
67.	Applications of nanomaterials	1	2/11/18		TLM1		T1 & T2	
68.	Applications of liquid crystals	1	3/11/18		TLM1		T1 & T2	

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: $A = \text{Avg}(\text{Best of Four}(A1, A2, A3, A4, A5))$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B = 75\% \text{ of Max}(B1, B2) + 25\% \text{ of Min}(B1, B2)$	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: $C = 75\% \text{ of Max}(C1, C2) + 25\% \text{ of Min}(C1, C2)$	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

PROGRAM OUTCOMES

Engineering Graduates will be able to:

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

	Dr V Paravathi	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 : 2018-19
COURSE NAME & CODE : COMPUTER PROGRAMMING LAB – 17CI60
L-T-P STRUCTURE : 2-0-0
COURSE CREDITS : 1
COURSE INSTRUCTOR : Mr. T Udaya Kumar/ Mr. L V Krishna Rao
COURSE COORDINATOR : Mrs. K. Naga Prasanthi
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
1.	Cycle - I	2	11/07/2018		
2.	Cycle – II	2	18/07/2018		
3.		2	25/07/2018		
4.	Cycle – III	2	01/08/2018		
5.		2	08/08/2018		
6.	Cycle – IV	2	05/09/2018		
7.	Cycle – V	2	19/09/2018		
8.	Cycle – VI	2	26/09/2018		
9.	Cycle – VII	2	03/10/2018		
10.	Cycle - VIII	2	24/10/2018		
11.	<i>LAB INTERNAL EXAM</i>	2	<i>31/10/2018</i>		

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. L V Krishna Rao	Mrs. K. Naga Prasanthi	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.	Introduction	2	12/07/2018		
2.	Cycle - I	2	19/07/2018		
3.	Cycle – II	2	26/08/2018		
4.		2	02/08/2018		
5.	Cycle – III	2	09/08/2018		
6.		2	16/08/2018		
7.	Cycle – IV	2	23/08/2018		
8.		2	30/08/2018		
9.	Cycle – V	2	06/09/2018		
10.	Cycle – VI	2	20/09/2018		
11.		2	27/09/2018		
12.	Cycle – VII	2	04/10/2018		
13.	Cycle - VIII	2	25/10/2018		
14.	<i>LAB INTERNAL EXAM</i>	2	<i>01/11/2018</i>		

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				

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:

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.

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. T Udaya Kumar Mr. L V Krishna Rao	Mrs. K. Naga Prasanthi	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana
Signature				

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., MECH
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : COMPUTER PROGRAMMING LAB – 17CI60
L-T-P STRUCTURE : 2-0-0
COURSE CREDITS : 1
COURSE INSTRUCTOR : Mr. L V Krishna Rao
COURSE COORDINATOR : Mrs. K. Naga Prasanthi
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 Weekly
1.	Introduction	2	18/07/2018		
2.	Cycle – I	2	25/07/2018		
3.	Cycle – II	2	01/08/2018		
4.		2	08/08/2018		
5.	Cycle – III	2	05/09/2018		
6.		2	12/09/2018		
7.	Cycle – IV	2	19/09/2018		
8.		2	26/09/2018		
9.	Cycle – V	2	03/10/2018		
10.	Cycle – VI	2	10/10/2018		
11.	Cycle – VII	2	24/10/2018		
12.	Cycle – VIII	2	31/10/2018		

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. L V Krishna Rao	Mrs. K. Naga Prasanthi	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:

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.
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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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Programming Paradigms:

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

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

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

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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., CSE-A
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : COMPUTER PROGRAMMING – 17CI01
L-T-P STRUCTURE : 4-1-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Mr. L V Krishna rao
COURSE COORDINATOR : Mrs. K. Naga Prasanthi
MODULE COORDINATOR: Dr. D. Veeraiah
PRE-REQUISITE: NIL

COURSE OBJECTIVE:

In this course, the student will be able to learn about the 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. The Derived Data Types like Arrays, Strings and 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 (CO):

- CO1:** Identify the 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 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	3	1	-	-	-	-	-	-	-	-	-	-	1	-	3
CO2	3	-	1	-	-	-	-	-	-	-	-	-	1	-	3
CO3	3	-	2	1	2	-	-	-	-	-	-	-	1	-	3
CO4	3	-	2	1	2	-	-	-	-	-	-	-	1	-	3
CO5	3	-	2	1	2	-	-	-	-	-	-	-	1	1	

Note: 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 N.B. Venkateswarlu and E.V. Prasad, C and Data Structures, S. Chand Publishers, 1st Edition, 2010.

R2 Reema Thareja, Programming in C, Oxford University Press, 2nd Edition, 2015.

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

R4 Pradeep Dey, Manas Ghosh, Programming in C, Oxford University Press, 2nd Edition, 2011.

R5 E. Balaguruswamy, Computer Programming, McGraw Hill Education, 1st Edition.

COURSE DELIVERY PLAN (LESSON PLAN): Section-B**UNIT – 1: INTRODUCTION TO PROBLEM SOLVING THROUGH C PROG.**

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.	Software Development Method for Problem Solving	1	09/07/18		TLM1, TLM2	CO1	T1	
2.	Algorithm with Examples	1	10/07/18		TLM1, TLM4	CO1	T1	
3.	Pseudo Code with Examples	1	11/07/18		TLM1, TLM4	CO1	T1, R2	
4.	Flow Chart with Examples	1	12/07/18		TLM1, TLM2, TLM4	CO1	T1, R2	
5.	Introduction to C, History of C, Features of C	1	13/07/18		TLM1, TLM2	CO1	T1, R2	
6.	Structure of a C Program, C Tokens – Keywords, Identifiers	1	16/07/18		TLM1, TLM2	CO1	R2	
7.	C Tokens – Constants, String Constants, Operator, Special Symbols	1	17/07/18		TLM1, TLM2	CO1	T1, R2	
8.	Data Types and Sizes	1	18/07/18		TLM1, TLM2	CO1	T1, R2	
9.	Input Output Statements and Sample C Program	1	19/07/18		TLM1, TLM4, TLM5	CO1	T1, R2	
10.	Operators – Arithmetic, Relational, Logical, Equality	1	20/07/18		TLM1, TLM4, TLM5	CO1	T1, R2	
11.	Operators – Unary, Assignment, Conditional, Bit Wise, Special Operators	1	23/07/18		TLM1, TLM4, TLM5	CO1	T1, R2	
12.	Tutorial-1	1	24/07/18			CO1		
13.	Control Structures: Decision Statements – if, if else, else if ladder	1	25/07/18		TLM1, TLM4, TLM5	CO1	T1, R2	
14.	switch statement with example	1	26/07/18		TLM1, TLM4, TLM5	CO1	T1, R2	
15.	continue, goto, break and labels	1	27/07/18		TLM1, TLM4,	CO1	T1, R2	

					TLM5			
16.	Loop Statements: while loop and do-while loop	1	30/07/18		TLM1, TLM4, TLM5	CO1	T1, R2	
17.	for loop with Examples	1	31/07/18		TLM1, TLM4, TLM5	CO1	T1, R2	
18.	Programming Examples	1	01/08/18		TLM1, TLM4, TLM5	CO1	T1, R2	
19.	Tutorial - 2	1	02/08/18		TLM1, TLM4, TLM5	CO1	T1, R2	
	Assignment / Quiz - 1				TLM3	CO1	---	
					TLM6	CO1	---	
No. of classes required to complete UNIT-I:		19	No. of classes taken:					

UNIT - 2: Arrays

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
20.	Introduction to Arrays and Types of Arrays	1	03/08/18		TLM1	CO2	T1, R2	
21.	1-D Array: Declaration and Initialization with Examples	1	06/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
22.	Accessing 1-D Array with Insertion, Deletion and Searching Operations.	1	07/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
23.	2-D Array: Declaration and Initialization with Examples	2	08/08/18, 09/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
24.	Accessing 2-D Array with Examples.	1	10/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
25.	2-D Array Examples: Matrix Addition, Subtraction, Multiplication, Transpose	2	13/08/18, 14/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
26.	Tutorial - 3	1	16/08/18			CO2		
27.	Character Arrays: Introduction, Declaration, Initialization and Accessing	1	17/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
28.	Arithmetic Operations and String Handling Functions Part - 1 with Examples	1	20/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
29.	String Handling Functions Part - 2 with Examples	1	21/08/18		TLM1, TLM4, TLM5	CO2	T1, R2	
30.	Tutorial - 4	1	23/08/18		TLM3	CO2	---	
	Assignment / Quiz - 2				TLM6	CO2	---	
No. of classes required to complete UNIT-I:		13	No. of classes taken:					

UNIT – 3: 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
31.	Functions: Introduction to Functions, Differences between Pre Defined Functions and User Defined Functions	1	24/09/18		TLM1	CO3	T1, R2	
32.	Function Declaration/Prototype, Function Definition, Function Calling	1	03/09/18		TLM1	CO3	T1, R2	
33.	Return Type, Parameter Passing, Calling Function, Called Function	1	09/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
34.	Recursive Functions with Examples	1	05/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
35.	Functions with Arrays	1	06/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
36.	Storage Classes	1	07/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
37.	Dynamic Memory Management Functions, Command Line Arguments	1	10/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
38.	Programming Examples	1	11/09/18		TLM5	CO3	T1, R2	
39.	Tutorial – 5	1	12/09/18					
40.	Pointers: Introduction, declaration and Initialization of Pointer Variables	1	15/09/18		TLM1	CO3	T1, R2	
41.	Pointers Expressions, Addresses and Arithmetic	1	17/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
42.	Pointers and Arrays	1	18/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
43.	Pointers and Strings	1	19/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
44.	Pointers to Pointers	1	20/09/18		TLM1, TLM4, TLM5	CO3	T1, R2	
45.	Pre Processor Directives and Macros	1	24/09/18		TLM1, TLM5	CO3	T1, R2	
46.	Tutorial – 6	1	25/09/18		TLM3	CO3	---	
	Assignment – 3 / Quiz – 3				TLM6	CO3	---	
No. of classes required to complete UNIT-III:		16	No. of classes taken:					

UNIT – 4: 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
47.	Structures: Introduction, Declaration and Initialization	1	26/09/18		TLM1	CO4	T1, R2	
48.	Accessing Structures with Examples	2	27/09/18, 28/10/18		TLM1, TLM4, TLM5	CO4	T1, R2	
49.	Nested Structures, Array of Structures	1	01/10/18		TLM1, TLM4, TLM5	CO4	T1, R2	
50.	Structures and Functions	1	03/10/18		TLM1, TLM4, TLM5	CO4	T1, R2	
51.	Pointers to Structures, Self Referential Structures	1	04/10/18		TLM1, TLM4, TLM5	CO4	T1, R2	
52.	Tutorial-7	1	05/10/18			CO4		
53.	Unions: Introduction, Declaration and Initialization	1	08/10/18		TLM1	CO4	T1, R2	
54.	Accessing Structures with Examples	1	09/10/18		TLM1, TLM4, TLM5	CO4	T1, R2	
55.	Typedef and Enum with Examples	1	10/10/18		TLM1, TLM5	CO4	T1, R2	
56.	Tutorial – 8	1	11/10/18		TLM3	CO4	---	
57.	Assignment – 4 / Quiz – 4					CO4	---	
No. of classes required to complete UNIT-IV		11	No. of classes taken:					

UNIT – 5: 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.	Introduction, Text and Binary Files, Streams	1	12/10/18		TLM1	CO5	T1, R2	
59.	Standard I/O and Formatted I/O Functions	2	22/10/18, 23/10/18		TLM1, TLM5	CO5	T1, R2	
60.	File I/O Operations	2	24/10/18, 25/10/18		TLM1, TLM5	CO5	T1, R2	
61.	Error Handling	1	26/10/18		TLM1, TLM4, TLM5	CO5	T1, R2	
62.	Programming Examples	1	29/10/18		TLM1, TLM5	CO5	T1, R2	
63.	Tutorial – 9	1	30/10/18		TLM3	CO5	---	
64.	Assignment – 5 / Quiz – 5	1	31/11/18		TLM6	CO5	---	
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
65.	Introduction to Objective C	1	01/08/18 ,02/11/18		TLM1, TLM2			

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

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Descriptive Examination	1, 2	B1=20
I-Mid Online Quiz Examination	1, 2	C1 = 10
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Descriptive Examination	3, 4, 5	B2=20
II-Mid Online Quiz Examination	3, 4, 5	C2 = 10
Evaluation of Assignment/Quiz Marks: $A = (A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Descriptive Marks: $B = 75\% \text{ of Max}(B1,B2)+25\% \text{ Min}(B1,B2)$	1,2,3,4,5	B=20
Evaluation of Mid Online Quiz Marks: $C = \text{Average}(C1, C2)$	1,2,3,4,5	C=10
Cumulative Internal Examination : $A+B+C$	1,2,3,4,5	A+B+C=35
Attendance	-	D = 0 to 5
Semester End Examinations	1,2,3,4,5	E=60
Total Marks: $A+B+C$	1,2,3,4,5	100

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:

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.
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PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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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 L V Krishna rao	Mrs. K. Naga Prasanthi	Dr. D. Veeraiah	Dr. Ch. Venkata Narayana
Signature				



LESSON PLAN

Department: COMPUTER SCIENCE ENGINEERING **Program:** B.Tech –I Sem-A

Course: DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA

Marks: 100

Credits: 4

L: T: P:: 4:1:0

1. Pre-requisites: fundamental knowledge on basic calculus and Matrices

2. Course Objectives

The objective of this course is to introduce the first order and higher order differential equations, functions of several variables. They also learn the numerical techniques of solving the differential equations

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

CO1: The mathematical skills derived from this course form a necessary base to analytical and design concepts encountered in the Program.

CO2: The First and Higher Order Differential Equations, procedures to solve them and their physical applications.

CO3: Expanding continuous functions as an infinite series and 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.

4. Course Articulation Matrix:

Course Outcomes POs	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	3	2	2									2
CO2.	3	2	2									2
CO3.	2	2	1									2
CO4.	3	2	2									2
CO5.	3	2	2									2

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

BOS APPROVED TEXT BOOKS:

1. S. S. Sastry, "Introductory Methods of Numerical Analysis", PHI, 5th Edition, 2005.
2. Dr. B. V. Ramana, "Higher Engineering Mathematics", TMH Publications, 1st Edition, 2010.

BOS APPROVED REFERENCE BOOKS:

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

2. Steven .C. Chopra and Ra. P. Canale, “Numerical Methods for Engineers with programming and software application”, TMH Publications,4th Edition,2002.

3. M. K. Jain, S. R. K. Iyengar, R.K. Jain, “Numerical Methods for Scientific and Engineering Computation”, New Age International Publishers, 5thEdition,2007.

Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	As per the Schedule	Actual Date	Tentative Date	DM
UNIT-I					
1.	Introduction to the course Differential equations & Linear algebra and Course Outcomes (CO's).	1		9/7/2018	1
2.	Introduction to Differential equations of first order and first degree	1		10/7/2018	1
3.	Variables separable method	1		11/7/2018	2
4.	Homogeneous method	1		12 /7/2018	1
5.	Solving a D.E. by observation method	1		13/7/2018	3
6.	Exact DE	1		16/7/2018	2
7.	Non Exact type -I	1		17/7/2018	2
8.	Non exact type- II	1		18/7/2018	2
9.	Tutorial-1	1		19/7/2018	3
10.	Non Exact type-III	1		20/7/2018	2
11.	Linear DE in y	1		23/7/2018	2
12.	Linear DE in x	1		24/7/2018	2
13.	Bernoulli DE	1		25/7/2018	2
14.	Tutorial-2	1		26/7/2018	3
15.	Orthogonal Trajectories (Cartesian)	1		27/7/2018	2
16.	Orthogonal Trajectories (polar)	1		30/7/2018	2
17.	Newton's Law of cooling	1		31/7/2018	2
18.	Newton's Law of Growth and Decay	1		01/8/2018	2
19.	Assignment/Quiz -1	1		02/8/2018	4
Number of classes		19			
UNIT-II					
20	Introduction to Higher order linear DE	1		3/8/2018	1
21	Solving a homogeneous DE	1		6/8/2018	2
22	P.I for e^{ax}	1		7/8/2018	2
23	P.I for e^{ax} , $\sin ax$, $\cos ax$	1		8/8/2018	2

24	Tutorial-3	1		9/8/2018	3
25	P.I for Cosax, sinax	1		10/8/2018	2
26	P.I for x^k	1		13/8/2018	2
27	P.I for sums	1		14/8/2018	2
28	Tutorial-4	1		16/8/2018	3
29	P.I for products	1		17/8/2018	2
30	P.I for products	1		20/8/2018	2
31	Method of Variation of parameters	1		21/8/2018	2
32	Method of Variation of parameters	1		23/8/2018	2
33	Assignment/Quiz -2	1		24/8/2018	4
Number of classes		14			
UNIT-III					
34	Introduction to Functions of several variables	1		4/9/2018	1
35	Generalized Mean Value Theorem	1		5/9/2018	2
36	Taylor's series	1		6/9/2018	2
37	Tutorial-5	1		7/9/2018	3
38	Maclaurin's series	1		10/9/2018	2
39	Jacobians (polar, cylindrical, spherical coordinates)	1		11/9/2018	2
40	Jacobians (polar, cylindrical, spherical coordinates)	1		12/9/2018	2
41	Maxima,minima of functions of two variables	1		14/9/2018	2
42	Maxima,minima of functions of two variables	1		17/9/2018	2
43	Maxima,minima of functions of two variables	1		18/9/2018	2
44	Lagrange's multipliers method.	1		19/9/2018	2
45	Tutorial-6	1		20/9/2018	3
46	Lagrange's multipliers method.	1		24/9/2018	2
47	Assignment/Quiz -3	1		25/9/2018	4
Number of classes		14			
UNIT-IV					
48	Introduction to Partial differential equations	1		26/9/2018	1
49	Formation of PDE by eliminating arbitrary constants	1		27/9/2018	2
50	Formation of PDE by eliminating arbitrary constants	1		28/9/2018	2
51	Tutorial-7	1		1/10/2018	3
52	Formation of PDE by eliminating arbitrary constants	1		3/10/2018	2

53	Formation of PDE by eliminating arbitrary functions	1		4/10/2018	2
54	Formation of PDE by eliminating arbitrary functions	1		5/10/2018	2
55	Tutorial-8	1		8/10/2018	3
56	Formation of PDE by eliminating arbitrary functions	1		9/10/2018	2
57	Solution of linear PDE - Lagranze's method	1		10/10/2018	2
58	Solution of linear PDE - Lagranze's method	1		11/10/2018	2
59	Solution of linear PDE - Lagranze's method	1		12/10/2018	2
60	Assignment/Quiz -4	1		15/10/2018	4
Number of classes		13			
UNIT-V					
69	Introduction on Unit-V	1		16/10/2018	1
70	Taylor's series method	1		22/10/2018	2
71	Taylor's series method	1		23/10/2018	2
72	Picard's method	1		24/10/2018	2
73	Tutorial-9	1		25/10/2018	3
74	Euler's method	1		26/10/2018	2
75	Modified Euler's method	1		29/10/2018	2
76	R-K method	1		30/10/2018	2
77	R-K method	1		31/10/2018	
78	Tutorial-10	1		1/11/2018	3
79	Assignment/Quiz -5	1		2/11/2018	4
Number of classes		11			
Total number of classes		71			

Delivery Methods (DM):

1. Chalk & Talk 2. Problem solving 3. Tutorial 4. Assignment/Quiz 5. ICT Tools

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the faculty		Dr.A.RAMIREDDY	Dr.A.RAMIREDDY	Dr.A.RAMIREDDY