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., CSE- A&B **Section**

ACADEMIC YEAR : 2017-18

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

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

COURSE CREDITS : 2

COURSE INSTRUCTOR : **Mrs. B.Siva Hari Prasad Sr.** Assistant Professor

COURSE COORDINATOR : **K Sasi Bhushan,** Associate 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 ARTICULATION MATRIX(Correlation between COs&POs,PSOs):

CO	Statement At the end of the course, student will be able to	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
1	Analyze the operation of devices like diodes, transistors and FETs practically.	3	--	--	--	3	2	--	--	--	--	2	3	2	3	--
2	Design electronic circuits using basic devices.	3	--	--	--	3	2	--	--	--	--	2	3	2	3	--
3	Design rectifier circuits with and without filters.	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).

BOS APPROVED REFERENCE BOOKS:

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

EDC LAB SCHEDULE (LESSON PLAN): Section-A

BATCH-II

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-1					
1.	LAB introduction and Calculation of resistance using color coding	3	07/07/2017			
2.	Study of CRO	3	14/07/2017			
3.	PN Junction diode characteristics	3	21/07/2017			
4.	Zener Diode Characteristics	3	28/07/2017			
5.	Half wave rectifier without filter	3	04/08/2017			
6.	Half wave rectifier with Capacitor & Inductor filter	3	11/08/2017			
7.	Full wave rectifier without filter	3	18/08/2017			
8.	Full wave rectifier with Capacitor & Inductor filter	3	01/09/2017			
9.	Full wave rectifier using Bridge rectifier circuit		15/09/2017			
	CYCLE-2					
10.	Transistor characteristics under CB configuration	3	22/09/2017			
11.	Transistor characteristics under CE configuration	3	06/10/2017			
12.	Transistor characteristics under CC configuration	3	13/10/2017			
13.	Drain characteristics of Field effect Transistor	3	20/10/2017			
14.	Transfer characteristics of Field effect Transistor	3	27/10/2017			
15.	Uni-junction Transistor characteristics	3	03/11/2017			
16.	Internal Lab Exam	3	10-11-17			
No. of classes required to complete LAB		48	No. of classes conducted:			

EDC LAB SCHEDULE (LESSON PLAN): Section-B

BATCH-I

S.No.	Experiments to be conducted	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	CYCLE-1					
1.	LAB introduction and Calculation of resistance using color coding	3	15/07/2017			
2.	Study of CRO	3	22/07/2017			
3.	PN Junction diode characteristics	3	29/07/2017			
4.	Zener Diode Characteristics	3	05/08/2017			
5.	Half wave rectifier without filter	3	12/08/2017			
6.	Half wave rectifier with Capacitor & Inductor filter	3	19/08/2017			
7.	Full wave rectifier without filter	3	26/08/2017			
8.	Full wave rectifier with Capacitor & Inductor filter	3	16/09/2017			
9.	Full wave rectifier using Bridge rectifier circuit	3	23/09/2017			
	CYCLE-2					
10.	Transistor characteristics under CB configuration	3	07/10/2017			
11.	Transistor characteristics under CE,CC configuration	3	21/10/2017			
12.	Drain and Transfer characteristics of Field effect Transistor	3	28/10/2017			
13.	Uni-junction Transistor characteristics	3	04/11/2017			
14.	Internal Lab Exam	3	11/11/2017			
No. of classes required to complete LAB		42	No. of classes conducted:			

Contents beyond the Syllabus:

1. Generation of primary signals and measurement of signal parameters

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
Orientatin Classes	03-07-2017	08-07-2017	1W
I Phase of Instructions-1	10-07-2017	01-09-2017	8W
I Mid Examinations	04-09-2017	08-09-2017	1W
II Phase of Instructions	09-09-2017	11-11-2017	9W
II Mid Examinations	13-11-2017	17-11-2017	1W
Preparation and Practical's	18-11-2017	29-11-2017	1½W
Semester End Examinations	30-11-2017	08-12-2017	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**

Mrs. B.Siva Hari Prasad	Mr.K.Sasi Bhushan	Mr.Y.Amar Babu	Prof.B.Ramesh Reddy
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

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COURSE HANDOUT

PROGRAM	: B.Tech., I-Sem., CSE
ACADEMIC YEAR	: 2017-18
COURSE NAME & CODE	: Electronic Devices and Circuits – 17CS02
L-T-P STRUCTURE	: 4-1-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: B Siva Hari Prasad, Assistant Professor
COURSE COORDINATOR	: K Sasi Bhushan, Associate Professor

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

CO	Statement At the end of the course, student will be able to	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
1	Recognize the transport phenomena of charge carriers in a semiconductor.	3	--	--	--	--	--	--	--	--	--	2	2	--	3	--
2	Analyze the different types of diodes, operation and its characteristics.	3	--	--	3	--	2	--	--	--	--	2	2	2	3	--
3	Apply different types of filters in AC to DC conversion.	3	--	--	3	--	2	--	--	--	--	2	2	2	3	2
4	Describe Bipolar Junction Transistors and Field Effect Transistors.	3	--	3	2	--	--	--	--	--	--	2	2	1	3	2
5	Analyze the different biasing techniques used in BJTs and FETs.	3	--	3	2	--	2	--	--	--	--	2	2	2	3	--

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
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BOS APPROVED TEXT BOOKS:

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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.

COURSE DELIVERY PLAN (LESSON PLAN): 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	HOD Sign Weekly
17.	Introduction to Subject	1	10-07-17		TLM1	
18.	Course Outcomes	1	10-07-17		TLM1	
19.	Introduction to UNIT-I	1	10-07-17		TLM1	
20.	Energy band theory of crystals	1	10-07-17		TLM1	
21.	Energy band theory of Insulators, Conductors, Semiconductors	1	11-07-17		TLM1	
22.	Mobility and Conductivity	1	13-07-17		TLM1	
23.	Energy distribution of electrons in metals	1	14-07-17		TLM1	
24.	Electrons and Holes in an Intrinsic Semiconductors	1	15-07-17		TLM1	
25.	Conductivity of a semiconductor	1	17-07-17		TLM1	
26.	Carrier concentration in an intrinsic Semiconductors	1	18-07-17		TLM1	
27.	Donor and Acceptor Impurities	1	20-07-17		TLM1	
28.	Mass Action Law	1	21-07-17		TLM1	
29.	Charge densities in semiconductor	1	22-07-17		TLM1	
30.	Diffusion, Carrier Lifetime	1	24-07-17		TLM1	
31.	Continuity Equation	1	25-07-17		TLM1	
32.	Hall Effect	1	27-07-17		TLM1	
33.	**TUTORIAL-1**	1	28-07-17		TLM3,4	
34.	**TUTORIAL-2**	1	29-07-17		TLM3,4	
35.	Assignment/Quiz	1	31-07-17		TLM6	
No. of classes required to complete UNIT-I		21	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	HOD Sign Weekly
36.	Qualitative theory of PN Junction	1	01-08-17		TLM1	
37.	Band Structure of an open circuited PN junction	1	03-08-17		TLM1	
38.	Current components in a PN Diode	1	04-08-17		TLM1	
39.	PN Junction diode operation in Forward bias and Reverse bias	1	05-08-17		TLM1	
40.	Qualitative theory of the PN diode currents- Diode current equation	1	07-08-17		TLM1	
41.	Law of the junction ,Forward currents, Reverse Saturation Current	1	08-08-17		TLM1	
42.	Volt Ampere Characteristics of Diode, Temperature dependence of Diode, Diode Resistance	1	10-08-17		TLM1	
43.	Diode Capacitance- Transition Capacitance	1	11-08-17		TLM1	
44.	Diffusion Capacitance	1	17-08-17		TLM1	
45.	Laser, Zener Diode	1	18-08-17		TLM1	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Tunnel Diode	1	19-08-17		TLM1	
47.	Varactor Diode	1	21-08-17		TLM1	
48.	Photo Diode, Avalanche Photo Diode	1	22-08-19		TLM1	
49.	LED, PIN Diode	1	24-08-17		TLM1	
50.	Liquid crystal diode, Solar Cell	1	26-08-17		TLM1	
51.	**TUTORIAL-3**	1	28-08-17		TLM3,4	
52.	**TUTORIAL-4**	1	29-08-17		TLM3,4	
53.	Assignment/Quiz	1	29-08-17		TLM6	
No. of classes required to complete UNIT-II		18	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	HOD Sign Weekly
54.	Half wave rectifier with characteristics	1	31-08-17		TLM1	
55.	Full wave rectifier with center tap transformer and its characteristics	1	01-09-17		TLM1	
56.	Full Wave Rectifier with Bridge circuit and its characteristics	1	11-09-17		TLM1	
57.	Comparison of rectifiers, Harmonic components in a rectifier circuits.	1	12-09-17		TLM1	
58.	Inductor Filter, Capacitor Filter	1	14-09-17		TLM1	
59.	L-Section Filter, π-Section Filter	1	15-09-17		TLM1	
60.	Multiple L-Section and Pi-Section Filters	1	16-09-17		TLM1	
61.	Voltage Regulation using Zener diode	1	18-09-17		TLM1	
62.	design of a Zener regulator (Series & Shunt)	1	19-09-17		TLM1	
63.	**TUTORIAL-5**	1	21-09-17		TLM3,4	
64.	**TUTORIAL-6**	1	22-09-17		TLM3,4	
65.	Assignment/Quiz	1	23-09-17		TLM6	
No. of classes required to complete UNIT-III		12	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	HOD Sign Weekly
66.	Introduction to Three terminal Devices	1	25-09-17		TLM1	
67.	PNP and NPN Transistors	1	26-09-17		TLM1	
68.	Transistor Current components- Emitter Efficiency, Transport Factor	1	03-10-17		TLM1	
69.	Large Signal Current Gain	1	05-10-17		TLM1	
70.	Common Base, Base width modulation	1	06-10-17		TLM1	
71.	Common Emitter	1	07-10-17		TLM1	
72.	Common Collector	1	09-10-17		TLM1	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
73.	Ebers-Moll Model.	1	10-10-17		TLM1	
74.	Comparison between FET and BJT	1	12-10-17		TLM1	
75.	JFET Construction, Operation, Classification	1	13-10-17		TLM1	
76.	Drain and Transfer Characteristics of JFET	1	16-10-17		TLM1	
77.	MOSFET Characteristics- Enhancement	1	17-10-17		TLM1	
78.	Depletion Mode	1	20-10-17		TLM1	
79.	Photo Transistor	1	21-10-17		TLM1	
80.	Silicon Controlled Rectifier	1	23-10-17		TLM1	
81.	Uni-junction Transistor, UJT relaxation oscillator	1	24-10-17		TLM1	
82.	**TUTORIAL-7**	1	26-10-17		TLM3,4	
83.	**TUTORIAL-8**	1	27-10-17		TLM3,4	
84.	Assignment/Quiz	1	28-10-17		TLM3,4	
No. of classes required to complete UNIT-IV		19	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	HOD Sign Weekly
85.	Transistor Biasing and Stability- DC load line, Operating Point, AC load line	1	30-10-17		TLM1	
86.	Thermal Instability, Stability factors S, S_I, S_{II}	1	31-11-17		TLM1	
87.	Fixed Bias	1	02-11-17		TLM1	
88.	Collector to Base Bias	1	03-11-17		TLM1	
89.	Self Bias	1	04-11-17		TLM1	
90.	Thermal Concepts- Thermal Runaway, Thermal Resistance, Thermal Stability, Condition to avoid Thermal Runaway	1	06-11-17		TLM1	
91.	Bias Compensation Techniques- Diode Compensation for V_{BE}, Diode Compensation for I_{CO}	1	07-11-17		TLM1	
92.	Different FET biasing methods (fixed, Self & Voltage divider Bias)	1	08-11-17		TLM1	
93.	**TUTORIAL-9**	1	09-11-17		TLM3,4	
94.	**TUTORIAL-10**	1	10-11-17		TLM3,4	
95.	Assignment/Quiz	1	11-11-17		TLM3,4	
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	HOD Sign Weekly
96.	Diode applications	1			TLM1	
97.	Transistor act as amplifier	1			TLM1	

Teaching Learning Methods

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	10-07-2017	01-09-2017	8 W
I Mid Examinations	04-09-2017	08-09-2017	1 W
II Phase of Instructions	09-09-2017	11-11-2017	9W
II Mid Examinations	13-11-2017	17-11-2017	1 W
Preparation and Practicals	18-11-2017	29-11-2017	1½ W
Semester End Examinations	30-11-2017	08-12-2017	2W

EVALUATION PROCESS:

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

Mr.B.Siva Hari Prasad	Mr.K.Sasi Bhushan	Mr.Y.Amar Babu	Prof.B.Ramesh Reddy
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

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COURSE HANDOUT

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

ACADEMIC YEAR   : 2017-18

COURSE NAME & CODE   : Electronic Devices and Circuits – 17CS02

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

COURSE CREDITS   : 3

COURSE INSTRUCTOR   : B Siva Hari Prasad, Assistant Professor

COURSE COORDINATOR   : K Sasi Bhushan, Associate Professor

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

CO	Statement At the end of the course, student will be able to	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
1	Recognize the transport phenomena of charge carriers in a semiconductor.	3	--	--	--	--	--	--	--	--	--	2	2	--	3	--
2	Analyze the different types of diodes, operation and its characteristics.	3	--	--	3	--	2	--	--	--	--	2	2	2	3	--
3	Apply different types of filters in AC to DC conversion.	3	--	--	3	--	2	--	--	--	--	2	2	2	3	2
4	Describe Bipolar Junction Transistors and Field Effect Transistors.	3	--	3	2	--	--	--	--	--	--	2	2	1	3	2
5	Analyze the different biasing techniques used in BJTs and FETs.	3	--	3	2	--	2	--	--	--	--	2	2	2	3	--

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
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BOS APPROVED REFERENCE BOOKS:
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2 Thomas L.Floyd, Electronic Devices, Pearson Education Publishers.

(LESSON PLAN): 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	HOD Sign Weekly
1.	Introduction to Subject	1	10-07-17		TLM1	
2.	Course Outcomes	1	10-07-17		TLM1	
3.	Introduction to UNIT-I	1	10-07-17		TLM1	
4.	Energy band theory of crystals	1	10-07-17		TLM1	
5.	Energy band theory of Insulators, Conductors, Semiconductors	1	11-07-17		TLM1	
6.	Mobility and Conductivity	1	13-07-17		TLM1	
7.	Energy distribution of electrons in metals	1	14-07-17		TLM1	
8.	Electrons and Holes in an Intrinsic Semiconductors	1	15-07-17		TLM1	
9.	Conductivity of a semiconductor	1	17-07-17		TLM1	
10.	Carrier concentration in an intrinsic Semiconductors	1	18-07-17		TLM1	
11.	Donor and Acceptor Impurities	1	20-07-17		TLM1	
12.	Mass Action Law	1	21-07-17		TLM1	
13.	Charge densities in semiconductor	1	22-07-17		TLM1	
14.	Diffusion, Carrier Lifetime	1	24-07-17		TLM1	
15.	Continuity Equation	1	25-07-17		TLM1	
16.	Hall Effect	1	27-07-17		TLM1	
17.	**TUTORIAL-1**	1	28-07-17		TLM3,4	
18.	**TUTORIAL-2**	1	29-07-17		TLM3,4	
19.	Assignment/Quiz	1	31-07-17		TLM6	
No. of classes required to complete UNIT-I		21	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	HOD Sign Weekly
20.	Qualitative theory of PN Junction	1	01-08-17		TLM1	
21.	Band Structure of an open circuited PN junction	1	03-08-17		TLM1	
22.	Current components in a PN Diode	1	04-08-17		TLM1	
23.	PN Junction diode operation in Forward bias and Reverse bias	1	05-08-17		TLM1	
24.	Qualitative theory of the PN diode currents- Diode current equation	1	07-08-17		TLM1	
25.	Law of the junction ,Forward currents, Reverse Saturation Current	1	08-08-17		TLM1	
26.	Volt Ampere Characteristics of Diode, Temperature dependence of Diode, Diode Resistance	1	10-08-17		TLM1	
27.	Diode Capacitance- Transition Capacitance	1	11-08-17		TLM1	
28.	Diffusion Capacitance	1	17-08-17		TLM1	
29.	Laser, Zener Diode	1	18-08-17		TLM1	
30.	Tunnel Diode	1	19-08-17		TLM1	
31.	Varactor Diode	1	21-08-17		TLM1	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Photo Diode, Avalanche Photo Diode	1	22-08-19		TLM1	
33.	LED, PIN Diode	1	24-08-17		TLM1	
34.	Liquid crystal diode, Solar Cell	1	26-08-17		TLM1	
35.	**TUTORIAL-3**	1	28-08-17		TLM3,4	
36.	**TUTORIAL-4**	1	29-08-17		TLM3,4	
37.	Assignment/Quiz	1	29-08-17		TLM6	
No. of classes required to complete UNIT-II		18	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	HOD Sign Weekly
38.	Half wave rectifier with characteristics	1	31-08-17		TLM1	
39.	Full wave rectifier with center tap transformer and its characteristics	1	01-09-17		TLM1	
40.	Full Wave Rectifier with Bridge circuit and its characteristics	1	11-09-17		TLM1	
41.	Comparison of rectifiers, Harmonic components in a rectifier circuits.	1	12-09-17		TLM1	
42.	Inductor Filter, Capacitor Filter	1	14-09-17		TLM1	
43.	L-Section Filter, π-Section Filter	1	15-09-17		TLM1	
44.	Multiple L-Section and Pi-Section Filters	1	16-09-17		TLM1	
45.	Voltage Regulation using Zener diode	1	18-09-17		TLM1	
46.	design of a Zener regulator (Series & Shunt)	1	19-09-17		TLM1	
47.	**TUTORIAL-5**	1	21-09-17		TLM3,4	
48.	**TUTORIAL-6**	1	22-09-17		TLM3,4	
49.	Assignment/Quiz	1	23-09-17		TLM6	
No. of classes required to complete UNIT-III		12	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	HOD Sign Weekly
50.	Introduction to Three terminal Devices	1	25-09-17		TLM1	
51.	PNP and NPN Transistors	1	26-09-17		TLM1	
52.	Transistor Current components- Emitter Efficiency, Transport Factor	1	03-10-17		TLM1	
53.	Large Signal Current Gain	1	05-10-17		TLM1	
54.	Common Base, Base width modulation	1	06-10-17		TLM1	
55.	Common Emitter	1	07-10-17		TLM1	
56.	Common Collector	1	09-10-17		TLM1	
57.	Ebers-Moll Model.	1	10-10-17		TLM1	
58.	Comparison between FET and BJT	1	12-10-17		TLM1	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
59.	JFET Construction, Operation, Classification	1	13-10-17		TLM1	
60.	Drain and Transfer Characteristics of JFET	1	16-10-17		TLM1	
61.	MOSFET Characteristics-Enhancement	1	17-10-17		TLM1	
62.	Depletion Mode	1	20-10-17		TLM1	
63.	Photo Transistor	1	21-10-17		TLM1	
64.	Silicon Controlled Rectifier	1	23-10-17		TLM1	
65.	Uni-junction Transistor, UJT relaxation oscillator	1	24-10-17		TLM1	
66.	**TUTORIAL-7**	1	26-10-17		TLM3,4	
67.	**TUTORIAL-8**	1	27-10-17		TLM3,4	
68.	Assignment/Quiz	1	28-10-17		TLM3,4	
No. of classes required to complete UNIT-IV		19	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	HOD Sign Weekly
69.	Transistor Biasing and Stability-DC load line, Operating Point, AC load line	1	30-10-17		TLM1	
70.	Thermal Instability, Stability factors S, S_I, S_{II}	1	31-11-17		TLM1	
71.	Fixed Bias	1	02-11-17		TLM1	
72.	Collector to Base Bias	1	03-11-17		TLM1	
73.	Self Bias	1	04-11-17		TLM1	
74.	Thermal Concepts- Thermal Runaway, Thermal Resistance, Thermal Stability, Condition to avoid Thermal Runaway	1	06-11-17		TLM1	
75.	Bias Compensation Techniques-Diode Compensation for V_{BE}, Diode Compensation for I_{CO}	1	07-11-17		TLM1	
76.	Different FET biasing methods (fixed, Self & Voltage divider Bias)	1	08-11-17		TLM1	
77.	**TUTORIAL-9**	1	09-11-17		TLM3,4	
78.	**TUTORIAL-10**	1	10-11-17		TLM3,4	
79.	Assignment/Quiz	1	11-11-17		TLM3,4	
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	HOD Sign Weekly

| 80. | Diode applications | 1 | | | TLM1 | |
| 81. | Transistor act as amplifier | 1 | | | TLM1 | |

Teaching Learning Methods

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	10-07-2017	01-09-2017	8 W
I Mid Examinations	04-09-2017	08-09-2017	1 W
II Phase of Instructions	09-09-2017	11-11-2017	9W
II Mid Examinations	13-11-2017	17-11-2017	1 W
Preparation and Practicals	18-11-2017	29-11-2017	1½ W
Semester End Examinations	30-11-2017	08-12-2017	2W

EVALUATION PROCESS:

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

Mr.B.Siva Hari Prasad	Mr.K.Sasi Bhushan	Mr.Y.Amar Babu	Prof.B.Ramesh Reddy
Course Instructor	**Course Coordinator**	**Module Coordinator**	**BOS Chairman&HOD**

LESSON PLAN

Department: COMPUTER SCIENCE AND ENGINEERING   **Program:** B.Tech
Course : – Computer Programming LAB (17CI60)
SEM: I   **Academic Year : 2017-18**

1. Pre-requisites: -NIL-

2. Course Educational Objectives (CEOs):

In this course student will learn about

Software development tools like algorithm, Pseudo codes and programming structure. Basic elements 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.

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

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.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI60	CO1	2	3								2		2	1		
	CO2	2	3								2		2	1		
	CO3	2	3								2		2	1		
1 = Slight (Low)		2 = Moderate (Medium)					3-Substantial(High)									

4. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes	Date	DM

		As per the Schedule	Taken		
1	Introduction to Computer	3			2,5
2	Introduction to Compiler	3			2,5
3	CYCLE I	3			2,5
4	CYCLE II	6			2,5
5	CYCLE III	6			2,5
6	CYCLE IV	6			2,5
7	CYCLE V	3			2,5
8	CYCLE VI	6			2,5
9	CYCLE VII	3			2,5
10	CYCLE VIII	3			2,5
11	Practice Session	3			3
12	Internal Lab Exam	3			4

Delivery Methods (DM):
1. Chalk & Talk   2. ICT Tools   3. Tutorial   4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty				

Head of the Department

LESSON PLAN

Department: COMPUTER SCIENCE AND ENGINEERING   **Program:** B.Tech
Course: – Computer Programming (17CI01)
SEM: I   **Academic Year : 2017-18**

5. Pre-requisites: -NIL-

6. Course Educational Objectives (CEOs):

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.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
	CO1	2	3											3		1
	CO2	2	3											3		1
T170	CO3	2	3	2										3		1
	CO4	2	3	2										3		1
	CO5	2	3	2										3	1	
1 = Slight (Low)				**2 = Moderate (Medium)**						**3-Substantial(High)**						

7. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No. of Classes		Date	DM
		As per the Schedule	Taken		

UNIT-I

1	Fundamentals of Computers	1			1
2	Algorithm/pseudo code	1			1
3	Flow charts, Examples	1			1,2
4	Examples on Algorithm/pseudo	1			1,2
5	Examples on Flow charts.	1			1,2
6	Introduction to c language	1			1
7	C advantages , C tokens	1			1
8	Constants, keywords	1			1
9	Identifiers, variables	1			1
10	Structure of a c program, Input and	1			1
11	Basic data types and sizes. Variable	1			1
12	Arithmetic, relational and logical	1			1
13	Increment/decrement, assignment and conditional operators	1			1
14	Bitwise operators, conditional	1			1
15	Type conversion, Examples	1			1
16	**TUTORIAL / ASSIGNMENT-1**	1			3,4
17	Decision making with simple if, if	1			1
18	Else-if ladder, switch statement	1			1
19	Programs on if constructs	1			1
20	while, do- while loops	1			1
21	For, break & continue statements	1			1
22	goto and labels	1			1
23	exercises Programming examples	1			1,2,5
Number of classes		23			

UNIT-II

24	Arrays definition, declaration and examples	1			1
25	Accessing elements, storing elements.	1			1
26	Two- dimensional arrays, Accessing element	1			1
27	Multi-dimensional arrays, applications of arrays.	1			1
28	Example Programs on arrays	1			1,2,5
29	**TUTORIAL / ASSIGNMENT-2**	1			3,4
30	Character arrays – Strings, Accessing	1			1
31	Program on String accessing, operation	1			1,2,5
32	String handling functions	1			1
33	Usage of String functions in programs	1			1
34	Programs without using string handling functions	1			1,2,5
Number of classes		**11**			

I-MID EXAMINATIONS

UNIT-III

35	Pointers: concepts, initialization of pointer variables	1			1
36	Pointers and Arrays, Strings.	1			1
37	Pointers to pointers, Examples	1			1
38	Pre-processor directives, Macros	1			1
39	Example Programs on pointers	1			1,2,5
40	Example Programs on pointers	1			1,2,5
41	**TUTORIAL / ASSIGNMENT-3**	1			3,4
42	Introduction to modular programming	1			1
43	Functions: Basics of functions,	1			1
44	Standard library functions,	1			1
45	Parameter passing techniques,	1			1
46	Recursion in functions, examples	1			1,2,5
47	**TUTORIAL / ASSIGNMENT-4**	1			3,4
48	Functions with arrays, passing arrays	1			1
49	Functions with pointers	1			1
50	Programs on functions with arrays and	1			1
51	Storage classes – auto, static, extern,	1			1
52	Dynamic memory management	1			1
53	Command line arguments, programs	1			1
54	Programs on Command line arguments	1			1,2,5
Number of classes		20			

UNIT-IV

55	Introduction to structures, use of structures in programming	1			1
56	Structures declaration, definition and initialization	1			1
57	Programs on structure creation, accessing and printing	1			1,2,5
58	Use of arrays as members in structure	1			1
59	Nested structures, Arrays of structures	1			1
60	Example programs on structures	1			1,2,5
61	Structures and functions, examples	1			1
62	Pointers to structures	1			1
63	Self-referential structures	1			1
64	Unions and differences over structures	1			1
65	Typedef, bit fields	1			1
66	Example programs on Unions	1			1,2,5
67	**TUTORIAL / ASSIGNMENT-5**	1			3,4
Number of classes		13			

UNIT-V

| 68 | File Concept, text files, reading & writing | 1 | | | 1 |
| 69 | binary files, modes of operation | 1 | | | 1 |

70	Standard I/O operations	2			1
71	Formatted I/O operations	1			1
72	File I/O operations	2			1
73	Error handling functions	1			1
74	Programs on file creation	1			1,2,5
75	Programs on file accessing	1			1,2,5
76	Programs on file reading and writing data	1			1,2,5
77	Programs on file handling functions	1			1,2,5
78	**TUTORIAL / ASSIGNMENT-6**	1			3,4
	Number of classes	13			
	Total Number of classes	80			

Delivery Methods (DM):

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

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty				

Head of the Department

1.   **Pre-requisites**   **:** Basics in English Grammar & Vocabulary

2. **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.

3. **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.

4. 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)**									

8. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
	Unit-1				
1	Introduction	1		10-7-2017	1
2	Presidential Address – Dr. A.P.J. Abdul Kalam	2		12-07-2017 & 14-07-2017	1,3
3	Word formation: Prefixes & suffixes	1		15-07-2017	1,3,4
4	Word formation: Compound Collocations	1		19-07-2017	1,3,4
5	Punctuation	1		20-07-2017	1,3
6	Parts of Speech	1		22-07-2017	1,3,4
7	Double Angels - David Scott	1		26-07-2017	1,3
8	Sentence structure; Paragraph writing	1		27-07-2017	1,3
9	Dialogue writing	2		29-07-2017	1,3
10	TEST-1	1		03-08-2017	4

	Number of classes	12			
	Unit-II				
11	SatyaNadella's E-Mail to his Employees	2		05-08-2017 & 09-08-2017	1,3
12	Words often confused	2		10-08-2017 & 16-08-2017	1,3,4
13	Types of verbs	1		17-08-2017	1,3,4
14	Types of sentences	1		19-08-2017	1,3,4
15	'The Road Not Taken' by Robert Frost	2		23-08-2017 & 24-08-2017	1,3
16	Letter Writing: Official Letters	2		26-08-2017 & 30-08-2017	1,3
17	Test - 2	1		31-08-2017	4
Number of classes		11			
	Unit-III				
18	Technology with a Human Face	1		13-09-2017	1,3
19	Synonyms	1		14-09-2017	1,3,4
20	Antonyms	1		16-09-2017	1,3,4
21	commonly misspelt words	1		20-09-2017	1,3,4
22	Tenses: Types & Uses	1		21-09-2017	1,3,4
23	'Preface' to Lyrical Ballads	1		23-09-2017	1,3
24	E-mails	1		27-09-2017	1,3
25	Memo drafting	1		4-10-2017	1,3
26	Test - III	1		5-10-2017	4
	Number of classes	**9**			
	Unit-IV				
27	Listening Skills		1	07-10-2017	1,3
28	The boy who broke the bank		1	11-10-2017	1,3
29	Understanding the story		1	12-10-2017	1,3
30	Understanding People		1	18-10-2017	1,3
31	Understanding Places & Events		1	21-10-2017	1,3
32	Exercises on Prefixes & suffixes		1	25-10-2017	1,3,4
33	Active Listening		1	26-10-2017	1,3
34	Proverbial expansion on Listening		1	28-10-2017	1,3
35	Test - IV		1	1-11-2017	4
	Number of Classes	9			
	Unit-V				
36	Interview Skills		1	2-11-2017	1,3
37	The lighthouse keeper of Aspinwall		1	3-11-2017	1,3
38	Understanding the story		1	4-11-2017	1,3
39	Understanding People		1	7-11-2017	1,3
40	Understanding the world		1	8-11-2017	1,3

41	Conjunctions	1		9-11-2017	1,3,4
42	Résumé with covering letter	1		15-11-2017	1,3
43	Proverbial expansion on Interview Skills	1		15-11-2017	1,3
44	Proverbial expansion on Interview Skills	1		16-11-2017	1,3
45	Test - V	1		17-11-2017	4
Total Number of classes		51			

Delivery Methods (DM):
1. Chalk & Talk   2. ICT Tools   3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	**T.RAMA MOHAN**	**Dr.B.Samrajya Lakshmi**	**Dr.B.Samrajya Lakshmi**	**Dr.A.Rami Reddy**

PRINCIPAL

	LESSON PLAN
	Department: COMPUTER SCIENCE AND ENGINEERING **Program:** B.Tech **Course :** – Computer Programming LAB (17CI60) **SEM:** I **Academic Year : 2017-18**

9. Pre-requisites: -NIL-

10.   Course Educational Objectives (CEOs):

In this course student will learn about

Software development tools like algorithm, Pseudo codes and programming structure. Basic elements 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.

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

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.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI60	CO1	2	3								2		2	1		
	CO2	2	3								2		2	1		
	CO3	2	3								2		2	1		
1 = Slight (Low)		**2 = Moderate (Medium)**							**3-Substantial(High)**								

12. **Course Delivery Plan:**

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
1	Introduction to Computer	3			2,5
2	Introduction to Compiler	3			2,5
3	CYCLE I	3			2,5
4	CYCLE II	6			2,5
5	CYCLE III	6			2,5

6	CYCLE IV	6			2,5
7	CYCLE V	3			2,5
8	CYCLE VI	6			2,5
9	CYCLE VII	3			2,5
10	CYCLE VIII	3			2,5
11	Practice Session	3			3
12	Internal Lab Exam	3			4

Delivery Methods (DM):
1. Chalk & Talk   2. ICT Tools   3. Tutorial   4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	**Mr L V Krishna rao**	**Ms Naga Prasanthi**	**Dr R Chandra sekharan**	**Dr N Ravi Shankar**

Head of the Department

No. of Periods	Date	Lab Cycles	Signature
1.	07-07-17	Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc	
2.	14-07-17	Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality	
3.	21-07-17	Model experiment - Determination of HCl using standard Na_2CO_3 solution.	
4.	28-07-17	Determination of alkalinity of water sample	

5.	04-08-17	Estimation of Mg^{+2}/Zn^{+2}/Ca^{+2} in given solution by using standard EDTA solution	
6.	11-08-17	Preparation of Urea formaldehyde resin. Preparation of Phenol formaldehyde resin.	
7.	18-08-17	Estimation of Mohr's salt by using potassium permanganate	
8.	15-09-17	Estimation of Mohr's salt by using potassium dichromate.	
9.	22-09-17	Estimation of $KMnO_4$ by using Oxalic acid.	
10.	06-10-17	Estimation of amount of HCl conductometrically using standard NaOH solution	
11.	13-10-17	Estimation of amount of HCl potentiometrically using NaOH solution	
12.	20-10-17	Determination of pH of the given sample solution using pH meter.	
13.	27-10-17	Determination of pH of the given sample solution using pH meter.	
14.	03-11-17	Internal Examination (Batch-I)	
15.	10-11-17	Internal Examination (Batch-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

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

COURSE HANDOUT

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

ACADEMIC YEAR   : 2017-18

COURSE NAME & CODE : Differential Equations & Numerical Applications 17FE05

L-T-P STRUCTURE   : 3-2-0

COURSE CREDITS   : 4

COURSE INSTRUCTOR : G.Vijaya Lakshmi, Assistant Professor

COURSE COORDINATOR :

COURSE OBJECTIVE: 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

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

CO	Statement At the end of the course, student will be able to	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	Apply first order and first degree differential equations to find Orthogonal trajectories and to calculate current flow in a simple LCR circuit.	3	2	2									2
2	Discriminate among the structure and procedure of solving a higher order differential equations with constant coefficients and variable coefficients.	3	2	2									2
3	Developing continuous functions as an infinite series and compute the Jacobian to determine the functional dependence.	2	2	1									2
4	Formation of partial differential equations and solve linear partial differential equations	3	2	2									2
5	Apply various Numerical methods in solving and initial value problem involving an ordinary differential equation.	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, 5thEdition,2005.
   2. Dr. B. V. Ramana, "Higher Engineering Mathematics", TMH Publications, 1stEdition,2010.

BOS APPROVED REFERENCE BOOKS:

   1.Dr.B.S.Grewal,"HigherEngineeringMathematics",KhannaPublishers, 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 (LESSON PLAN):

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

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
98.	Introduction to the course	1	04-07-17		**TLM 1**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
99.	Introduction to Differential equations of first order and first degree	1	04-07-17		**TLM 1**	
100.	Variable separable method	1	05-07-17		**TLM 1**	
101.	Homogeneous method	1	06-07-17 11-07-17		**TLM 1**	
102.	Exact Differential Equations	2	11-07-17 12-07-17		**TLM 1**	
103.	Non Exact Differential Equations of Type - I	2	13-07-17 15-07-17		**TLM 1**	
104.	Non Exact Differential Equations of Type - II	2	18-07-17 19-07-17		**TLM 1**	
105.	Non Exact Differential Equations of Type - III	2	20-07-17 22-07-17		**TLM 1**	
106.	Non Exact Differential Equations of Type - IV	2	25-07-17 26-07-17		**TLM 1**	
107.	Orthogonal Trajectories in Cartesian form	2	27-07-17 29-07-17		**TLM 1**	
108.	Orthogonal Trajectories in Polar form	2	01-08-17 01-08-17		**TLM 1**	
109.	Newton's Law of Cooling	2	02-08-17 03-08-17		**TLM 1**	
13	Law of Growth & Decay	2	04-08-17 05-08-17		**TLM 1**	
14	TUTORIAL-1	1	18-07-17		**TLM 3**	
15	TUTORIAL-2	1	25-07-17		**TLM 3**	
16	Assignment/Quiz-1	1	08-08-17		**TLM 6**	
No. of classes required to complete UNIT-I		25	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	HOD Sign Weekly
110.	Introduction to Higher Order Differential Equations	2	09-08-17 10-08-17		**TLM 1**	
111.	Non Homogeneous Differential Equations of Type - I	2	12-08-17 16-08-17		**TLM 1**	
112.	Non Homogeneous Differential Equations of Type - II	2	17-08-17 19-08-17		**TLM 1**	
113.	Non Homogeneous Differential Equations of Type - III	2	22-08-17 23-08-17		**TLM 1**	
114.	Non Homogeneous Differential Equations of Type - IV	1	24-08-17		**TLM 1**	
115.	Non Homogeneous Differential Equations of	1	26-08-17		**TLM 1**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Type - V					
116.	Method of Variation of Parameters	2	29-08-17 30-08-17		**TLM 1**	
117.	TUTORIAL-3	1	22-08-17		**TLM 3**	
118.	TUTORIAL-4	1	29-08-17		**TLM 3**	
119.	Assignment/Quiz-2	1	31-08-17		**TLM 6**	
No. of classes required to complete UNIT-II		15	No. of classes taken:			

UNIT-III : Functions of Several Variables

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
120.	Taylor Series of continuous functions	2	09-09-17 12-09-17		**TLM 1**	
121.	Maclaurin's Series of continuous functions	2	12-09-17 13-09-17		**TLM 1**	
122.	Jacobians and Functional Dependence	3	14-09-17 16-09-17 19-09-17		**TLM 1**	
123.	Maxima,minima of functions of two variables	3	20-09-17 21-09-17 23-09-17		**TLM 1**	
124.	Lagrange'smultiplier method	2	26-09-17 27-09-17		**TLM 1**	
125.	TUTORIAL-6	1	19-09-17		**TLM 3**	
126.	TUTORIAL-7	1	26-09-17		**TLM 3**	
127.	Assignment/Quiz-3	1	03-10-17		**TLM 6**	
No. of classes required to complete UNIT-III		15	No. of classes taken:			

UNIT-IV : System of Linear Equations

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
128.	Introduction to Partial differential equations	2	03-10-17 04-10-17		**TLM 1**	
129.	Formation of PDE by eliminating arbitrary constants	2	05-10-17, 07-10-17		**TLM 1**	
130.	Formation of PDE by eliminating arbitrary constants	2	11-09-17 12-09-17		**TLM 1**	
131.	Solution of linear PDE - Lagranze's method	3	14-10-17 17-10-17 19-10-17		**TLM 1**	
132.	TUTORIAL-8	1	17-10-17		**TLM 3**	
133.	TUTORIAL-9	1	21-10-17		**TLM 3**	
134.	Assignment/Quiz-3	1	24-10-17		**TLM 6**	
No. of classes required to complete UNIT-IV		12	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	HOD Sign Weekly
135.	Introduction to Numerical solution of ODE	1	24-10-17		**TLM 1**	
136.	Taylor's series method	2	25-10-17 26-10-17		**TLM 1**	
137.	Picard's method	1	28-10-17		**TLM 1**	
138.	Euler's method	1	31-10-17		**TLM 1**	
139.	Modified Euler's method	2	01-11-17 02-11-17		**TLM 1**	
140.	Runge Kutta method	2	04-11-17 07-11-17		**TLM 1**	
141.	TUTORIAL-10	1	31-10-17		**TLM 3**	
142.	TUTORIAL-11	1	07-11-17		**TLM 3**	
143.	Assignment/Quiz-5	1	08-11-17		**TLM 6**	
144.	Revision	2	09-11-17 11-11-17			
No. of classes required to complete UNIT-V		14	No. of classes taken:			

Teaching Learning Methods					
TLM 1	Chalk and Talk	**TLM 4**	Problem Solving	**TLM 7**	Seminars or GD
TLM 2	PPT	**TLM 5**	Programming	**TLM 8**	Lab Demo
TLM 3	Tutorial	**TLM 6**	Assignment or Quiz	**TLM 9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
Orientation Classes	03-07-2017	08-07-2017	1 W
I Phase of Instructions-1	10-07-2017	01-09-2017	8 W
I Mid Examinations	04-09-2017	08-09-2017	1 W
II Phase of Instructions	09-09-2017	11-11-2017	9 W
II Mid Examinations	13-11-2017	17-11-2017	1 W
Preparation and Practicals	18-11-2017	29-11-2017	1 1/2 W
Semester End Examinations	30-11-2017	08-12-2017	2 W

Course Instructor   Course Coordinator   HOD

G.Vijaya Lakshmi.   Dr. A. RamiReddy

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

COURSE HANDOUT

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

ACADEMIC YEAR   : 2017-18

COURSE NAME & CODE   : Differential Equations & Numerical Applications 17FE05

L-T-P STRUCTURE   : 3-2-0

COURSE CREDITS   : 4

COURSE INSTRUCTOR   : K.N.V.Lakshmi, Assistant Professor

COURSE COORDINATOR :

COURSE OBJECTIVE: 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

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

CO	Statement At the end of the course, student will be able to	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	Apply first order and first degree differential equations to find Orthogonal trajectories and to calculate current flow in a simple LCR circuit.	3	2	2									2
2	Discriminate among the structure and procedure of solving a higher order differential equations with constant coefficients and variable coefficients.	3	2	2									2
3	Developing continuous functions as an infinite series and compute the Jacobian to determine the functional dependence.	2	2	1									2
4	Formation of partial differential equations and solve linear partial differential equations	3	2	2									2
5	Apply various Numerical methods in solving and initial value problem involving an ordinary differential equation.	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).

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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 (LESSON PLAN):
UNIT-I : Differential Equations of First Order and First Degree

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
145.	Introduction to the course	1	03-07-17		**TLM 1**	
146.	Introduction to Differential equations of first order and first degree	1	04-07-17		**TLM 1**	
147.	Variable separable method	1	05-07-17		**TLM 1**	
148.	Homogeneous method	1	07-07-17 8-07-17		**TLM 1**	
149.	Exact Differential Equations	2	10-07-17 11-07-17		**TLM 1**	
150.	Non Exact Differential Equations of Type - I	2	12-07-17 14-07-17		**TLM 1**	
151.	Non Exact Differential Equations of Type - II	2	15-07-17 17-07-17		**TLM 1**	
152.	Non Exact Differential Equations of Type - III	2	19-07-17 21-07-17		**TLM 1**	
153.	Non Exact Differential Equations of Type - IV	2	22-07-17 24-07-17		**TLM 1**	
154.	Orthogonal Trajectories in Cartesian form	2	26-07-17 28-07-17		**TLM 1**	
155.	Orthogonal Trajectories in Polar form	2	29-07-17 31-07-17		**TLM 1**	
156.	Newton's Law of Cooling	2	01-08-17 02-08-17		**TLM 1**	
13	Law of Growth & Decay	2	04-08-17 05-08-17		**TLM 1**	
14	TUTORIAL-1	1	18-07-17		**TLM 3**	
15	TUTORIAL-2	1	25-07-17		**TLM 3**	
16	Assignment/Quiz-1	1	07-08-17		**TLM 6**	
No. of classes required to complete UNIT-I		25	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	HOD Sign Weekly
157.	Introduction to Higher Order Differential Equations and Solution of Homogeneous Differential	1	08-08-17		**TLM 1**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Equations					
158.	Non Homogeneous Differential Equations of Type - I	1	9-08-17		**TLM 1**	
159.	Non Homogeneous Differential Equations of Type - II	2	11-08-17 16-08-17		**TLM 1**	
160.	Non Homogeneous Differential Equations of Type - III	2	19-08-17 21-08-17		**TLM 1**	
161.	Non Homogeneous Differential Equations of Type - IV	1	22-08-17		**TLM 1**	
162.	Non Homogeneous Differential Equations of Type - V	2	23-08-17 28-08-17		**TLM 1**	
163.	Method of Variation of Parameters	2	29-08-17 30-08-17		**TLM 1**	
164.	TUTORIAL-3	1	18-08-17		**TLM 3**	
165.	TUTORIAL-4	1	26-08-17		**TLM 3**	
166.	Assignment/Quiz-2	1	01-09-17		**TLM 6**	
No. of classes required to complete UNIT-II		14	No. of classes taken:			

UNIT-III : Functions of Several Variables

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
167.	Taylor Series of continuous functions	2	09-09-17 11-09-17		**TLM 1**	
168.	Maclaurin's Series of continuous functions	1	12-09-17		**TLM 1**	
169.	Jacobians and Functional Dependence	2	13-09-17 15-09-17		**TLM 1**	
170.	Maxima,minima of functions of two variables	3	19-09-17 20-09-17 22-09-17		**TLM 1**	
171.	Lagrange'smultiplier method	2	23-09-17 26-09-17		**TLM 1**	
172.	TUTORIAL-6	1	18-09-17		**TLM 3**	
173.	TUTORIAL-7	1	25-09-17		**TLM 3**	
174.	Assignment/Quiz-3	1	03-10-17		**TLM 6**	
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	HOD Sign Weekly
175.	Introduction to Partial differential equations	2	04-10-17 06-10-17		**TLM 1**	
176.	Formation of PDE by eliminating arbitrary constants	2	07-10-17 09-10-17		**TLM 1**	
177.	Formation of PDE by eliminating arbitrary constants	2	11-09-17 13-09-17		**TLM 1**	
178.	Solution of linear PDE - Lagranze's method	3	16-10-17 20-10-17 21-10-17		**TLM 1**	
179.	TUTORIAL-8	1	10-10-17		**TLM 3**	
180.	TUTORIAL-9	1	17-10-17		**TLM 3**	
181.	Assignment/Quiz-3	1	23-10-17		**TLM 6**	
No. of classes required to complete UNIT-IV		12	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	HOD Sign Weekly
182.	Introduction to Numerical solution of ODE	1	24-10-17			
183.	Taylor's series method	2	25-10-17 27-10-17		**TLM 1**	
184.	Picard's method	1	30-10-17		**TLM 1**	
185.	Euler's method	1	31-10-17		**TLM 1**	
186.	Modified Euler's method	2	01-11-17 03-11-17		**TLM 1**	
187.	Runge Kutta method	2	4-11-17 7-11-17		**TLM 1**	
188.	TUTORIAL-10	1	28-10-17		**TLM 3**	
189.	TUTORIAL-11	1	06-11-17		**TLM 3**	
190.	Assignment/Quiz-5	1	8-11-17		**TLM 6**	
191.	Revision	2	10-11-17 11-11-17			
No. of classes required to complete UNIT-V		14	No. of classes taken:			

Teaching Learning Methods					
TLM 1	Chalk and Talk	**TLM 4**	Problem Solving	**TLM 7**	Seminars or GD
TLM 2	PPT	**TLM 5**	Programming	**TLM 8**	Lab Demo
TLM 3	Tutorial	**TLM 6**	Assignment or Quiz	**TLM 9**	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
Orientation Classes	03-07-2017	08-07-2017	1 W
I Phase of Instructions-1	10-07-2017	01-09-2017	8 W
I Mid Examinations	04-09-2017	08-09-2017	1 W

II Phase of Instructions	09-09-2017	11-11-2017	9 W
II Mid Examinations	13-11-2017	17-11-2017	1 W
Preparation and Practicals	18-11-2017	29-11-2017	1 1/2 W
Semester End Examinations	30-11-2017	08-12-2017	2 W

Course Instructor   **Course Coordinator**   **HOD**

K.N.V.Lakshmi.   Dr. A. RamiReddy

LESSON PLAN

Department:
Course: ENGINEERING CHEMISTRY (17FE15)
SEM: I

Program: I B.Tech

Academic Year : 2017-18

Pre-requisite :

Course Educational Objective (CEOs) : To impart the knowledge on various types of electro chemical energy systems, corrosion prevention methods and characteristics of various engineering materials and to enable the students to obtain the knowledge on photo chemical processes , liquid crystals, analytical and spectroscopic techniques of chemical analyses.

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

CO1: Analyze different types of electrodes and batteries for technological applications.
CO2: Apply the principles of corrosion in order to maintain various equipments more effectively.
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 important of analytical and spectroscopic techniques in chemical analyses.

Course Articulation Matrix:

Course Outcomes PO's →	ENGINEERING CHEMISTRY											
	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	3	3	3	2	2	2	2					2
CO2.	3	3	3	2	2	2	2					2
CO3.	3	3	3	2	2	2	2					2
CO4.	3	3	3	2	2	2	2					2
CO5.	3	3	2	3	3							2
CATEGORY	BASIC SCIENCES											
APPROVAL	APPROVED BY ACADEMIC COUNCIL, 2017.											
	Where 3- Strong, 2-Medium & 1- Least											

13. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
1	Orientation class-1	1			1
2	Orientation class-2	1			1
3	Orientation class-3	1			1
4	Orientation class-4	1			1
5	Orientation class-5	1			1
Unit-I					
6	Concept of electrode potential	1			1
7	SRP & SOP, EMF	1			1
8	S.H.E and its drawbacks	1			1
9	Calamel electrode	1			1
10	Tutorial-1	1			3
11	Measurement of electrode potential	1			1
12	Electrochemical series & applications	1			1
13	Applications of electrochemical series (contd)	1			1
14	Nernst equation Derivation	1			1
15	Tutorial-2	1			3
16	Problems on Nernst equation	1			1
17	Problems on Nernst equation	1			1
18	Problems on Nernst equation	1			1
19	Primary, secondary &reserve batteries	1			1
20	Dry battery (leclanche cell)	1			1
21	Nickel- Cadmium battery	1			1
22	Magnesium – Copper reserve battery	1			1
23	Hydrogen –oxygen Fuel cell	1			1
24	Tutorial-3	1			3
25	Quiz questions	1			1
26	Assignment	1			4
	Number of classes	**21**			
	Unit-II				
27	Corrosion definition examples, definition of dry corrosion.	1			1
28	Oxidative. Corrosion by other gases	1			1
29	Liquid metal corrosion, Pilling bed worth rrulerule	1			1
30	Wet corrosion- mechanism	1			1
31	Tutorial-1	1			1
32	Galvanic corrosion	1			1
33	Concentration cell corrosion	1			1
34	Concentration cell corrosion (contd)	1			1
35	Passivity, Exceptions in E.C series, Galvanic series	1			1

36	Tutorial-2	1			3
37	Nature of metal	1			1
38	Nature of environment	1			1
39	Cathodic protection	1			1
40	electroplating	1			1
41	Metal cladding & Quiz questions	1			1
42	Assignment	1			1,4
	Number of classes	**16**			

Unit-III

43	Definition of nanomaterial	1			1
44	Properties of nano materials	1			1
45	Preparation of nano materials (sol gel method)	1			1
46	Applications of nano materials	1			1
47	Tutorial-1	1			3
48	Basic terminology of polymers	1			1
49	Classification of polymers	1			1
50	Classification of polymers & Types of polymerisation	1			1
51	Preoparation , properties & applications of Bakelite	1			1
52	Preoparation , properties & applications of PMMA	1			1
53	Conducting polymers	1			1
54	FRPs and processing of natural rubber,vulcanization ,advantages	1			1
55	Preoparation , properties & applications of Thiokol and	1			1
56	Tutorial-II	1			3
57	Quiz questions	1			1
58	Assignment	1			4
	Total Number of Classes	**16**			

Unit-IV

59	Definition, differences between thermal and photo chemical reactions	1			1
60	Grothers-Droper law, Stark-Einstein law and Quantum efficiency(Definition only).	1			1
61	Fluorescence, phosphorescence – applications	1			1
62	chemiluminiscence, bio-luminescence and Photo-	1			1
63	Tutorial-1	1			3
64	Definition, Identification and structural aspects of molecules to form liquid crystals	1			1
65	Thermo tropic liquid crystals and types	1			1
66	lyotropic liquid crystals and applications.	1			1,3
67	Tutorial-II	1			3
68	Quiz questions	1			1
69	Assignment	1			1
	Total Number of classes	**11**			4

Unit-IV

70	Types of analysis, Analysis of physical characteristics, Gravimetric and volumetric analysis (basic concept only). Analysis of physical characteristics.	1			1

	ctro analytical techniques – Introduction	1			1
	ong acid - strong base and strong acid - weak base, weak acid -strong base and weak acid -weak base – advatages.	1			1
73	Acid-base and oxidation-reduction titrations-	1			1
74	Principle and determination of Iron by using thiocynate as a reagent.	1			1
75	Tutorial-1	1			3
76	Origin of electronic spectra, Types of spectra-emission and absorption spectra and Beer-Lambert's law	1			1
77	Types of vibrations, factors influencing vibrational frequencies.	1			1
78	Applications of IR-Spectroscopy.applications of IR-Spectroscopy.	1			1
79	Types of electronic transitions, probability	1			1
80	Chomophores, Auxochromes and applications of UV-	1			1
81	Tutorial-II	1			3
82	Quiz questions	1			1
83	Assignment	1			4
Total Number of classes		**14**			
84	Topics beyond syllabus	1			1
85	Topics beyond syllabus	1			1
86	Topics beyond syllabus	1			1
87	Topics beyond syllabus	1			1
Total Number of classes		**87**			4

Delivery Methods (DM):

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

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

PRINCIPAL

			To
	Sub Name: Engg. Chemistry Lab Class: I B. CSE Semester: I		17/11/2017

No. of Periods	Date	Lab Cycles	Signature
16.		Introduction to Chemistry laboratory – Molarity, Normality, Primary, secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis, etc	
17.		Preparation of standard solutions, concept of standardisation, dilution to get solution of required normality	
18.		Model experiment - Determination of HCl using standard Na_2CO_3 solution.	
19.		Determination of alkalinity of water sample	
20.		Estimation of $Mg^{+2}/Zn^{+2}/Ca^{+2}$ in given solution by using standard EDTA solution	
21.		Preparation of Urea formaldehyde resin. Preparation of Phenol formaldehyde resin.	
22.		Estimation of Mohr's salt by using potassium permanganate	
23.		Estimation of Mohr's salt by using potassium dichromate.	
24.		Estimation of $KMnO_4$ by using Oxalic acid.	
25.		Estimation of amount of HCl conductometrically using standard NaOH solution	
26.		Estimation of amount of HCl potentiometrically using NaOH solution	
27.		Determination of pH of the given sample solution using pH meter.	
28.		Determination of pH of the given sample solution using pH meter.	

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

14. Pre-requisites: -NIL-

15. Course Educational Objectives (CEOs):

In this course student will learn about

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

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

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.

4. Course Articulation Matrix:

Course	COs	Programme Outcomes												PSOs		
Code		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI61	CO1					1				2			2	1		
	CO2					3					3		2	1		
	CO3					3					3		2	1		
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

17. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
1	Introduction to Computer	3			2,5
2	Introduction to Hardware	3			2,5
3	WEEK 1	3			2,5
4	WEEK 2	3			2,5
5	WEEK 3	3			2,5

6	WEEK 4	3			2,5
7	WEEK 5	3			2,5
8	WEEK 6	3			2,5
9	WEEK 7	3			2,5
10	WEEK 8	3			2,5
11	WEEK 9	3			2,5
12	WEEK 10	3			2,5
13	WEEK 11	3			2,5
14	WEEK 12	3			2,5
15	Practice Session	3			3
16	Internal Lab Exam	3			4

Delivery Methods (DM):
1. Chalk & Talk   2. ICT Tools   3. Tutorial   4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	**B SIVARAMA KRISHNA**			**Dr. N Ravi Shankar**

18.   Pre-requisites: -NIL-

19.   Course Educational Objectives (CEOs):

In this course student will learn about

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

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

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.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI61	CO1					1				2			2	1		
	CO2					3					3		2	1		
	CO3					3					3		2	1		
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

21.   Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
1	Introduction to Computer	3			2,5
2	Introduction to Hardware	3			2,5
3	WEEK 1	3			2,5

4	WEEK 2	3			2,5
5	WEEK 3	3			2,5
6	WEEK 4	3			2,5
7	WEEK 5	3			2,5
8	WEEK 6	3			2,5
9	WEEK 7	3			2,5
10	WEEK 8	3			2,5
11	WEEK 9	3			2,5
12	WEEK 10	3			2,5
13	WEEK 11	3			2,5
14	WEEK 12	3			2,5
15	Practice Session	3			3
16	Internal Lab Exam	3			4

Delivery Methods (DM):
1. Chalk & Talk   2. ICT Tools   3. Tutorial   4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	**L KRANTHI KUMAR**			**Dr. N Ravi Shankar**

COs and CEOs

Department: COMPUTER SCIENCE AND ENGINEERING   **Program:** B.Tech
Course: – ITWS LAB (17CI61)
SEM: I   **Academic Year: 2016-17**

22. **Pre-requisites: -NIL-**

23. **Course Educational Objectives (CEOs):**

In this course student will learn about

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

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

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.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI61	CO1					1				2			2	1		
	CO2					3					3		2	1		
	CO3					3					3		2	1		
1 = Slight (Low)				2 = Moderate (Medium)						3-Substantial(High)						

25. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
1	Introduction to Computer	3			2,5
2	Introduction to Hardware	3			2,5
3	WEEK 1	3			2,5
4	WEEK 2	3			2,5
5	WEEK 3	3			2,5
6	WEEK 4	3			2,5
7	WEEK 5	3			2,5
8	WEEK 6	3			2,5
9	WEEK 7	3			2,5
10	WEEK 8	3			2,5
11	WEEK 9	3			2,5
12	WEEK 10	3			2,5
13	WEEK 11	3			2,5
14	WEEK 12	3			2,5
15	Practice Session	3			3
16	Internal Lab Exam	3			4

Delivery Methods (DM):
1. Chalk & Talk   2. ICT Tools   3. Tutorial   4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	**B SIVARAMA KRISHNA**			**Dr. N Ravi Shankar**

26.   Pre-requisites: -NIL-

27.   Course Educational Objectives (CEOs):

In this course student will learn about

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

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

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.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI61	CO1					1				2			2	1		
	CO2					3					3		2	1		
	CO3					3					3		2	1		
1 = Slight (Low)		**2 = Moderate (Medium)**							**3-Substantial(High)**							

29.   Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
1	Introduction to Computer	3			2,5
2	Introduction to Hardware	3			2,5
3	WEEK 1	3			2,5
4	WEEK 2	3			2,5
5	WEEK 3	3			2,5
6	WEEK 4	3			2,5
7	WEEK 5	3			2,5
8	WEEK 6	3			2,5
9	WEEK 7	3			2,5
10	WEEK 8	3			2,5
11	WEEK 9	3			2,5
12	WEEK 10	3			2,5
13	WEEK 11	3			2,5
14	WEEK 12	3			2,5
15	Practice Session	3			3
16	Internal Lab Exam	3			4

Delivery Methods (DM):
1. Chalk & Talk   2. ICT Tools   3. Tutorial   4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	**L KRANTHI KUMAR**			**Dr. N Ravi Shankar**

LESSON PLAN

Department: CSE   **Program:** I B.Tech
Course: ENGINEERING CHEMISTRY (17FE15)   **Section:** B
SEM: I   **Academic Year:** 2017-18

Pre-requisite :

Course Educational Objective (CEOs) : To impart the knowledge on various types of electro chemical energy systems, corrosion prevention methods and characteristics of various engineering materials and to enable the students to obtain the knowledge on photo chemical processes , liquid crystals, analytical and spectroscopic techniques of chemical analyses.

Course Outcomes (COs)   At the end of this course student will be able to:
CO1: Analyze different types of electrodes and batteries for technological applications.
CO2: Apply the principles of corrosion in order to maintain various equipments more effectively.
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 important of analytical and spectroscopic techniques in chemical analyses.

Course Articulation Matrix:

Course Outcomes PO's →	ENGINEERING CHEMISTRY											
	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
CO6.	3	3	3	2	2	2	2					2
CO7.	3	3	3	2	2	2	2					2
CO8.	3	3	3	2	2	2	2					2
CO9.	3	3	3	2	2	2	2					2
CO10.	3	3	2	3	3							2
CATEGORY	BASIC SCIENCES											
APPROVAL	APPROVED BY ACADEMIC COUNCIL, 2017.											
	Where 3- Strong, 2-Medium & 1- Least											

30.   Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
1	Orientation class-1	1	1	3-7-17	1
2	Orientation class-2	1	1	3-7-17	1
3	Orientation class-3	1	1	4-7-17	1
4	Orientation class-4	1	1	6-7-17	1
5	Orientation class-5	1	1	7-7-17	1
Unit-I					
6	Concept of electrode potential	1	1	10-7-17	1
7	SRP & SOP, EMF	1	1	10-7-17	1
8	S.H.E and its drawbacks	1	1	11-7-17	1
9	Calamel electrode	1	1	13-7-17	1
10	Tutorial-1	1	1	14-7-17	3
11	Measurement of electrode potential	1	1	17-7-17	1
12	Electrochemical series & applications	1	1	17-7-17	1
13	Applications of electrochemical series (contd)	1	1	18-7-17	1
14	Nernst equation Derivation	1	1	20-7-17	1
15	Tutorial-2	1	1	21-7-17	3
16	Problems on Nernst equation	1	1	24-7-17	1
17	Problems on Nernst equation	1	1	24-7-17	1
18	Problems on Nernst equation	1	1	26-7-17	1
19	Primary, secondary &reserve batteries	1	1	27-7-17	1
20	Dry battery (leclanche cell)	1	1	28-7-17	1
21	Nickel- Cadmium battery	1	1	31-7-17	1
22	Magnesium – Copper reserve battery	1	1	31-7-17	1
23	Hydrogen –oxygen Fuel cell	1	1	1-8-17	1
24	Tutorial-3	1	1	3-8-17	3
25	Quiz questions	1	1	4-8-17	1
26	Assignment	1	1	7-8-17	4
	Number of classes	**21**			
	Unit-II				
27	Corrosion definition examples, definition of dry corrosion.	1	1	8-8-17	1
28	Oxidative. Corrosion by other gases	1	1	11-8-17	1
29	Liquid metal corrosion, Pilling bed worth rrulerule	1	1	11-8-17	1
30	Wet corrosion- mechanism	1	1	17-8-17	1
31	Tutorial-1	1	1	18-8-17	1
32	Galvanic corrosion	1	1	21-8-17	1
33	Concentration cell corrosion	1	1	21-8-17	1
34	Concentration cell corrosion (contd)	1	1	21-8-17	1

35	Passivity, Exceptions in E.C series, Galvanic series	1	1	22-8-17	1
36	Tutorial-2	1	1	22-8-17	3
37	Nature of metal	1	1	24-8-17	1
38	Nature of environment	1	1	28-8-17	1
39	Cathodic protection	1	1	28-8-17	1
40	electroplating	1	1	29-8-17	1
41	Metal cladding & Quiz questions	1	1	31-8-17	1
42	Assignment	1	1	31-8-17	1,4
	Number of classes	**16**			
	Unit-III				
43	Definition of nanomaterial	1	1	11-9-17	1
44	Properties of nano materials	1	1	11-9-17	1
45	Preparation of nano materials (sol gel method)	1	1	12-9-17	1
46	Applications of nano materials	1	1	14-9-17	1
47	Tutorial-1	1	1	15-9-17	3
48	Basic terminology of polymers	1	1	18-9-17	1
49	Classification of polymers	1	1	18-9-17	1
50	Classification of polymers & Types of polymerisation	1	1	19-9-17	1
51	Preoparation , properties & applications of Bakelite	1	1	21-9-17	1
52	Preoparation , properties & applications of PMMA	1	1	22-9-17	1
53	Conducting polymers	1	1	25-9-17	1
54	FRPs and processing of natural rubber,vulcanization ,advantages	1	1	25-9-17	1
55	Preoparation , properties & applications of Thiokol and	1	1	26-9-17	1
56	Tutorial-II	1	1	3-10-17	3
57	Quiz questions	1	1	5-10-17	1
58	Assignment	1	1	6-10-17	4
	Total Number of Classes	**16**			
	Unit-IV				
59	Definition, differences between thermal and photo chemical reactions	1	1	9-10-17	1
60	Grothers-Droper law, Stark-Einstein law and Quantum efficiency(Definition only).	1	1	9-10-17	1
61	Fluorescence, phosphorescence – applications	1	1	10-10-17	1
62	chemiluminiscence, bio-luminescence and Photo-	1	1	12-10-17	1
63	Tutorial-1	1	1	13-1017	3
64	Definition, Identification and structural aspects of molecules to form liquid crystals	1	1	16-10-17	1
65	Thermo tropic liquid crystals and types	1	1	16-10-17	1
66	lyotropic liquid crystals and applications.	1	1	17-10-17	1,3
67	Tutorial-II	1	1	20-10-17	3
68	Quiz questions	1	1	23-10-17	1
69	Assignment	1	1	23-10-17	1
	Total Number of classes	**11**			4
	Unit-IV				

70	Types of analysis, Analysis of physical characteristics, Gravimetric and volumetric analysis (basic concept only). Analysis of physical characteristics.	1	1	24-10-17	1
71	Electro analytical techniques – Introduction	1	1	26-10-17	1
72	Strong acid - strong base and strong acid - weak base, weak acid -strong base and weak acid -weak base – advatages.	1	1	27-10-17	1
73	Acid-base and oxidation-reduction titrations-	1	1	30-10-17	1
74	Principle and determination of Iron by using thiocynate as a reagent.	1	1	30-10-17	1
75	Tutorial-1	1	1	31-10-17	3
76	Origin of electronic spectra, Types of spectra-emission and absorption spectra and Beer-Lambert's law	1	1	2-11-17	1
77	Types of vibrations, factors influencing vibrational frequencies.	1	1	3-11-17	1
78	Applications of IR-Spectroscopy.applications of IR-Spectroscopy.	1	1	6-11-17	1
79	Types of electronic transitions, probability	1	1	6-11-17	1
80	Chomophores, Auxochromes and applications of UV-	1	1	7-11-17	1
81	Tutorial-II	1	1	9-11-17	3
82	Quiz questions	1	1	10-11-17	1
83	Assignment	1	1	10-11-17	4
Total Number of classes		**14**			
Total Number of classes		**83**			

Delivery Methods (DM):
1.Chalk & Talk   2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz
5. Laboratory/Field Visit 6. Web based learning.

	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**

PRINCIPAL