

## COURSE HANDOUT

### Part-A

<b>PROGRAM</b>	: B.Tech., II-Sem., CSE
<b>ACADEMIC YEAR</b>	: 2017-18
<b>COURSE NAME &amp; CODE</b>	: Transformation Techniques and Vector Calculus – 17FE06
<b>L-T-P STRUCTURE</b>	: 4-1-0
<b>COURSE CREDITS</b>	: 4
<b>COURSE INSTRUCTOR</b>	: K. Jhansi Rani
<b>COURSE COORDINATOR</b>	: Y.P.C.S. Anil Kumar
<b>PRE-REQUISITES:</b>	Integration and Vectors

**COURSE EDUCATIONAL OBJECTIVES (CEOs):** In this course the students are introduced to Integral transformations which include Laplace Transforms and Z – Transforms. They will also learn Multiple Integrals in different coordinate systems and Vector Calculus.

### **COURSE OUTCOMES (COs)**

- After completion of the course, the student will be able to
- CO1: Apply the concepts of Laplace Transforms to solve ordinary differential equations.
- CO2: Apply Z - Transforms to solve difference equations
- CO3: Discriminate among Cartesian, Polar and Spherical coordinates in multiple integrals and their respective applications to areas and volumes.
- CO4: Evaluate the directional derivative, divergence and angular velocity of a vector function.
- CO5: Apply Vector Integration for curves, surfaces and volumes and relationship among themselves.

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

COs	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								1
CO5	3	2		1								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", 42<sup>nd</sup> Edition, Khanna Publishers, New Delhi, 2012.
- T2** Dr. B. V. Ramana, "Higher Engineering Mathematics", 1<sup>st</sup> Edition, TMH, New Delhi, 2010.

**BOS APPROVED REFERENCE BOOKS:**

**R1** Michael D. Greenberg , “Advanced Engineering Mathematics”, 2<sup>nd</sup> Edition, TMH, New Delhi, 2011.

**R2** Erwin Krezig, “Advanced Engineering Mathematics”, 8<sup>th</sup> Edition, John Wiley & Sons, New Delhi, 2011.

**Part-B****COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I : Laplace Transforms and Inverse Laplace Transforms**

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	18/12/17		TLM1			
2.	Course Outcomes	1	19/12/17		TLM1			
3.	Introduction to UNIT-I	1	20/12/17		TLM1	CO1	T1,T2	
4.	Laplace Transforms of standard functions	1	21/12/17		TLM1	CO1	T1,T2	
5.	Linear Property, Shifting Theorems, Change of Scale Property	1	22/12/17		TLM1	CO1	T1,T2	
6.	TUTORIAL - 1	1	26/12/17		TLM3	CO1	T1,T2	
7.	Multiplication by 't'	1	27/12/17		TLM1	CO1	T1,T2	
8.	Division by 't'	1	28/12/17		TLM1	CO1	T1,T2	
9.	Unit Step function, Transforms of derivatives	1	29/12/17		TLM1	CO1	T1,T2	
10.	TUTORIAL - 2	1	02/01/18		TLM3	CO1	T1,T2	
11.	Transformation of integrals, Dirac's Delta function.	1	03/01/18		TLM1	CO1	T1,T2	
12.	Inverse Laplace Transforms, Linear Property, Shifting Properties	1	04/01/18		TLM1	CO1	T1,T2	
13.	Convolution theorem	1	05/01/18		TLM1	CO1	T1,T2	
14.	Application of L.T. to ordinary differential equation	1	08/01/18		TLM1	CO1	T1,T2	
15.	Application of L.T. to ordinary	1	09/01/18		TLM1	CO1	T1,T2	

	differential equation							
16.	Assignment/Quiz	1	10/01/18		TLM6	CO1	T1,T2	
No. of classes required to complete UNIT-I		16			No. of classes taken:			

### UNIT-II : Z-Transforms

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Introduction to UNIT II	1	11/01/18		TLM1	CO2	T1,T2	
18.	Z-transform	1	12/01/18		TLM1	CO2	T1,T2	
19.	Properties	1	18/01/18		TLM1	CO2	T1,T2	
20.	Damping rule	1	19/01/18		TLM1	CO2	T1,T2	
21.	Shifting rule	1	22/01/18		TLM1	CO2	T1,T2	
22.	TUTORIAL - 3	1	23/01/18		TLM3	CO2	T1,T2	
23.	Initial and final value theorems	1	24/01/18		TLM1	CO2	T1,T2	
24.	Inverse Z-transform	1	25/01/18		TLM1	CO2	T1,T2	
25.	Convolution theorem	1	29/01/18		TLM1	CO2	T1,T2	
26.	TUTORIAL - 4	1	30/01/18		TLM3	CO2	T1,T2	
27.	Solution of difference equation by Z-transform	1	31/01/18		TLM1	CO2	T1,T2	
28.	Solution of difference equation by Z-transform	1	01/02/18		TLM1	CO2	T1,T2	
29.	Assignment/Quiz	1	02/02/18		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

### UNIT-III : Multiple Integrals

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
30.	Introduction to UNIT III	1	12/02/18		TLM1	CO3	T1,T2	
31.	Multiple Integrals	1	14/02/18		TLM1	CO3	T1,T2	
32.	Change variables of	1	15/02/18		TLM1	CO3	T1,T2	
33.	Double Integrals - Cartesian coordinates	1	16/02/18		TLM1	CO3	T1,T2	
34.	Double Integrals- Polar co ordinates	1	19/02/18		TLM1	CO3	T1,T2	

35.	TUTORIAL - 5	1	20/02/18		TLM3	CO3	T1,T2	
36.	Double Integrals- Spherical co ordinates	1	21/02/18		TLM1	CO3	T1,T2	
37.	Triple Integrals - Cartesian coordinates	1	22/02/18		TLM1	CO3	T1,T2	
38.	Triple Integrals - Polar coordinates	1	23/02/18		TLM1	CO3	T1,T2	
39.	Triple Integrals - Spherical coordinates	1	26/02/18		TLM1	CO3	T1,T2	
40.	TUTORIAL - 6	1	27/02/18		TLM3	CO3	T1,T2	
41.	Change of order of Integration	1	28/02/18		TLM1	CO3	T1,T2	
42.	Change of order of Integration	1	01/03/18		TLM1	CO3	T1,T2	
43.	Applications to Areas	1	02/03/18		TLM1	CO3	T1,T2	
44.	Applications to Volumes	1	05/03/18		TLM1	CO3	T1,T2	
45.	Assignment/Quiz	1	06/03/18		TLM6	CO3	T1,T2	
No. of classes required to complete UNIT-III		16			No. of classes taken:			

#### UNIT-IV : Vector Differentiation

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
46.	Introduction to UNIT IV	1	07/03/18		TLM1	CO4	T1,T2	
47.	Vector Differentiation	1	08/03/18		TLM1	CO4	T1,T2	
48.	Gradient	1	09/03/18		TLM1	CO4	T1,T2	
49.	Directional Derivative	1	12/03/18		TLM1	CO4	T1,T2	
50.	TUTORIAL - 7	1	13/03/18		TLM3	CO4	T1,T2	
51.	Divergence	1	14/03/18		TLM1	CO4	T1,T2	
52.	Curl	1	15/03/18		TLM1	CO4	T1,T2	
53.	Solenoidal fields, Irrotational fields, potential surfaces	1	16/03/18		TLM1	CO4	T1,T2	
54.	Laplacian, second order operators	1	19/03/18		TLM1	CO4	T1,T2	
55.	TUTORIAL - 8	1	20/03/18		TLM3	CO4	T1,T2	
56.	Properties	1	21/03/18		TLM1	CO4	T1,T2	

57.	Properties	1	22/03/18		TLM1	CO4	T1,T2	
58.	Assignment/Quiz	1	23/03/18		TLM6	CO4	T1,T2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

### UNIT-V : Vector Integration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
59.	Introduction to UNIT V	1	26/03/18		TLM1	CO5	T1,T2	
60.	Line Integral	1	27/03/18		TLM1	CO5	T1,T2	
61.	Work done and area	1	28/03/18		TLM1	CO5	T1,T2	
62.	Surface Integrals	1	29/03/18		TLM1	CO5	T1,T2	
63.	Volume Integrals	1	30/03/18		TLM3	CO5	T1,T2	
64.	Greens theorem	1	02/04/18		TLM1	CO5	T1,T2	
65.	TUTORIAL - 9	1	03/04/18		TLM1	CO5	T1,T2	
66.	Related problems	1	04/04/18		TLM1	CO5	T1,T2	
67.	Stokes theorem	1	05/04/18		TLM1	CO5	T1,T2	
68.	Related problems	1	06/04/18		TLM3	CO5	T1,T2	
69.	Gauss Divergence theorem	1	09/04/18		TLM1	CO5	T1,T2	
70.	TUTORIAL - 10	1	10/04/18		TLM1	CO5	T1,T2	
71.	Related problems	1	11/04/18		TLM1	CO5	T1,T2	
72.	Assignment/Quiz	1	12/04/18		TLM6	CO5	T1,T2	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

### Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
73.	Further applications in Multiple Integrals		13/04/18		TLM!		T1,T2	

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM2</b>	PPT	<b>TLM6</b>	Assignment or Quiz
<b>TLM3</b>	Tutorial	<b>TLM7</b>	Group Discussion/Project

<b>TLM4</b>	Demonstration (Lab/Field Visit)	
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**Part - C**

**EVALUATION PROCESS:**

<b>Evaluation Task</b>	<b>COs</b>	<b>Marks</b>
Assignment	1	A1=5
Assignment	2	A2=5
I-Mid Examination	1,2	B1=20
Quiz	1,2	D1=10
Assignment	3	A3=5
Assignment	4	A4=5
Assignment	5	A5=5
II-Mid Examination	3,4,5	B2=20
Quiz	3,4,5	D2=10
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Evaluation of Mid Marks: $D=75\%$ of Max(D1,D2)+25% of Min(D1,D2)	1,2,3,4,5	D=10
Attendance: E		E=5
<b>Cumulative Internal Examination : A+B+D+E</b>	<b>1,2,3,4,5</b>	<b>40</b>
<b>Semester End Examinations: C</b>	<b>1,2,3,4,5</b>	<b>60</b>
<b>Total Marks: A+B+D+E+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

**PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

**PROGRAMME OUTCOMES (POs)**

**PSOs**

Course Instructor	Course Coordinator	Module Coordinator	HOD

**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
 (Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,  
 NAAC Accredited 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., II-Sem., CSE(A)  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Transformation Techniques and Vector Calculus –  
 17FE06  
**L-T-P STRUCTURE** : 4-1-0  
**COURSE CREDITS** : 4  
**COURSE INSTRUCTOR** : D.VIJAY KUMAR  
**COURSE COORDINATOR** : Y.P.C.S. Anil Kumar

**PRE-REQUISITES:** Integration and Vectors

**COURSE EDUCATIONAL OBJECTIVES (CEOs):** In this course the students are introduced to Integral transformations which includes Laplace Transforms and Z – Transforms. They will also learn Multiple Integrals in different coordinate systems and Vector Calculus.

**COURSE OUTCOMES (COs)**

- After completion of the course, the student will be able to
- CO1: Apply the concepts of Laplace Transforms to solve ordinary differential equations.
- CO2: Apply Z - Transforms to solve difference equations
- CO3: Discriminate among Cartesian, Polar and Spherical coordinates in multiple integrals and their respective applications to areas and volumes.
- CO4: Evaluate the directional derivative, divergence and angular velocity of a vector function.
- CO5: Apply Vector Integration for curves, surfaces and volumes and relationship among themselves.

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

COs	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								1
CO5	3	2		1								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:**

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**Part-B**

**COURSE DELIVERY PLAN (LESSON PLAN):**

**UNIT-I : Laplace Transforms and Inverse Laplace Transforms**

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	18/12/17		TLM1			
2.	Course Outcomes	1	19/12/17		TLM1			
3.	Introduction to	1	20/12/17		TLM1	CO1	T1,T2	

UNIT-I							
4.	Laplace Transforms of standard functions	1	22/12/17		TLM1	CO1	T1,T2
5.	Linear Property, Shifting Theorems, Change of Scale Property	1	23/12/17		TLM1	CO1	T1,T2
6.	Multiplication by 't'	1	26/12/17		TLM1	CO1	T1,T2
7.	Division by 't'	1	27/12/17		TLM1	CO1	T1,T2
8.	Unit Step function, Transforms of derivatives	1	29/12/17		TLM1	CO1	T1,T2
9.	TUTORIAL-1	1	30/12/17		TLM3	CO1	T1,T2
10.	Transformation of integrals, Dirac's Delta function.	1	01/01/18		TLM1	CO1	T1,T2
11.	Inverse Laplace Transforms, Linear Property, Shifting Properties	1	02/01/18		TLM1	CO1	T1,T2
12.	Convolution theorem	1	03/01/18		TLM1	CO1	T1,T2
13.	Application of L.T. to ordinary differential equation	1	05/01/18		TLM1	CO1	T1,T2
14.	TUTORIAL-2	1	06/01/18		TLM3	CO1	T1,T2
15.	Application of L.T. to ordinary differential equation	1	08/01/18		TLM1	CO1	T1,T2
16.	Assignment/Quiz	1	09/01/18		TLM6	CO1	T1,T2
No. of classes required to complete UNIT-I		14			No. of classes taken:		

#### UNIT-II : Z-Transforms

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Introduction to UNIT II	1	10/01/18		TLM1	CO2	T1,T2	
18.	Z-transform	1	12/01/18		TLM1	CO2	T1,T2	
19.	Properties	1	19/01/18		TLM1	CO2	T1,T2	
20.	TUTORIAL-3	1	20/01/18		TLM3	CO2	T1,T2	



21.	Damping rule	1	22/01/18		TLM1	CO2	T1,T2	
22.	Shifting rule	1	23/01/18		TLM1	CO2	T1,T2	
23.	Initial and final value theorems	1	24/01/18		TLM1	CO2	T1,T2	
24.	TUTORIAL-4	1	27/01/18		TLM3	CO2	T1,T2	
25.	Inverse Z-transform	1	29/01/18		TLM1	CO2	T1,T2	
26.	Convolution theorem	1	30/01/18		TLM1	CO2	T1,T2	
27.	Solution of difference equation by Z-transform	1	31/01/18		TLM1	CO2	T1,T2	
28.	Solution of difference equation by Z-transform	1	02/02/18		TLM1	CO2	T1,T2	
29.	Assignment/Quiz	1	03/02/18		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

### UNIT-III : Multiple Integrals

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
30.	Introduction to UNIT III	1	10/02/18		TLM1	CO3	T1,T2	
31.	Multiple Integrals	1	12/02/18		TLM1	CO3	T1,T2	
32.	Change of variables	1	14/02/18		TLM1	CO3	T1,T2	
33.	Double Integrals - Cartesian coordinates	1	16/02/18		TLM1	CO3	T1,T2	
34.	Double Integrals- Polar coordinates	1	17/02/18		TLM1	CO3	T1,T2	
35.	Double Integrals- Spherical coordinates	1	19/02/18		TLM1	CO3	T1,T2	
36.	Triple Integrals - Cartesian coordinates	1	20/02/18		TLM1	CO3	T1,T2	
37.	Triple Integrals - Polar coordinates	1	21/02/18		TLM1	CO3	T1,T2	
38.	Triple Integrals - Spherical coordinates	1	23/02/18		TLM1	CO3	T1,T2	
39.	TUTORIAL-5	1	24/02/18		TLM3	CO3	T1,T2	
40.	Change of order of Integration	1	26/02/18		TLM1	CO3	T1,T2	
41.	Change of order of Integration	1	27/02/18		TLM1	CO3	T1,T2	
42.	Applications to Areas	1	28/02/18		TLM1	CO3	T1,T2	

43.	Applications to Volumes	1	02/03/18		TLM1	CO3	T1,T2	
44.	TUTORIAL-6	1	03/03/18		TLM3	CO3	T1,T2	
45.	Assignment/Quiz	1	05/03/18		TLM6	CO3	T1,T2	
No. of classes required to complete UNIT-III		16			No. of classes taken:			

#### UNIT-IV : Vector Differentiation

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
46.	Introduction to UNIT IV	1	06/03/18		TLM1	CO4	T1,T2	
47.	Vector Differentiation	1	07/03/18		TLM1	CO4	T1,T2	
48.	Gradient	1	09/03/18		TLM1	CO4	T1,T2	
49.	TUTORIAL-7	1	10/03/18		TLM3	CO4	T1,T2	
50.	Directional Derivative	1	12/03/18		TLM1	CO4	T1,T2	
51.	Divergence	1	13/03/18		TLM1	CO4	T1,T2	
52.	Curl	1	14/03/18		TLM1	CO4	T1,T2	
53.	Solenoidal fields, Irrotational fields, potential surfaces	1	16/03/18		TLM1	CO4	T1,T2	
54.	TUTORIAL-8	1	17/03/18		TLM3	CO4	T1,T2	
55.	Laplacian, second order operators	1	19/03/18		TLM1	CO4	T1,T2	
56.	Properties	1	20/03/18		TLM1	CO4	T1,T2	
57.	Properties	1	21/03/18		TLM1	CO4	T1,T2	
58.	Assignment/Quiz	1	23/03/18		TLM6	CO4	T1,T2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

#### UNIT-V: Vector Integration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
59.	Introduction to UNIT V	1	24/03/18		TLM1	CO5	T1,T2	
60.	Line Integral	1	26/03/18		TLM1	CO5	T1,T2	
61.	Work done and area	1	27/03/18		TLM1	CO5	T1,T2	
62.	Surface Integrals	1	28/03/18		TLM1	CO5	T1,T2	

63.	TUTORIAL-9	1	31/03/18		TLM3	CO5	T1,T2	
64.	Volume Integrals	1	02/04/18		TLM1	CO5	T1,T2	
65.	Greens theorem	1	03/04/18		TLM1	CO5	T1,T2	
66.	Related problems	1	04/04/18		TLM1	CO5	T1,T2	
67.	Stokes theorem	1	06/04/18		TLM1	CO5	T1,T2	
68.	TUTORIAL-10	1	07/04/18		TLM3	CO5	T1,T2	
69.	Related problems	1	09/04/18		TLM1	CO5	T1,T2	
70.	Gauss Divergence theorem	1	10/04/18		TLM1	CO5	T1,T2	
71.	Related problems	1	11/04/18		TLM1	CO5	T1,T2	
72.	Assignment/Quiz	1	13/04/18		TLM6	CO5	T1,T2	
No. of classes required to complete UNIT-V		14			No. of classes taken:			

### Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
73.	Further applications in Multiple Integrals		13/04/18		TLM!		T1,T2	

### Teaching Learning Methods

<b>TLM1</b>	Chalk and Talk	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM2</b>	PPT	<b>TLM6</b>	Assignment or Quiz
<b>TLM3</b>	Tutorial	<b>TLM7</b>	Group Discussion/Project
<b>TLM4</b>	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: $B=75\%$ of $\text{Max}(B1,B2)+25\%$ of $\text{Min}(B1,B2)$	1,2,3,4,5	B=20
Evaluation of Online Quiz Marks: $C=75\%$ of $\text{Max}(C1,C2)+25\%$ of $\text{Min}(C1,C2)$	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
<b>Cumulative Internal Examination : A+B+C+D</b>	<b>1,2,3,4,5</b>	<b>40</b>
<b>Semester End Examinations : E</b>	<b>1,2,3,4,5</b>	<b>60</b>
<b>Total Marks: A+B+C+D+E</b>	<b>1,2,3,4,5</b>	<b>100</b>

### 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.

Course Instructor	Course Coordinator	Module Coordinator	HOD

**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. II-Sem., CSE-B  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Professional Communication -II (17FE02)  
**L-T-P STRUCTURE** : 3-0-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : Mr/Ch.Nagarjuna  
**COURSE COORDINATOR** : Dr.B.Samrajya Lakshmi

**PRE-REQUISITES:** Students should have basics in English vocabulary and Grammar & they should write error free sentences

**Course Educational Objective (CEOs):** To Improve vocabulary, Grammar, Verbal – Non verbal Communication; to develop adaptability, assertive skills and Team spirit for skillful management in work place; and to Interpret technical data given in the form of charts, graphs & pictograms for writing technical reports.

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

CO1: Use appropriate vocabulary to interpret data thoroughly and to write reports effectively.

CO2: Face any situation with confidence and voice opinions/decisions assertively.

CO3: Use English Language effectively in spoken and written forms.

CO4: Work effectively in teams for better result.

CO5: Communicate effectively using verbal and non-verbal dimensions 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
17FE02	CO1	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO2	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO3	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO4	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO5	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3-Substantial(High)</b>						

### BOS APPROVED TEXT BOOKS:

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

**BOS APPROVED REFERENCE BOOKS:**

<b>R1</b>	Murphy, “English Grammar with CD”, Cambridge University Press, New Delhi, 2004.
<b>R2</b>	Rizvi Ashraf M., “Effective Technical Communication”, Tata Mc Graw Hill, New Delhi, 2008.
<b>R3</b>	Baradwaj Kumkum, “Professional Communication”, I.K.International Publishing House Pvt.Lt., New Delhi, 2008.
<b>R4</b>	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
74.	Introduction to UNIT-I	1	18-12-2017	18-12-2017	TLM1			
75.	Good Manners – J.C.Hill	1	20-12-2017	21-12-2017	TLM1	CO1	T1	
76.	Idioms	1	22-12-2017	22-12-2017	TLM1, TLM2, TLM5	CO1	T1,R1,R3	
77.	One-word Substitutes	1	27-12-2017	28-12-2017	TLM1, TLM2, TLM5	CO1	T1,R1,R3	
78.	Sequence of tenses	1	29-12-2017	29-12-2017	TLM1, TLM2, TLM5	CO1	T1,R1,R3	
79.	Subject – Verb Agreement (Concord)	1	03-01-2018	04-01-2018	TLM1, TLM2, TLM5	CO1	T1,R1,R3	
80.	If- Rudyard Kipling	1	05-01-2018	05-01-2018	TLM1	CO1	T1	
81.	Information Transfer	1	08-01-2018		TLM1, TLM2	CO1	T1,R2,R4	
No. of classes required to complete UNIT-I					No. of classes taken: 08			

**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
82.	Verger – Somerset Maugham	1	10-01-2018		TLM1, TLM6	CO2	T2	
83.	Assertive skills from the story/ personal level/ workplace	1	12-01-2018		TLM1, TLM6	CO2	T2,R2,R4	
84.	Expanding proverbs on Assertive skills	1	17-01-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
85.	White washing the fence – Mark Twain	1	19-01-2018		TLM1, TLM6	CO2	T2	
86.	Teamwork skills from the story/ work place	1	22-01-2018		TLM1, TLM6	CO2	T2,R2,R4	
87.	Expanding proverbs on Teamwork	1	24-01-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
88.	Note-making	1	25-01-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
89.	Abstract/Summary writing	1	29-01-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2,R2,R4	
No. of classes required to complete UNIT-II					No. of classes taken: 8			

### 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
90.	Oh Father, Dear Father – Raj Kinger	1	31-01-2018		TLM1	CO3	T1	
91.	Foreign Languages and their Influence on English	1	02-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
92.	Conditional Sentences	1	05-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
93.	Degrees of Comparison	1	07-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	

94.	Question Tags	1	09-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R1, R3	
95.	Basic Education – M.K. Gandhi	1	12-02-2018		TLM1, TLM6	CO3	T1	
96.	Report Writing	1	14-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
97.	Report Writing	1	16-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1,R2, R4	
No. of classes required to complete UNIT-III					No. of classes taken: 8			

#### 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
98.	Senior Payroll – W E Barrett	1	19-02-2018		TLM1, TLM6	CO4	T2	
99.	Organizational Communication	1	21-02-2018		TLM1, TLM6	CO4	T2,R2,R4	
100.	Adaptability skills from the story	1	22-02-2018		TLM1, TLM6	CO4	T2,R2,R4	
101.	Adaptability skills at work place & Real life	1	26-02-2018		TLM1, TLM6	CO4	T2,R2,R4	
102.	Expanding proverbs on Adaptability skills	1	28-02-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R2,R4	
103.	Active & Passive Voice	1	02-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
104.	Active & Passive Voice	1	05-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
105.	Direct & Indirect Speech	1	07-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
106.	Direct & Indirect Speech	1	09-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2,R1,R3	
No. of classes required to complete UNIT-IV					No. of classes taken: 9			



**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	
107.	A real good smile – Bill Naughton	1	12-03-2018		TLM1, TLM6	CO5	T2		
108.	Non-Verbal Communication Skills from the story	1	14-03-2018		TLM1, TLM6	CO5	T2,R2,R4		
109.	Non-Verbal Communication skills through real life experiences	1	16-03-2018		TLM1, TLM6	CO5	T2,R2,R4		
110.	articulation and gestures	1	19-04-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4		
111.	‘Wh’ & ‘Yes’ or ‘No’ questions	1	21-03-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3		
112.	Proverbial expansion on Non-Verbal Communication	1	23-03-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R2,R4		
113.	Common Errors	1	26-03-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3		
114.	Common Errors	1	28-03-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2,R1,R3		
No. of classes required to complete UNIT-V					No. of classes taken:8				

**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
115.	SOP	1	02-04-2018		TLM1, TLM2, TLM5, TLM6		T1,T2	
116.	SOP	1	04-04-2018		TLM1, TLM2, TLM5, TLM6		T1,T2	
117.	TUTORIALS		06-04-2018					
118.	TUTORIALS		09-04-2018					

119.	TUTORIALS		11-04-2018					
120.	TUTORIALS		13-04-2018					

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

### Part - C

#### EVALUATION PROCESS:

Evaluation Task	Cos	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	1,2	A2=5
I-Mid Examination	1,2	B1=20
Quiz -1	1,2	C1=10
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
Quiz -2	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 Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
Evaluation of Quiz Marks: $C=75\% \text{ of Max}(C1,C2)+25\% \text{ of Min}(C1,C2)$	1,2,3,4,5	C=10
Attendance Marks: $D(>95\%=5, 90-95\%=4, 85-90\%=3, 80-85\%=2, 75-80\%=1)$		D=5
<b>Cumulative Internal Examination : A+B+C+D</b>	<b>1,2,3,4,5</b>	<b>40</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>E=60</b>
<b>Total Marks: A+B+C+D+E</b>	<b>1,2,3,4,5</b>	<b>100</b>

#### PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

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

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

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

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

#### PROGRAM OUTCOMES

**Engineering Graduates will be able to:**

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

complex engineering problems.

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

## **PROGRAM SPECIFIC OUTCOMES**

### **1. Programming Paradigms:**

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

### **2. Data Engineering:**

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

### **3. Software Engineering:**

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

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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. II-Sem., CSE-B  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : ENGLISH COMMUNICATION SKILLS LAB - 17FE60  
**L-T-P STRUCTURE** : 0-0-2  
**COURSE CREDITS** : 1  
**COURSE INSTRUCTOR** : Mr.Ch.Nagarjuna  
**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			
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3-Substantial(High)</b>						

**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
121.	Introduction	2	21-12-2017		TLM4		
122.	Self Introduction	2	28-12-2017		TLM4	CO3	
123.	JAM- I	2	04-01-2018		TLM4	CO3	
124.	JAM-II	2	11-01-2018		TLM4	CO3	
125.	JAM-III	2	18-02-2018		TLM4	CO3	
126.	Role Play	2	25-02-2018		TLM4	CO3	
127.	Role Play	2	01-02-2018		TLM4	CO3	
128.	Data Interpretation	2	08-03-2018		TLM2, TLM4	CO4	
129.	Group Discussion	2	15-03-2018		TLM4, TLM6	CO2	
130.	Group Discussion	2	22-02-2018		TLM4, TLM6	CO2	
131.	Group Discussion	2	08-03-2018		TLM4, TLM6	CO2	
132.	Introduction to Phonetics	2	15-03-2018		TLM1, TLM2	CO1	
133.	Introduction to Phonetics	2	22-03-2018		TLM1, TLM2	CO1	
134.	Introduction to Phonetics	2	29-03-2018		TLM1, TLM2	CO1	
15	Introduction to Phonetics	2	05-04-2018		TLM1, TLM2	CO1	
16	Internal Lab Exam	2	12-04-2018		TLM1, TLM2	CO1	
	Total	32					

<b>Teaching Learning Methods</b>			
<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	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:

<b>Parameter</b>		<b>Marks</b>
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
<b>Total</b>		<b>40 Marks</b>

<b>% of Attendance</b>	<b>Marks</b>
≥ 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
<b>Total</b>	<b>60 Marks</b>

<b>Rubrics For Evaluation of Laboratory Courses</b>								
<b>Day-To-Day Lab (Observation) Performance Evaluation (R-17)</b>					<b>Record Performance Evaluation (R-17)</b>			
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 (3Marks)	Language used is good No word/spelling errors (4 Marks)
2	Content (4Marks)	Unable to Deliver all the pints 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/ exaamples (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)
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### **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, this 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

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

**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. II-Sem., CSE (A)  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Professional Communication - I (17FE02)  
**L-T-P STRUCTURE** : 3-0-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : **B Sagar**  
**COURSE COORDINATOR** : Dr.B.Samrajya Lakshmi

**PRE-REQUISITES:** Students should have basics in English vocabulary and Grammar & they should write error free sentences

**Course Educational Objective (CEOs):** To Improve vocabulary, Grammar, Verbal – Non verbal Communication; to develop adaptability, assertive skills and Team spirit for skillful management in work place; and to Interpret technical data given in the form of charts, graphs & pictograms for writing technical reports.

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

CO1: Use appropriate vocabulary to interpret data thoroughly and to write reports effectively.

CO2: Face any situation with confidence and voice opinions/decisions assertively.

CO3: Use English Language effectively in spoken and written forms.

CO4: Work effectively in teams for better result.

CO5: Communicate effectively using verbal and non-verbal dimensions 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
17FE02	CO1	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO2	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO3	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO4	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
	CO5	-	1	-	1	-	1	-	-	3	3	-	2	-	-	-
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3-Substantial(High)</b>						

**BOS APPROVED TEXT BOOKS:**

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

**BOS APPROVED REFERENCE BOOKS:**

<b>R1</b>	Murphy, “English Grammar with CD”, Cambridge University Press, New Delhi, 2004.
<b>R2</b>	Rizvi Ashraf M., “Effective Technical Communication”, Tata Mc Graw Hill, New Delhi, 2008.
<b>R3</b>	Baradwaj Kumkum, “Professional Communication”, I.K.International Publishing House Pvt.Lt., New Delhi, 2008.
<b>R4</b>	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	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
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		Required	Completion	Completion	Methods	COs	followed	Weekly
135.	Introduction to UNIT-I	1	18-12-2017		TLM1			
136.	Good Manners – J.C.Hill	1	19-12-2017		TLM1	CO1	T1	
137.	Idioms	1	23-12-2017		TLM1, TLM2, TLM5	CO1	T1	
138.	One-word Substitutes	1	26-12-2017		TLM1, TLM2, TLM5	CO1	T1	
139.	Sequence of tenses	1	30-12-2017		TLM1, TLM2, TLM5	CO1	T1	
140.	Subject – Verb Agreement (Concord)	1	02-01-2018		TLM1, TLM2, TLM5	CO1	T1	
141.	If- Rudyard Kipling	1	06-01-2018		TLM1	CO1	T1	
142.	Information Transfer	1	08-01-2018		TLM1, TLM2	CO1	T1	
No. of classes required to complete UNIT-I					No. of classes taken: 08			

### 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
143.	Verger – Somerset Maugham	1	09-01-2018		TLM1, TLM6	CO2	T2	
144.	Assertive skills from the story/ personal level/ workplace	1	13-01-2018		TLM1, TLM6	CO2	T2	
145.	Expanding proverbs on Assertive skills	1	20-01-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2	
146.	White washing the fence – Mark Twain	1	22-01-2018		TLM1, TLM6	CO2	T2	
147.	Teamwork skills from the story/ work place	1	23-01-2018		TLM1, TLM6	CO2	T2	
148.	Expanding	1	27-01-2018		TLM1, TLM2,	CO2	T2	

	proverbs on Teamwork				TLM5, TLM6			
149.	Note-making	1	29-01-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2	
150.	Abstract/Summary writing	1	30-01-2018		TLM1, TLM2, TLM5, TLM6	CO2	T2	
No. of classes required to complete UNIT-II					No. of classes taken: 8			

### 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
151	Oh Father, Dear Father – Raj Kinger	1	03-02-2018		TLM1	CO3	T1	
152	Foreign Languages and their Influence on English	1	10-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1	
153	Conditional Sentences	1	12-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1	
154	Degrees of Comparison	1	13-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1	
155	Question Tags	1	17-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1	
156	Basic Education – M.K. Gandhi	1	19-02-2018		TLM1, TLM6	CO3	T1	
157	Report Writing	1	20-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1	
158	Report Writing	1	24-02-2018		TLM1, TLM2, TLM5, TLM6	CO3	T1	
No. of classes required to complete UNIT-III					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
159.	Senior Payroll – W E Barrett	1	26-02-2018		TLM1, TLM6	CO4	T2	

160.	Organizational Communication	1	27-02-2018		TLM1, TLM6	CO4	T2	
161.	Adaptability skills from the story	1	03-03-2018		TLM1, TLM6	CO4	T2	
162.	Adaptability skills at work place & Real life	1	05-03-2018		TLM1, TLM6	CO4	T2	
163.	Expanding proverbs on Adaptability skills	1	06-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2	
164.	Active & Passive Voice	1	10-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2	
165.	Active & Passive Voice	1	12-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2	
166.	Direct & Indirect Speech	1	13-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2	
167.	Direct & Indirect Speech	1	17-03-2018		TLM1, TLM2, TLM5, TLM6	CO4	T2	
No. of classes required to complete UNIT-IV					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
168.	A real good smile – Bill Naughton	1	19-03-2018		TLM1, TLM6	CO5	T2	
169.	Non-Verbal Communication Skills from the story	1	20-03-2018		TLM1, TLM6	CO5	T2	
170.	Non-Verbal Communication skills through real life experiences	1	24-03-2018		TLM1, TLM6	CO5	T2	
171.	articulation and gestures	1	26-03-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2	
172.	'Wh' & 'Yes' or 'No' questions	1	27-03-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2	

173.	Wh' & 'Yes' or 'No' questions	1	31-03-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2	
174.	Proverbial expansion on Non-Verbal Communication	1	02-04-2017		TLM1, TLM2, TLM5, TLM6	CO5	T2	
175.	Proverbial expansion on Non-Verbal Communication	1	03-04-2017		TLM1, TLM2, TLM5, TLM6	CO5	T2	
No. of classes required to complete UNIT-V					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
176.	Common Errors	1	07-04-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2	
177.	Common Errors	1	09-04-2018		TLM1, TLM2, TLM5, TLM6	CO5	T2	
178.	Preparation	1	10-04-2018					

### Teaching Learning Methods

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

### Part - C

### 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
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

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

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

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

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

## **PROGRAM OUTCOMES**

### **Engineering Graduates will be able to:**

13. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
14. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
15. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
16. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
17. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
18. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
19. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
20. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
21. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
22. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective

presentations, and give and receive clear instructions.

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

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

## PROGRAM SPECIFIC OUTCOMES

### 1. Programming Paradigms:

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

### 2. Data Engineering:

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

### 3. Software Engineering:

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

B Sagar	Dr.B.SamrajyaLakshmi	Dr.B.SamrajyaLakshmi	Dr.A.Ramireddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

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## COURSE HANDOUT

### Part-A

**PROGRAM** : B.Tech. II-Sem., CSE-A  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : ENGLISH COMMUNICATION SKILLS LAB - 17FE60  
**L-T-P STRUCTURE** : 0-0-2  
**COURSE CREDITS** : 1  
**COURSE INSTRUCTOR** : B Sagar  
**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			
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3-Substantial(High)</b>						

**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
179.	Introduction	2	23-12-2017		TLM4		
180.	Self Introduction	2	06-01-2018		TLM4	CO3	
181.	JAM- I	2	13-01-2018		TLM4	CO3	
182.	JAM-II	2	20-01-2018		TLM4	CO3	
183.	JAM-III	2	27-01-2018		TLM4	CO3	
184.	Role Play	2	03-02-2018		TLM4	CO3	
185.	Role Play	2	10-02-2018		TLM4	CO3	
186.	Data Interpretation	2	17-02-2018		TLM2, TLM4	CO4	

187.	Data Interpretation	2	24-02-2018		TLM2, TLM4	CO4	
188.	Group Discussion	2	03-03-2018		TLM4, TLM6	CO2	
189.	Group Discussion	2	10-03-2018		TLM4, TLM6	CO2	
190.	Group Discussion	2	17-03-2018		TLM4, TLM6	CO2	
191.	Introduction to Phonetics	2	24-03-2018		TLM1, TLM2	CO1	
192.	Introduction to Phonetics	2	31-03-2018		TLM1, TLM2	CO1	
193.	Internal Lab Exam	2	07-04-2018				
	Total	30					

<b>Teaching Learning Methods</b>			
<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	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):**

<b>Parameter</b>		<b>Marks</b>
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
<b>Total</b>	<b>40 Marks</b>

- ✓ 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:

**(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

% 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
Presentation	10 Marks
Interview	20 Marks
<b>Total</b>	<b>60 Marks</b>

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 (3Marks)	Language used is good No word/spelling errors (4 Marks)
2	Content (4Marks)	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 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, this 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

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

**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. II-Sem., CSE-A
- ACADEMIC YEAR** : 2017-18
- COURSE NAME & CODE** : ENGLISH COMMUNICATION SKILLS LAB - 17FE60
- L-T-P STRUCTURE** : 0-0-2
- COURSE CREDITS** : 1
- COURSE INSTRUCTOR** : B Sagar

**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			
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3-Substantial(High)</b>						

**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
194.	Introduction	2	23-12-2017		TLM4		
195.	Self Introduction	2	06-01-2018		TLM4	CO3	
196.	JAM- I	2	13-01-2018		TLM4	CO3	
197.	JAM-II	2	20-01-2018		TLM4	CO3	

198.	JAM-III	2	27-01-2018		TLM4	CO3	
199.	Role Play	2	03-02-2018		TLM4	CO3	
200.	Role Play	2	10-02-2018		TLM4	CO3	
201.	Data Interpretation	2	17-02-2018		TLM2, TLM4	CO4	
202.	Data Interpretation	2	24-02-2018		TLM2, TLM4	CO4	
203.	Group Discussion	2	03-03-2018		TLM4, TLM6	CO2	
204.	Group Discussion	2	10-03-2018		TLM4, TLM6	CO2	
205.	Group Discussion	2	17-03-2018		TLM4, TLM6	CO2	
206.	Introduction to Phonetics	2	24-03-2018		TLM1, TLM2	CO1	
207.	Introduction to Phonetics	2	31-03-2018		TLM1, TLM2	CO1	
208.	Internal Lab Exam	2	07-04-2018				
	Total	30					

<b>Teaching Learning Methods</b>			
<b>TLM1</b>	Chalk and Talk	<b>TLM4</b>	Demonstration (Lab/Field Visit)
<b>TLM2</b>	PPT	<b>TLM5</b>	ICT (NPTEL/Swayam Prabha/MOOCs)
<b>TLM3</b>	Tutorial	<b>TLM6</b>	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):**

Parameter	Marks
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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
<b>Total</b>		<b>40 Marks</b>

- ✓ 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:

<b>% of Attendance</b>	<b>Marks</b>
≥ 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:

<b>Parameter</b>	<b>Marks</b>
Phonemes	05 Marks
Short answers on phonetics	05 Marks



Transcription	10 Marks
Dialogue writing	10 Marks
Presentation	10 Marks
Interview	20 Marks
<b>Total</b>	<b>60 Marks</b>

### 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 (3Marks)	Language used is good No word/spelling errors (4 Marks)
2	Content (4Marks)	Unable to Deliver all the pints 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/ exaamples (4 Marks)
3	Style of Presentation (2 Marks)	Inappropriate body language Improper prentation (0 Marks)	Prentation is not upto the mark (1 Mark)	Presented well with appropriate ettiquett 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 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, this 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

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

# **LAKIREDDY BALI REDDY CLLEGE OF ENGINEERING (A)**

## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,

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

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### **COURSE HANDOUT**

<b>PROGRAM</b>	: B.Tech. II-Sem., CSE
<b>ACADEMIC YEAR</b>	: 2017-18
<b>COURSE NAME &amp; CODE</b>	: Digital Logic design – 17CI02
<b>L-T-P STRUCTURE</b>	: 2 – 2 – –
<b>COURSE CREDITS</b>	: 3
<b>COURSE INSTRUCTOR</b>	: K.Rangachary
<b>COURSE COORDINATOR</b>	: T N V S PRAVEEN
<b>PRE-REQUISITE</b>	: Mathematics, Discrete mathematics

#### **COURSE OBJECTIVE:**

The main objective of this course is to enable the students to know about applying the knowledge of mathematics, Computer science and engineering, realize complex logic functions utilizing programmable logic, Design digital circuitry, analyze and interpret data to learn simple digital circuits in preparation for computer engineering

#### **COURSE OUTCOMES (CO):**

- CO1:** Evaluate digital number systems and use Boolean algebra theorems, Properties and canonical forms for digital logic circuit design.
- CO2:** Apply K-Maps and Tabulation methods for simplification of Boolean expressions and construct logic circuits.
- CO3:** Design Combinational logic circuits using Adders, Subtractors, Decoders, Multiplexers and magnitude Comparators.
- CO4:** Design sequential logic circuits using Flip-Flops, shift registers, Counters, and Memory unit.
- CO5:** Contrast Programmable logic devices (PROM,PAL, and PLA) and its design.

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

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

**BOS APPROVED TEXT BOOKS:**

**T1** Morris mano, Michael D Ciletti ,”Digital Design” , 4/e,, PEA

**BOS APPROVED REFERENCE BOOKS:**

**R1** Leach, Malvino, saha,”Digital Logic design”, TMH.

**R2** R.P.jain,”Modern Digital Electronics”, TMH.

**R3** A.Anand Kumar,”Switching Theory and logic Design”, Prentice-hall Of India pvt..

**R4** A.P Godse,G.A Godse,”Digital Logic Design”, T-Publishers,

**COURSE DELIVERY PLAN (LESSON PLAN): Section-B**

**UNIT – 1: NUMBER SYSTEMS**

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	Discussion of Cos and POs	1	18/12/17		TLM1	CO1	T1	
2	Introduction to Digital Systems	1	19/12/17		TLM1	CO1	T1	
3	Digital Systems, Binary Numbers	1	20/12/17		TLM1	CO1	T1	
4	Number base Conversion, Octal and Hexadecimal Numbers	2	21/12/17		TLM1, TLM2, TLM8	CO1	T1, R1	
5	Complements	2	22/12/17		TLM1, TLM2, TLM8	CO1	T1, R1	
6	Binary Codes, Binary Storage and Registers	1	26/12/17		TLM1, TLM2,	CO1	T1, R1	

					TLM8			
7	Binary Logic, <b>TUTORIAL – 1</b>	1	27/12/17		TLM1, TLM2	CO1	T1, R1	
8	Introduction to Boolean algebra, Basic theorems and Properties of Boolean Algebra	2	28/12/17		TLM1, TLM2, TLM8	CO1	T1	
9	Boolean functions, Canonical and Standard Forms, Digital Logic Gates	2	29/12/17		TLM1, TLM2	CO1	T1	
10	<b>TUTORIAL – 2</b>	<b>1</b>	<b>02/01/18</b>		<b>TLM3</b>	<b>CO1</b>	---	
11	<b>Assignment / Quiz – 1/Test</b>	<b>1</b>	<b>03/01/18</b>		<b>TLM6</b>	<b>CO1</b>	---	
<b>No. of classes required to complete UNIT-I:</b>		<b>15</b>	<b>No. of classes taken:</b>					

### UNIT – 2: LOGIC GATES AND BOOLEAN ALGEBRA

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	Simplification Of Boolean Expressions	1	04/01/18		TLM1, TLM2	CO2	T1	
2	Introduction to Karnaugh Maps	2	05/01/18 08/01/18		TLM1, TLM2	CO2	T1	
3	One Variable, Two variable, Three Variable maps	1	09/01/18		TLM1, TLM2	CO2	T1	
4	Four Variable Map	1	10/01/18		TLM1, TLM2	CO2	T1	
5	Problems on K-Maps	2	11/01/18 12/01/18		TLM1, TLM2	CO2	T1, R2	
6	Five Variable K-Map and Examples	1	17/01/18		TLM1, TLM2	CO2	T1, R2	
7	Six Variable K-Maps Examples, <b>TUTORIAL – 3</b>	1	18/01/18		TLM1, TLM2	CO2	T1, R2	
8	Minimal Expressions for incomplete Boolean functions	1	19/01/18		TLM1, TLM2	CO2	T1, R2	
9	Quine-McCluskey Method	1	22/01/18		TLM1,	CO2	T1, R2	

					TLM2			
10	Prime implicants and Essential Prime Implicants	1	23/01/18		TLM9	CO2	T1	
11	<b>TUTORIAL – 4</b>	<b>1</b>	<b>24/01/18</b>		<b>TLM3</b>	<b>CO2</b>	---	
12	<b>Assignment / Quiz – 2/Test</b>	<b>1</b>	<b>25/01/18</b>		<b>TLM6</b>	<b>CO2</b>	---	
<b>No. of classes required to complete UNIT-II:</b>		<b>15</b>	<b>No. of classes taken:</b>					

### UNIT – 3: COMBINATIONAL LOGIC CIRCUITS

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book followed	HOD Sign
1	Introduction to Combinational Logic, Design Procedure, Analysis Procedure	1	29/1/18		TLM1, TLM2	CO3	T1, R2	
2	Adders, Subtractors	2	30/1/18 31/1/18		TLM1, TLM2, TLM8	CO3	T1, R2	
3	Code Conversion	1	1/2/18		TLM9	CO3	T1	
4	Multilevel NAND circuits, Multilevel NOR circuits, <b>TUTORIAL – 5</b>	1	2/2/18		TLM1, TLM2	CO3	T1, R2	
5	Introduction to Combinational Logic with MSI And LSI	1	12/2/18		TLM1, TLM2, TLM8	CO3	T1, R2	
6	Binary Parallel Adder, Decimal Adder,	2	13/2/18		TLM9	CO3	T1	
7	Magnitude Comparator,	1	14/2/18					
8	Decoders and Multiplexers	1	15/2/18					
9	<b>TUTORIAL – 6</b>	<b>1</b>	<b>16/2/18</b>		<b>TLM3</b>	<b>CO3</b>	---	
10	<b>Assignment / Quiz – 3/Test</b>	<b>1</b>	<b>16/2/18</b>		<b>TLM6</b>	<b>CO3</b>	---	
<b>No. of classes required to complete UNIT-III:</b>		<b>12</b>	<b>No. of classes taken:</b>					

### UNIT – 4: SEQUENTIAL LOGIC CIRCUITS

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
1	Introduction to Sequential Logic, Flip Flops	2	19/02/18 20/02/18		TLM1, TLM2	CO4	T1	

2	Triggering of Flip-Flops	1	21/02/18		TLM1, TLM2	CO4	T1	
3	Analysis of Clocked Sequential Circuits	2	23/02/18 26/02/18		TLM1, TLM2,	CO4	T1	
4	State Reduction and Assignment	2	27/02/18 28/02/18		TLM1, TLM2	CO4	T1	
5	Flip-Flop Excitation tables, <b>TUTORIAL – 7</b>	1	05/03/18		TLM1, TLM2, TLM8	CO4	T1	
6	Design of Counters, Introduction to	1	06/03/18		TLM1, TLM2	CO4	T1	
7	Ripple Counters, Synchronous Counters	1	07/03/18		TLM1, TLM2, TLM8	CO4	T1	
8	Timing sequences And Memory unit	1	09/03/18		TLM9	CO4	T1	
9	<b>TUTORIAL – 8</b>	<b>1</b>	<b>12/03/18</b>		<b>TLM3</b>	<b>CO4</b>	---	
10	<b>Assignment / Quiz – 4/Test</b>	<b>1</b>	<b>14/03/18</b>		<b>TLM6</b>	<b>CO4</b>	---	
<b>No. of classes required to complete UNIT-IV</b>		<b>13</b>	<b>No. of classes taken:</b>					

### UNIT – 5: PROGRAMMABLE LOGIC DEVICES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1	Read – Only Memory (ROM)	2	16/03/18 19/03/18		TLM1, TLM2	CO5	T1	
2	Problems On ROM	2	21/03/18 23/03/18		TLM1, TLM2	CO5	T1	
3	Programmable Read Only memory	1	26/03/18		TLM1, TLM2	CO5	T1	
4	Problems on PROM, <b>TUTORIAL – 9</b>	1	28/03/18		TLM1, TLM2	CO5	T1	
5	Programmable Logic Device (PLD)	1	02/04/18		TLM1, TLM2, TLM8	CO5	T1	
6	Problems on PLD	2	03/04/18 04/04/18		TLM1, TLM2	CO5	T1	
7	Programmable Logic Array	1	05/03/18		TLM1, TLM2	CO5	T1	
8	Programmable Array Logic (PAL).	1	09/04/18		TLM9	CO5	T1	

9	Problems on PLA and PAL	1	10/04/18					
10	<b>TUTORIAL – 10</b>	<b>1</b>	<b>11/04/18</b>		<b>TLM3</b>	<b>CO5</b>	<b>---</b>	
11	<b>Assignment / Quiz – 5/Test</b>	<b>1</b>	<b>13/04/18</b>		<b>TLM6</b>	<b>CO5</b>	<b>---</b>	
<b>No. of classes required to complete UNIT-V</b>		<b>13</b>	<b>No. of classes taken:</b>					

### 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
1	PROM related problems	1						
2	Ripple Counters	1						
3	How magnitude comparators are different from Decoders	1						

### Teaching Learning Methods

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

### 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: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	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=5
<b>Cumulative Internal Examination : A+B+C+D</b>	<b>1,2,3,4,5</b>	<b>A+B+C+D=40</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>E=60</b>
<b>Total Marks: A+B+C+D+E</b>	<b>1,2,3,4,5</b>	<b>100</b>

### 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:**

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

assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

31. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
32. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
33. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
34. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
35. **Project management and finance:** Demonstrate knowledge and understanding of the **engineering and management principles and apply these to one's own work, as a member and** leader in a team, to manage projects and in multidisciplinary environments.
36. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

#### **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.

# 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

<b>PROGRAM</b>	: B.Tech., II-Sem., CSE
<b>ACADEMIC YEAR</b>	: 2017-18
<b>COURSE NAME &amp; CODE</b>	: Digital Logic design – 17CI02
<b>L-T-P STRUCTURE</b>	: 2-2-
<b>COURSE CREDITS</b>	: 3
<b>COURSE INSTRUCTOR</b>	: T N V S PRAVEEN
<b>COURSE COORDINATOR</b>	: T N V S PRAVEEN
<b>PRE-REQUISITE:</b>	<b>Mathematics, Discrete mathematics</b>

#### **COURSE OBJECTIVE:**

The main objective of this course is to enable the students to know about applying the knowledge of mathematics, Computer science and engineering, realize complex logic functions utilizing programmable logic, Design digital circuitry, analyze and interpret data to learn simple digital circuits in preparation for computer engineering

#### **COURSE OUTCOMES (CO):**

- CO1:** Evaluate digital number systems and use Boolean algebra theorems, Properties and canonical forms for digital logic circuit design.
- CO2:** Apply K-Maps and Tabulation methods for simplification of Boolean expressions and construct logic circuits.
- CO3:** design Combinational logic circuits using Adders, Subtractors, Decoders, Multiplexers and magnitude Comparators.
- CO4:** Design sequential logic circuits using Flip-Flops, shift registers, Counters, and Memory unit.
- CO5:** Contrast Programmable logic devices (PROM,PAL, and PLA) and its design.

#### **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	3													1
CO2	3	3	2												
CO3	3	3	2												
CO4	3	3	2												
CO5	3	3	2												1

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

#### **BOS APPROVED TEXT BOOKS:**

**T1** Morris mano, Michael D Ciletti ,”Digital Design” , 4/e,, PEA

**BOS APPROVED REFERENCE BOOKS:****R1** Leach, Malvino, saha, "Digital Logic design", TMH.**R2** R.P.jain, "Modern Digital Electronics", TMH.**R3** A.Anand Kumar, "Switching Theory and logic Design", Prentice-hall Of India pvt..**R4** A.P Godse, G.A Godse, "Digital Logic Design", T-Publishers,**COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT – 1: NUMBER SYSTEMS**

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
209.	Discussion of Cos and POs	1	18/12/17		TLM1	CO1	T1	
210.	Introduction to Digital Systems	1	19/12/17		TLM1	CO1	T1	
211.	Digital Systems, Binary Numbers	1	20/12/17		TLM1	CO1	T1	
212.	Number base Conversion, Octal and Hexadecimal Numbers	2	21/12/17		TLM1, TLM2, TLM8	CO1	T1, R1	
213.	Complements	2	22/12/17		TLM1, TLM2, TLM8	CO1	T1, R1	
214.	Binary Codes, Binary Storage and Registers	1	26/12/17		TLM1, TLM2, TLM8	CO1	T1, R1	
215.	Binary Logic	1	27/12/17		TLM1, TLM2	CO1	T1, R1	
216.	Introduction to Boolean algebra, Basic theorems and Properties of Boolean Algebra	2	28/12/17		TLM1, TLM2, TLM8	CO1	T1	
217.	Boolean functions, Canonical and Standard Forms, Digital Logic Gates	2	29/12/17		TLM1, TLM2	CO1	T1	
218.	<b>TUTORIAL – 1</b>	1	02/01/18		TLM3	CO1	---	
219.	<b>Assignment / Quiz – 1</b>	1	03/01/18		TLM6	CO1	---	
<b>No. of classes required to complete UNIT-I:</b>		<b>15</b>	<b>No. of classes taken:</b>					

## UNIT – 2: LOGIC GATES AND BOOLEAN ALGEBRA

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
220	Simplification Of Boolean Expressions	1	04/01/18		TLM1, TLM2	CO2	T1	
221	Introduction to Karnaugh Maps	2	05/01/18 08/01/18		TLM1, TLM2	CO2	T1	
222	One Variable, Two variable, Three Variable maps	1	09/01/18		TLM1, TLM2	CO2	T1	
223	Four Variable Map	1	10/01/18		TLM1, TLM2	CO2	T1	
224	Problems on K-Maps	2	11/01/18 12/01/18		TLM1, TLM2	CO2	T1, R2	
225	Five Variable K-Map and Examples	2	17/01/18 18/01/18		TLM1, TLM2	CO2	T1, R2	
226	Six Variable K-Maps Examples	1	19/01/18		TLM1, TLM2	CO2	T1, R2	
227	Minimal Expressions for incomplete Boolean functions	1	22/01/18		TLM1, TLM2	CO2	T1, R2	
228	Quine-McCluskey Method	1	23/01/18		TLM1, TLM2	CO2	T1, R2	
229	Prime implicants and Essential Prime Implicants	1	24/01/18		TLM9	CO2	T1	
230	<b>TUTORIAL – 2</b>	1	25/01/18		TLM3	CO2	---	
231	<b>Assignment / Quiz – 2</b>	1	26/01/18		TLM6	CO2	---	
<b>No. of classes required to complete UNIT-II:</b>		<b>15</b>	<b>No. of classes taken:</b>					

## UNIT – 3: COMBINATIONAL LOGIC CIRCUITS

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
232	Introduction to Combinational Logic, Design Procedure, Analysis Procedure	1	29/1/18		TLM1, TLM2	CO3	T1, R2	
233	Adders, Subtractors	2	30/1/18 31/1/18		TLM1, TLM2, TLM8	CO3	T1, R2	
234	Code Conversion	1	01/02/18		TLM9	CO3	T1	
235	Multilevel NAND circuits,	1	02/02/18		TLM1,	CO3	T1, R2	

	Multilevel NOR circuits				TLM2			
236.	Intoduction to Combinational Logic with MSI And LSI	1	12/02/18		TLM1, TLM2, TLM8	CO3	T1, R2	
237.	Binary Parallel Adder, Decimal Adder	2	13/02/18		TLM9	CO3	T1	
238.	Magnitude Comparator	1	14/02/18					
239.	Decoders and Multiplexers	1	15/02/18					
240.	<b>TUTORIAL – 3</b>	1	16/02/18		TLM3	CO3	---	
241.	<b>Assignment / Quiz – 3</b>	1	16/02/18		TLM6	CO3	---	
<b>No. of classes required to complete UNIT-III:</b>		<b>12</b>	<b>No. of classes taken:</b>					

#### UNIT – 4: SEQUENTIAL LOGIC CIRCUITS

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
242.	Introduction to Sequential Logic, Flip Flops	2	19/02/18 20/02/18		TLM1, TLM2	CO4	T1	
243.	Triggering of Flip-Flops,	1	21/02/18		TLM1, TLM2	CO4	T1	
244.	Analysis of Clocked Sequential Circuits	2	23/02/18 26/02/18		TLM1, TLM2, TLM8	CO4	T1	
245.	State Reduction and Assignment	2	27/02/18 28/02/18		TLM1, TLM2	CO4	T1	
246.	Flip-Flop Excitation tables	1	05/03/18		TLM1, TLM2, TLM8	CO4	T1	
247.	Design of Counters, Introduction to Registers, Shift registers	1	06/03/18		TLM1, TLM2	CO4	T1	
248.	Ripple Counters, Synchronous Counters	1	07/03/18		TLM1, TLM2, TLM8	CO4	T1	
249.	Timing sequences And Memory unit	1	09/03/18		TLM9	CO4	T1	
250.	<b>TUTORIAL – 4</b>	1	12/03/18		TLM3	CO4	---	
251.	<b>Assignment / Quiz – 4</b>	1	14/03/18		TLM6	CO4	---	
<b>No. of classes required to complete UNIT-IV</b>		<b>13</b>	<b>No. of classes taken:</b>					

#### UNIT – 5: PROGRAMMABLE LOGIC DEVICES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
252.	Read – Only Memory (ROM)	2	16/03/18 19/03/18		TLM1, TLM2	CO5	T1	
253.	Problems On ROM	2	21/03/18 23/03/18		TLM1, TLM2	CO5	T1	
254.	Programmable Read Only memory	1	26/03/18		TLM1, TLM2	CO5	T1	
255.	Problems on PROM	1	28/03/18		TLM1, TLM2	CO5	T1	
256.	Programmable Logic Device (PLD)	1	02/04/18		TLM1, TLM2, TLM8	CO5	T1	
257.	Problems on PLD	2	03/04/18 04/04/18		TLM1, TLM2	CO5	T1	
258.	Programmable Logic Array	1	05/03/18		TLM1, TLM2	CO5	T1	
259.	Programmable Array Logic (PAL).	1	09/04/18		TLM9	CO5	T1	
260.	Problems on PLA and PAL	1	10/04/18					
261.	<b>TUTORIAL – 5</b>	1	11/04/18		TLM3	CO5	---	
262.	<b>Assignment / Quiz – 5</b>	1	13/04/18		TLM6	CO5	---	
<b>No. of classes required to complete UNIT-V</b>		<b>13</b>	<b>No. of classes taken:</b>					

### 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
263.	PROM related problems	1						
264.	Ripple Counters	1						
265.	How magnitude comparators are different from Decoders	1						

### Teaching Learning Methods

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

### EVALUATION PROCESS:

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

### 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:

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

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

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

40. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and



synthesis of the information to provide valid conclusions.

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

#### **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.

Course Instructor

Course Coordinator

Module Coordinator

HOD

#### **DLD LAB-LESSON PLAN**



**Department:** CSE

**Course:** Digital design Lab (17CS60)

**Program:** B.Tech-A/S

**Lab:** 2 hours/week

**1. Pre-requisites:** Knowledge of gates designing

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

This course enables the students to know about use of basic gates, decoders and multiplexers, flip-flops, counters, shift registers and PLDs.

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

<b>CO1:</b>	Design and test the functionalities and properties of basic gates, universal gates and special gates using Logisim software.
<b>CO2:</b>	Design and verify the functionalities of basic building blocks used in combinational logic circuits
<b>CO3:</b>	Design and verify functionalities of basic building blocks used in sequential logic circuits.

**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
S168	CO1	3	3	1		3					1		2	1		1
	CO2															
	CO3	3	3	1		3					1		2	1		1
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3- Substantial(High)</b>						

**5. List of Experiments**

S No	Program to be executed	Lab Cycle
CYCLE -1		

1	<p>a) Basic Gates Function Verification using truth tables.</p> <ul style="list-style-type: none"> <li>i. AND Gate using 7408 IC</li> <li>ii. OR Gate using 7432 IC</li> <li>iii. NOT Gate using 7404 IC</li> </ul>	<b>Cycle 1</b>
	<p>b) Universal Gates Functional Verification</p> <ul style="list-style-type: none"> <li>i. NAND Gate using 7400 IC</li> <li>ii. NOR Gate using 7402 IC</li> </ul>	
	<p>c) Special Gates Functional verification</p> <ul style="list-style-type: none"> <li>i. XOR Gate using 7486 IC</li> <li>ii. XNOR Gate using XOR followed by NOT Gate</li> </ul>	
2	<p>Realization of following gates using universal gates and its functional verification.</p> <p>AND, OR, XOR, NOT</p>	
3	<p>a) Design Half-adder and Full-adder circuits and verify its functionality.</p> <p>b) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.</p>	
4	<p>Design a four bit comparator and verify its functionality (using logic gates or IC's)</p>	
5	<p>Design a BCD to Excess-3 code converter and verify its functionality by using gates.</p>	
6	<p>Design a BCD to Gray code converter and verify its functionality by using gates.</p>	
7	<p>Design and verify the functionality of Decoders and multiplexers of different inputs.</p>	
<b>CYCLE II</b>		<b>Cycle 2</b>
8	<p>Verify the functionality of following Flip-Flops.</p> <ul style="list-style-type: none"> <li>a) SR Flip-Flop</li> <li>b) JK Flip-Flop</li> <li>c) D Flip-Flop</li> <li>d) T Flip-Flop</li> </ul>	
9	<p>a) Design a UP-Counter using JK/T Flip-Flop.</p> <p>b) Design a MOD-3 Counter.</p>	
10	<p>Design a Bi-directional Counter using JK/T Flip-Flop.</p>	
11	<p>IC555 Timer- Astable Operations-Monostable Operations.</p>	<b>Cycle 3</b>
12	<p>PCB Drawing and project</p>	

## 6. Course Delivery Plan:

S No	Program to be executed	Tentative dates	DM
1	a) Basic Gates Function Verification using truth tables. iv. AND Gate using 7408 IC v. OR Gate using 7432 IC vi. NOT Gate using 7404 IC		5
	b) Universal Gates Functional Verification iii. NAND Gate using 7400 IC iv. NOR Gate using 7402 IC		5
	c) Special Gates Functional verification iii. XOR Gate using 7486 IC iv. XNOR Gate using XOR followed by NOT Gate		5
2	Realization of following gates using universal gates and its functional verification. AND, OR, XOR, NOT		5
3	c) Design Half-adder and Full-adder circuits and verify its functionality. d) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.		1,5
4	Design a four bit comparator and verify its functionality (using logic gates or IC's)		5
5	Design a BCD to Excess-3 code converter and verify its functionality by using gates.		1,5

6	Design a BCD to Gray code converter and verify its functionality by using gates.		1,5
7	Design and verify the functionality of Decoders and multiplexers of different inputs.		5
<b>CYCLE-2</b>			
8	Verify the functionality of following Flip-Flops. a) SR Flip-Flop b) JK Flip-Flop c) D Flip-Flop d) T Flip-Flop		1,5
9	a) Design a UP-Counter using JK/T Flip-Flop. b) Design a MOD-3 Counter.		5
10	Design a Bi-directional Counter using JK/T Flip-Flop.		5
11	IC555 Timer- Astable Operations-Monostable Operations.		5
12	PCB Drawing and Project		1,5,6
<b>LAB Internal Examination</b>			

**Delivery Methods (DM):**

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

	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>HOD</b>
Signature				
Name of the Faculty				

**7. Pre-requisites:** Knowledge of gates designing

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

This course enables the students to know about use of basic gates, decoders and multiplexers, flip-flops, counters, shift registers and PLDs.

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

<b>CO1:</b>	Design and test the functionalities and properties of basic gates, universal gates and special gates using Logisim software.
<b>CO2:</b>	Design and verify the functionalities of basic building blocks used in combinational logic circuits
<b>CO3:</b>	Design and verify functionalities of basic building blocks used in sequential logic circuits.

**10. Course Articulation Matrix:**

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
S168	CO1	3	3	1		3					1		2	1		1
	CO2															
	CO3	3	3	1		3					1		2	1		1
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3- Substantial(High)</b>						

**11. List of Experiments**

S No	Program to be executed	Lab Cycle
<b>CYCLE -1</b>		
1	a) Basic Gates Function Verification using truth tables. vii. AND Gate using 7408 IC viii. OR Gate using 7432 IC ix. NOT Gate using 7404 IC	

	b) Universal Gates Functional Verification v. NAND Gate using 7400 IC vi. NOR Gate using 7402 IC	
	c) Special Gates Functional verification v. XOR Gate using 7486 IC vi. XNOR Gate using XOR followed by NOT Gate	
2	Realization of following gates using universal gates and its functional verification. AND, OR, XOR, NOT	
3	e) Design Half-adder and Full-adder circuits and verify its functionality. f) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.	<b>Cycle 1</b>
4	Design a four bit comparator and verify its functionality (using logic gates or IC's)	
5	Design a BCD to Excess-3 code converter and verify its functionality by using gates.	
6	Design a BCD to Gray code converter and verify its functionality by using gates.	
7	Design and verify the functionality of Decoders and multiplexers of different inputs.	
<b>CYCLE II</b>		
8	Verify the functionality of following Flip-Flops. a) SR Flip-Flop b) JK Flip-Flop c) D Flip-Flop d) T Flip-Flop	
9	a) Design a UP-Counter using JK/T Flip-Flop. b) Design a MOD-3 Counter.	
10	Design a Bi-directional Counter using JK/T Flip-Flop.	
11	IC555 Timer- Astable Operations-Monostable Operations.	<b>Cycle 3</b>
12	PCB Drawing and project	

## 12. Course Delivery Plan:

S No	Program to be executed	Tentative dates	DM
1	a) Basic Gates Function Verification using truth tables. <ul style="list-style-type: none"> <li>x. AND Gate using 7408 IC</li> <li>xi. OR Gate using 7432 IC</li> <li>xii. NOT Gate using 7404 IC</li> </ul>		5
	b) Universal Gates Functional Verification <ul style="list-style-type: none"> <li>vii. NAND Gate using 7400 IC</li> <li>viii. NOR Gate using 7402 IC</li> </ul>		5
	c) Special Gates Functional verification <ul style="list-style-type: none"> <li>vii. XOR Gate using 7486 IC</li> <li>viii. XNOR Gate using XOR followed by NOT Gate</li> </ul>		5
2	Realization of following gates using universal gates and its functional verification. AND, OR, XOR, NOT		5
3	g) Design Half-adder and Full-adder circuits and verify its functionality. h) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.		1,5
4	Design a four bit comparator and verify its functionality (using logic gates or IC's)		5
5	Design a BCD to Excess-3 code converter and verify its functionality by using gates.		1,5
6	Design a BCD to Gray code converter and verify its functionality by using gates.		1,5
7	Design and verify the functionality of Decoders and		5



	multiplexers of different inputs.		
<b>CYCLE-2</b>			
8	Verify the functionality of following Flip-Flops. a) SR Flip-Flop b) JK Flip-Flop c) D Flip-Flop d) T Flip-Flop		1,5
9	a) Design a UP-Counter using JK/T Flip-Flop. b) Design a MOD-3 Counter.		5
10	Design a Bi-directional Counter using JK/T Flip-Flop.		5
11	IC555 Timer- Astable Operations-Monostable Operations.		5
12	PCB Drawing and Project		1,5,6
<b>LAB Internal Examination</b>			

**Delivery Methods (DM):**

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

	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>HOD</b>
Signature				
Name of the Faculty				

**13. Pre-requisites:** Knowledge of gates designing

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

This course enables the students to know about use of basic gates, decoders and multiplexers, flip-flops, counters, shift registers and PLDs.

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

<b>CO1:</b>	Design and test the functionalities and properties of basic gates, universal gates and special gates using Logisim software.
<b>CO2:</b>	Design and verify the functionalities of basic building blocks used in combinational logic circuits
<b>CO3:</b>	Design and verify functionalities of basic building blocks used in sequential logic circuits.

**16. Course Articulation Matrix:**

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
S168	CO1	3	3	1		3					1		2	1		1
	CO2															
	CO3	3	3	1		3					1		2	1		1
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3- Substantial(High)</b>						

**17. List of Experiments**

S No	Program to be executed	Lab Cycle
<b>CYCLE -1</b>		
1	a) Basic Gates Function Verification using truth tables. xiii. AND Gate using 7408 IC xiv. OR Gate using 7432 IC xv. NOT Gate using 7404 IC	
	b) Universal Gates Functional Verification ix. NAND Gate using 7400 IC x. NOR Gate using 7402 IC	

	<p>c) Special Gates Functional verification</p> <p>ix. XOR Gate using 7486 IC</p> <p>x. XNOR Gate using XOR followed by NOT Gate</p>	
2	<p>Realization of following gates using universal gates and its functional verification.</p> <p>AND, OR, XOR, NOT</p>	
3	<p>i) Design Half-adder and Full-adder circuits and verify its functionality.</p> <p>j) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.</p>	<b>Cycle 1</b>
4	Design a four bit comparator and verify its functionality (using logic gates or IC's)	
5	Design a BCD to Excess-3 code converter and verify its functionality by using gates.	
6	Design a BCD to Gray code converter and verify its functionality by using gates.	
7	Design and verify the functionality of Decoders and multiplexers of different inputs.	
<b>CYCLE II</b>		
8	<p>Verify the functionality of following Flip-Flops.</p> <p>a) SR Flip-Flop</p> <p>b) JK Flip-Flop</p> <p>c) D Flip-Flop</p> <p>d) T Flip-Flop</p>	
9	<p>a) Design a UP-Counter using JK/T Flip-Flop.</p> <p>b) Design a MOD-3 Counter.</p>	
10	Design a Bi-directional Counter using JK/T Flip-Flop.	
11	IC555 Timer- Astable Operations-Monostable Operations.	
12	PCB Drawing and project	<b>Cycle 3</b>

### 18. Course Delivery Plan:

S No	Program to be executed		

		Tentative dates	DM
1	<p>a) Basic Gates Function Verification using truth tables.</p> <p>xvi. AND Gate using 7408 IC</p> <p>xvii. OR Gate using 7432 IC</p> <p>xviii. NOT Gate using 7404 IC</p>		5
	<p>b) Universal Gates Functional Verification</p> <p>xi. NAND Gate using 7400 IC</p> <p>xii. NOR Gate using 7402 IC</p>		5
	<p>c) Special Gates Functional verification</p> <p>xi. XOR Gate using 7486 IC</p> <p>xii. XNOR Gate using XOR followed by NOT Gate</p>		5
2	<p>Realization of following gates using universal gates and its functional verification.</p> <p>AND, OR, XOR, NOT</p>		5
3	<p>k) Design Half-adder and Full-adder circuits and verify its functionality.</p> <p>l) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.</p>		1,5
4	<p>Design a four bit comparator and verify its functionality (using logic gates or IC's)</p>		5
5	<p>Design a BCD to Excess-3 code converter and verify its functionality by using gates.</p>		1,5
6	<p>Design a BCD to Gray code converter and verify its functionality by using gates.</p>		1,5
7	<p>Design and verify the functionality of Decoders and multiplexers of different inputs.</p>		5

CYCLE-2			
8	Verify the functionality of following Flip-Flops. a) SR Flip-Flop b) JK Flip-Flop c) D Flip-Flop d) T Flip-Flop		1,5
9	a) Design a UP-Counter using JK/T Flip-Flop. b) Design a MOD-3 Counter.		5
10	Design a Bi-directional Counter using JK/T Flip-Flop.		5
11	IC555 Timer- Astable Operations-Monostable Operations.		5
12	PCB Drawing and Project		1,5,6
<b>LAB Internal Examination</b>			

**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				

**LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING  
DEPARTMENT OF ELECTRICAL AND ELECTRONICS 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., II-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Basic Electrical Engineering - S 192  
**L-T-P STRUCTURE** : 3-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : Dr.G.Nageswara Rao  
**COURSE COORDINATOR** : Dr.G.Nageswara Rao  
**PRE-REQUISITES** : **Basic Electrical Engineering**

**COURSE EDUCATIONAL OBJECTIVES (CEOs):** This course enables the student to illustrate the basics of circuits and AC electric machines. It also deals with basic principles of measuring instruments.

### COURSE OUTCOMES (COs)

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

CO1: Analyze AC and DC circuits

CO2: Enumerate the working of static & rotating electrical machines

CO3: Analyse the performance of electrical machines

CO4: Interpret the working of various electrical measuring instruments

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

Mappings of course outcomes (COs) with programme outcomes (POs) & PSOs																	
17EE52 – BASIC ELECTRICAL ENGINEERING																	
		Pos											PSOs				
		a	b	c	d	e	f	g	h	i	j	k	l	PSO1	PSO2	PSO3	PSO4
COs	CO1	3	2		2	2							1	3	3	2	1
	CO2	3	2			2							1	2	3		
	CO3	3	2			2							1	2	3		
	CO4	3											1	3	3		3
		1: Slight (Low)					2: Moderate (Medium)					3: Substantial (High)					

### BOS APPROVED TEXT BOOKS:

**T1** M.S Naidu and S.Kamakshaiah, “ Introduction to Electrical Engineering ”, TMH Publication, 3<sup>rd</sup> Edition

**T2** A.Sudhakar and Shyammohan S Palli, “ Electrical Circuits ” Tata McGraw-Hill, 3<sup>rd</sup>

Edition.

**BOS APPROVED REFERENCE BOOKS:**

**R1** Kothari and Nagarath, “ Basic Electrical Engineering ”, TMH Publication, 3<sup>rd</sup> Edition

**R2** V.K.Mehta, “ Principles of Electrical Engineering ”, S.Chand Publications.

**Part-B**

**COURSE DELIVERY PLAN (LESSON PLAN): Section-B**

**UNIT-I : Electrical Circuit Fundamentals**

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	20/12/2017		<b>TLM1</b>	1	T2	
2.	Course Outcomes	1	21/12/2017		<b>TLM1</b>	1	T2	
3.	Introduction to UNIT-I	1	22/12/2017		<b>TLM1</b>	1	T2	
4.	Basic definitions	1	23/12/2017		<b>TLM1</b>	1	T2	
5.	Classification of network elements	1	27/12/2017		<b>TLM1</b>	1	T2	
6.	Ohm’s Law	1	28/12/2017		<b>TLM1</b>	1	T2	
7.	Kirchhoff’s Laws	1	3/1/2018		<b>TLM1</b>	1	T2	
8.	Star-Delta/Delta-Star transformation	1	4/1/2018		<b>TLM1</b>	1	T2	
9.	TUTORIAL-1	1	5/1/2018		<b>TLM3</b>	1	T2	
10.	Source transformations	1	6/1/2018		<b>TLM1</b>	1	T2	
11.	Problems	1	10/1/2018		<b>TLM1</b>	1	T2	
12.	Problems	1	11/1/2018		<b>TLM1</b>	1	T2	
13.	TUTORIAL-2	1	12/1/2018		<b>TLM3</b>	1	T2	
No. of classes required to complete UNIT-I		13			No. of classes taken:			

**UNIT-II : Network Theorems without proofs(DC Networks)**

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
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14.	Mesh Analysis	1	18.1.2018		<b>TLM1</b>	1	T2	
15.	Nodal Analysis	1	19.1.2018		<b>TLM1</b>	1	T2	
16.	Superposition Theorem	1	20.1.2018		<b>TLM1</b>	1	T2	
17.	TUTORIAL-3	1	24.1.2018		<b>TLM1</b>	1	T2	
18.	Thevenin's Theorem	1	25.1.2018		<b>TLM1</b>	1	T2	
19.	Norton's Theorem	1	27.1.2018		<b>TLM1</b>	1	T2	
20.	Maximum Power Transfer Theorem	1	31.1.2018		<b>TLM1</b>	1	T2	
21.	TUTORIAL-4	1	1.02.2018		<b>TLM1</b>	1	T2	
22.	Problems	1	2.2.2018		<b>TLM3</b>	1	T2	
23.	Problems	1	3.2.2018		<b>TLM1</b>	1	T2	
24.	TUTORIAL-5	1	14.2.2018		<b>TLM1</b>	1	T2	
No. of classes required to complete UNIT-II		11			No. of classes taken:			

### UNIT-III : AC Fundamentals

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.	Definitions	1	15.2.2018		<b>TLM1</b>	1	T2	
26.	Phase & Phase difference	1	16.2.2018		<b>TLM1</b>	1	T2	
27.	Reactance, Impedance..	1	21.2.2018		<b>TLM1</b>	1	T2	
28.	Real, Reactive Power..	1	22.2.2018		<b>TLM1</b>	1	T2	
29.	TUTORIAL-8	1	23.2.2018		<b>TLM1</b>	1	T2	
30.	Power factor	1	24.2.2018		<b>TLM1</b>	1	T2	
31.	Resonance	1	27.2.2018		<b>TLM1</b>	1	T2	
32.	TUTORIAL-9	1	1.03.2018		<b>TLM1</b>	1	T2	
33.	Numerical Problems	1	2.03.2018		<b>TLM3</b>	1	T2	
34.	TUTORIAL-10	1	3.03.2018		<b>TLM1</b>	1	T2	
35.	Definitions	1	5.03.2018		<b>TLM1</b>	1	T2	
36.	Phase & Phase difference	1	6.03.2018		<b>TLM1</b>	1	T2	
37.	Reactance, Impedance..	1	7.03.2018		<b>TLM3</b>	1	T2	
38.	Real, Reactive Power..	1	8.03.2018		<b>TLM1</b>	1	T2	



No. of classes required to complete UNIT-III	14	No. of classes taken:
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#### UNIT-IV : Generalised Treatment of Electrical Machines

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.	Dynamo	1	9.03.2018		<b>TLM1</b>	2	T1	
40.	Generator	1	10.03.2018		<b>TLM1</b>	2	T1	
41.	TUTORIAL-11	1	13.03.2018		<b>TLM1</b>	2	T1	
42.	Motor	1	14.03.2018		<b>TLM1</b>	2	T1	
43.	TUTORIAL-12	1	15.03.2018		<b>TLM1</b>	2	T1	
44.	Torque	1	16.03.2018		<b>TLM1</b>	2	T1	
45.	Types of electrical rotating machines	1	17.03.2018		<b>TLM1</b>	3	T1	
46.	Numerical Problems	1	21.03.2018		<b>TLM1</b>	3	T1	
47.	TUTORIAL-13	1	22.03.2018		<b>TLM3</b>	3	T1	
48.	Numerical Problems	1	23.03.2018		<b>TLM1</b>	3	T1	
49.	Numerical Problems	1	24.03.2018		<b>TLM2</b>	2	T1	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

#### UNIT-V : Single Phase Transformers & 3-Phase Induction Motor

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.	Single Phase Transformer	1	26.03.2018		<b>TLM1</b>	2	T3	
51.	Transformer Tests	1	27.03.2018		<b>TLM1</b>	2	T3	
52.	TUTORIAL-14	1	28.03.2018		<b>TLM1</b>	2	T3	
53.	Numerical Problems	1	29.03.2018		<b>TLM1</b>	2	T3	
54.	Induction Motor	1	30.03.2018		<b>TLM1</b>	3	T3	
55.	Torque-slip Characteristics	1	31.03.2018		<b>TLM1</b>	3	T3	
56.	TUTORIAL-15	1	4.04.2018		<b>TLM1</b>	3	T3	
57.	Numerical Problems	1	5.04.2018		<b>TLM1</b>	3	T3	
58.	Electrical Measuring	1	6.04.2018		<b>TLM3</b>	4	T3	

	Instruments						
59.	TUTORIAL-16	1	7.04.2018		<b>TLM1</b>	4	T3
No. of classes required to complete UNIT-V		10			No. of classes taken:		

### Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign
60.	Dependent Sources	1	11.04.2018		<b>TLM2</b>	1	T2	
61.	Power & Energy Relations	2	12.04.2018		<b>TLM2</b>	1	T2	
62.	PMMC Meter	1	13.04.2018		<b>TLM2</b>	4	T2	

### Teaching Learning Methods

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

### Part - C

### 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
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

### PROGRAMME OUTCOMES (POs)

### PSOs

Course Instructor	Course Coordinator	Module Coordinator	HOD

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

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## **COURSE HANDOUT**

### **Part-A**

**PROGRAM** : B.Tech., II-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Basic Electrical Engineering - S 192  
**L-T-P STRUCTURE** : 2-2-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : **Dr.G.Nageswara Rao**  
**COURSE COORDINATOR** : **Dr.G.Nageswara Rao**  
**PRE-REQUISITES** : Basic Electrical Engineering

**COURSE EDUCATIONAL OBJECTIVES (CEOs):** This course enables the student to illustrate the basics of circuits and AC electric machines. It also deals with basic principles of measuring instruments.

### **COURSE OUTCOMES (COs)**

After completion of the course, the student will be able to  
CO1: Analyze AC and DC circuits  
CO2: Enumerate the working of static & rotating electrical machines  
CO3: Analyse the performance of electrical machines  
CO4: Interpret the working of various electrical measuring instruments

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

Mappings of course outcomes (COs) with programme outcomes (POs) & PSOs 17EE52 – BASIC ELECTRICAL ENGINEERING																
	<b>Pos</b>											<b>PSOs</b>				
	a	b	c	d	e	f	g	h	i	j	k	l	PSO1	PSO2	PSO3	PSO4

COs	CO1	3	2		2	2						1	3	3		2	1
	CO2	3	2			2						1	2	3			
	CO3	3	2			2						1	2	3			
	CO4	3										1	3	3			3
1: Slight (Low)      2: Moderate (Medium)      3: Substantial (High)																	

**BOS APPROVED TEXT BOOKS:**

**T1** M.S Naidu and S.Kamakshaiah, “ Introduction to Electrical Engineering ”, TMH Publication, 3<sup>rd</sup> Edition

**T2** A.Sudhakar and Shyammohan S Palli, “ Electrical Circuits ” Tata McGraw-Hill, 3<sup>rd</sup> Edition.

**BOS APPROVED REFERENCE BOOKS:**

**R1** Kothari and Nagarath, “ Basic Electrical Engineering ”, TMH Publication, 3<sup>rd</sup> Edition

**R2** V.K.Mehta, “ Principles of Electrical Engineering ”, S.Chand Publications.

**Part-B**

**COURSE DELIVERY PLAN (LESSON PLAN): Section-A**

**UNIT-I : Electrical Circuit Fundamentals**

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	18.12.2017		<b>TLM1</b>	1	T2	
2.	Course Outcomes	1	19.12.2017		<b>TLM1</b>	1	T2	
3.	Introduction to UNIT-I	1	21.12.2017		<b>TLM1</b>	1	T2	
4.	Basic definitions	1	23.12.2017		<b>TLM1</b>	1	T2	
5.	Classification of network elements	1	26.12.2017		<b>TLM1</b>	1	T2	
6.	Ohm’s Law	1	28.12.2017		<b>TLM1</b>	1	T2	
7.	Kirchhoff’s Laws	1	30.12.2017		<b>TLM1</b>	1	T2	
8.	Star-Delta Transformation	1	2.01.2018		<b>TLM1</b>	1	T2	
9.	TUTORIAL-1	1	4.01.2018		<b>TLM3</b>	1	T2	
10.	Source transformations	1	6.01.2018		<b>TLM1</b>	1	T2	
11.	TUTORIAL-2	1	8.01.2018		<b>TLM1</b>	1	T2	
12.	Problems	1	9.01.2018		<b>TLM1</b>	1	T2	

13.	TUTORIAL-3	1	11.01.2018		<b>TLM3</b>	1	T2	
No. of classes required to complete UNIT-I		13			No. of classes taken:			

### UNIT-II : Network Theorems without proofs(DC Networks)

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.	Mesh Analysis	1	18.01.2018		<b>TLM1</b>	1	T2	
15.	TUTORIAL-4	1	20.01.2018		<b>TLM3</b>	1	T2	
16.	Nodal Analysis	1	22.01.2018		<b>TLM1</b>	1	T2	
17.	Superposition Theorem	1	23.01.2018		<b>TLM1</b>	1	T2	
18.	TUTORIAL-5	1	25.01.2018		<b>TLM3</b>	1	T2	
19.	Thevenin's Theorem	1	27.01.2018		<b>TLM1</b>	1	T2	
20.	Norton's Theorem	1	29.01.2018		<b>TLM1</b>	1	T2	
21.	Maximum Power Transfer Theorem	1	1.02.2018		<b>TLM1</b>	1	T2	
22.	TUTORIAL-6	1	3.02.2018		<b>TLM3</b>	1	T2	
23.	Problems	1	10.02.2018		<b>TLM1</b>	1	T2	
24.	Problems	1	12.02.2018		<b>TLM1</b>	1	T2	
25.	TUTORIAL-7	1	13.02.2018		<b>TLM3</b>	1	T2	
No. of classes required to complete UNIT-II		12			No. of classes taken:			

### UNIT-III : AC Fundamentals

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
26.	Definitions	1	15.02.2018		<b>TLM1</b>	1	T2	
27.	Phase & Phase difference	1	17.02.2018		<b>TLM1</b>	1	T2	
28.	Reactance, Impedance..	1	10.02.2018		<b>TLM1</b>	1	T2	
29.	Real, Reactive Power..	1	12.02.2018		<b>TLM1</b>	1	T2	

30.	TUTORIAL-8	1	13.02.2018		<b>TLM3</b>	1	T1	
31.	Power factor	1	19.02.2018		<b>TLM1</b>	1	T2	
32.	Resonance	1	20.02.2018		<b>TLM1</b>	1	T2	
33.	TUTORIAL-9	1	15.02.2018		<b>TLM1</b>	1	T2	
34.	Numerical Problems	1	22.02.2018		<b>TLM1</b>	1	T2	
35.	TUTORIAL-10	1	24.02.2018		<b>TLM3</b>	1	T2	
No. of classes required to complete UNIT-III		10			No. of classes taken:			

#### UNIT-IV : Generalised Treatment of Electrical Machines

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
36.	Dynamo	1	26.02.2018		<b>TLM2</b>	2	T1	
37.	Generator	1	27.02.2018		<b>TLM1</b>	3	T1	
38.	TUTORIAL-11	1	1.03.2018		<b>TLM1</b>	2	T1	
39.	Motor	1	3.03.2018		<b>TLM1</b>	2	T1	
40.	TUTORIAL-12	1	5.03.2018		<b>TLM1</b>	2	T1	
41.	Torque	1	22.02.2018		<b>TLM1</b>	2	T1	
42.	Types of electrical rotating machines	1	6.03.2018		<b>TLM1</b>	3	T1	
43.	Numerical Problems	1	8.03.2018		<b>TLM1</b>	3	T1	
44.	TUTORIAL-13	1	10.03.2018		<b>TLM1</b>	3	T1	
45.	Numerical Problems	1	12.03.2018		<b>TLM1</b>	3	T1	
No. of classes required to complete UNIT-IV		10			No. of classes taken:			

#### UNIT-V : Single Phase Transformers & 3-Phase Induction Motor

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
46.	Single Phase Transformer	2	13.02.2018		<b>TLM1</b>	2	T3	
47.	Tests	2	15.03.2018		<b>TLM1</b>	2	T3	
48.	TUTORIAL-14	1	17.03.2018		<b>TLM3</b>	2	T3	
49.	Numerical Problems	1	19.03.2018		<b>TLM1</b>	2	T3	
50.	Induction Motor	2	20.03.2018		<b>TLM1</b>	2	T3	

51.	Torque-slip Characteristics	1	13.02.2018		<b>TLM1</b>	2	T3	
52.	TUTORIAL-15	1	15.03.2018		<b>TLM3</b>	2	T3	
53.	Numerical Problems	1	17.03.2018		<b>TLM1</b>	2	T3	
54.	Electrical Measuring Instruments	1	19.03.2018		<b>TLM1</b>	4	T3	
55.	TUTORIAL-16	1	20.03.2018		<b>TLM3</b>	4	T3	
56.	Revision	1	2.04.2018		<b>TLM1</b>		T3	
57.	Revision	1	3.04.2018		<b>TLM1</b>		T3	
58.	Revision	1	6.04.2018		<b>TLM1</b>		T3	
59.	Revision	1	7.04.2018		<b>TLM1</b>		T3	
60.	Revision	1	9.04.2018		<b>TLM1</b>		T3	
61.	Revision	1	10.04.2018		<b>TLM1</b>		T3	
62.	Revision	1	13.04.2018		<b>TLM1</b>		T3	
No. of classes required to complete UNIT-V		20			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
63.	Dependent Sources	1	22.03.2018		<b>TLM2</b>	1	T2	
64.	Power & Energy Relations	1	26.03.2018		<b>TLM2</b>	1	T2	
65.	PMMC Meter	1	30.03.2018		<b>TLM2</b>	4	T3	

### Teaching Learning Methods

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

### Part - C

### 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
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

**PROGRAMME EDUCATIONAL OBJECTIVES (PEOs) PROGRAMME OUTCOMES (POs)PSOs**

Course Instructor	Course Coordinator	Module Coordinator	HOD

**Pre-requisites:** Awareness about the usage of Vernier callipers, Screw Gauge etc.,

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

To make students learn the theoretical concepts, Analytical techniques and graphical analysis through completing a host of experiments with the procedures and observational skills using simple and complex apparatus.

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

**CO1 :** Find the wave length of Laser light source and width of single slit by diffraction pattern.

**CO2 :** Estimate the Radius of curvature of Plano convex lens by forming Newton's rings.

**CO3 :** Analyze the characteristics of different Diodes.

**CO4 :** Determine the energy band gap of a semi conductor Diode.

**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	3	3	3	2					3			3			
	CO2	3	3	2	2					3			3			
	CO3	3	3	2	2					3			3			
	CO4	3	3	2	2					3			3			



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

S.NO	EXPERIMENT TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Take n		
<b>Unit-1</b>					
1	Introduction	3	3	21-12-17	
2	Demonstration	3	3	28-12-17	
3	Cycle -1	3	3	04-01-18	
4		3	3	11-01-18	
5	Cycle -1	3	3	18-01-18	
6	Cycle -1	3	3	25-01-18	
7		3	3	01-02-18	
8	MID-1	3	3	05-02-18	
9	Demonstration	3	3	15-02-18	
10	Cycle -2	3	3	22-02-18	
11	Cycle -2	3	3	8-03-18	
12	Cycle -2	3	3	15-03-18	
13	Cycle -2	3	3	22-03-18	
14	Repetition lab	3		29-03-18	
15	Internal	3	3	05-04-18	
16	Internal	3	3	12-04-18	
<b>Number of classes</b>		48			

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	<b>N.Aruna</b>	<b>Dr.T.Vasantarao</b>	<b>Dr.T.Vasantarao</b>	<b>Dr.A.Ramireddy</b>

**Pre-requisites:** Awareness about the usage of Vernier callipers, Screw Gauge etc.,

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

To make students learn the theoretical concepts, Analytical techniques and graphical analysis through completing a host of experiments with the procedures and observational skills using simple and complex apparatus.

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

**CO1 :** Find the wave length of Laser light source and width of single slit by diffraction pattern.

**CO2 :** Estimate the Radius of curvature of Plano convex lens by forming Newton's rings.

**CO3 :** Analyze the characteristics of different Diodes.

**CO4 :** Determine the energy band gap of a semi conductor Diode.

**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	3	3	3	2					3			3			
	CO2	3	3	2	2					3			3			
	CO3	3	3	2	2					3			3			
	CO4	3	3	2	2					3			3			
		<b>1 = Slight (Low)</b>				<b>2 = Moderate (Medium)</b>				<b>3-Substantial(High)</b>						

S.NO	EXPERIMENT TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Take n		

<b>Unit-1</b>					
	1	Introduction	2	2	18-12-17
	2	Demonstration	2	2	08-01-18
	3	Cycle -1	2	2	22-01-18
	4		2	2	29-01-18
ference from	5	Cycle -1	2	2	05-02-18
TORIAL-1	6	Cycle -1	2	2	12-02-18
	7		2	2	19-02-18
	8	MID-1	2	2	26-02-18
	9	Demonstration	2	2	05-03-18
	10	Cycle -2	2	2	12-03-18
	11	Cycle -2	2	2	19-03-18
	12	Cycle -2	2	2	26-03-18
	13	Cycle -2	2	2	02-04-18
	14	Internal			09-04-18
<b>Number of classes</b>			28		

	<b>Course Instructor</b>	<b>Course Coordinator</b>	<b>Module Coordinator</b>	<b>HOD</b>
Signature				
Name of the Faculty	<b>N.Aruna</b>	<b>Dr.T.Vasantarao</b>	<b>Dr.T.Vasantarao</b>	<b>Dr.A.Ramireddy</b>

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

## COURSE HANDOUT

### Part-A

**PROGRAM** : B.Tech., II-Sem., CSE-A  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : APPLIED PHYSICS & 17FE12  
**L-T-P STRUCTURE** : 3-2-0  
**COURSE CREDITS** : 4  
**COURSE INSTRUCTOR** : Dr T VASANTHA RAO  
**COURSE COORDINATOR** : N.Aruna  
**Pre-requisites** : Basics in Light, Conductivity in different solid materials etc.,

**Course Educational Objectives :** To make students learn the basic concepts of Optics such as Interference, Diffraction, Polarization and Lasers; the principle of quantum mechanics, free electron theory of metals, Concept of semi conductors, diodes and different types of polarizations in dielectrics and their applications.

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

Co1: Define the nature of Interference and Diffraction.

Co2: Describe the polarization and LASER, types of lasers and their applications.

Co3: Estimate the electrical conductivity in metals.

Co4: Design the circuits of semiconductor diodes, LED, Photodiode, Solar cell.

Co5: Classify the different types of polarizations in dielectric materials.

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

APPLIED PHYSICS												
COURSE DESIGNED BY	FRESHMAN ENGINEERING DEPARTMENT											
Course Outcomes	Programme Outcomes											
PO's →	1	2	3	4	5	6	7	8	9	10	11	12
CO1.	3	3	2	2								3
CO2.	3	3	3	2								3
CO3.	3	3	2	2								3
CO4.	3	3	2	2								3
CO5.	3	3	2	2								3
CATEGORY	BASIC SCIENCES											
APPROVAL	APPROVED BY ACADEMIC COUNCIL, 2017.											

**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:**

**Text Books:**

**TEXT BOOKS**

T1 : V. Rajendran, “*Engineering Physics*”, TMH, New Delhi, 6<sup>th</sup> Edition, 2013.

T2 : D. K.Bhattacharya, Poonam Tandon, “ *Applied Physics*”, Oxford press, New Delhi, 1<sup>st</sup> Edition, 2016.

**REFERENCES**

R1: M.N. Avadhanulu, TVS Arun Murthy, “*Applied Physics*”, S. Chand & Co., 2<sup>nd</sup> Edition, 2007.

R2 : P.K. Palani Samy, “*Applied Physics*”, Sci. Publ. Chennai, 4<sup>th</sup> Edition, 2016.

R3 : P. Sreenivasa Rao, K Muralidhar, “*Applied Physics*”, Him. Publi. Mumbai, 1<sup>st</sup> Edition, 2016.

R4 : Hitendra K Mallik , AK Singh “ *Engineering Physics*”, TMH, New Delhi, 1<sup>st</sup> Edition, 2009.

**Part-B**

**COURSE DELIVERY PLAN (LESSON PLAN): Section- B**

**UNIT-I : Interference and diffraction**

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
266.	Introduction to Subject, Course Outcomes	1	18-12-2017		TLM2	CO1	T1 or T2	
267.	Introduction to UNIT-I	1	19-12-2017		TLM1	CO1	T1 or T2	
268.	Superposition of waves,	1	20-12-2017		TLM1	CO1	T1 or T2	
269.	Coherence, Conditions for Interference	1	21-12-2017		TLM1	CO1	T1 or T2	
270.	Interference from thin films	1	22-12-2017		TLM1	CO1	T1 or T2	
271.	Newton's rings	1	26-12-2017		TLM1 TLM2	CO1	T1 or T2	
272.	Michelson's interferometer	1	27-12-2017		TLM1 TLM2	CO1	T1 or T2	
273.	Tutorial 1	1	28-12-2017		TLM3	CO1	T1 or T2	
274.	Introduction – Diffraction	1	29-12-2017		TLM1	CO1	T1 or T2	
275.	Single slit diffraction	1	02-01-2018		TLM1 TLM2	CO1	T1 or T2	
276.	Double slit diffraction	1	03-01-2018		TLM1	CO1	T1 or T2	
277.	Diffraction –Circular aperture	1	04-01-2018		TLM1 TLM2	CO1	T1 or T2	
278.	Diffraction –N parallel slits, Diffraction grating,	1	05-01-2018		TLM1 TLM2	CO1	T1 or T2	
279.	Resolving power of grating,	1	08-01-2018		TLM1	CO1	T1 or T2	
280.	Resolving power of Telescope	1	09-01-2018		TLM1	CO1	T1 or T2	
281.	TUTORIAL-2	1	10-01-2018		TLM3	CO1	T1 or T2	
282.	Assignment/Quiz	1	11-01-2018			CO1	T1 or T2	
No. of classes required to complete UNIT-I		17			No. of classes taken:			

**UNIT-II : Polarisation and Lasers**

S.No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book followed	HOD Sign
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		Required	Completion	Completion	Methods	COs		Weekly
283.	<b>UNIT II :introduction</b> polarization of light, Brewster's law	1	17-01-2018		<b>TLM1</b> <b>TLM2</b>	CO2	T1 or T2	
284.	Double refraction, Geometry of calcite crystal	1	18-01-2018		<b>TLM1</b> <b>TLM2</b>	CO2	T1 or T2	
285.	Nicol Prism, QWP & HWP	1	19-01-2018		<b>TLM1</b>	CO2	T1 or T2	
286.	Optical Activity, polarimeter	1	22-01-2018		<b>TLM1</b>	CO2	T1 or T2	
287.	TUTORIAL-3	1	23-01-2018		<b>TLM3</b>	CO2	T1 or T2	
288.	Introduction - characteristics of Lasers	1	24-01-2018		<b>TLM1</b> <b>TLM2</b>	CO2	T1 or T2	
289.	Principle of Laser, Einstein's coefficients	1	25-01-2018		<b>TLM1</b>	CO2	T1 or T2	
290.	Population inversion,	1	29-01-2018		<b>TLM1</b>	CO2	T1 or T2	
291.	Pumping mechanism,	1	30-01-2018		<b>TLM1</b>	CO2	T1 or T2	
292.	Nd-YAG Laser	1	31-01-2018		<b>TLM1,</b> <b>TLM2</b>	CO2	T1 or T2	
293.	He-Ne gas laser	1	01-02-2018		<b>TLM1,</b> <b>TLM2</b>	CO2	T1 or T2	
294.	TUTORIAL-4	1	02-02-2018		<b>TLM3</b>	CO2	T1 or T2	
No. of classes required to complete UNIT-II		12			No. of classes taken:			

### UNIT-III : Principles of Quantum Mechanics and Free electron theory

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
29	<b>I MID</b>	1	05-02-2018			Co1,Co2		
29	<b>I MID</b>	1	06-02-2018			Co1,Co2		
29	<b>I MID</b>	1	07-02-2018			Co1,Co2		
29	<b>I MID</b>	1	08-02-2018			Co1,Co2	T1 or T2	
29	Introduction to principles of quantum mechanics	1	9-02-2018		<b>TLM1</b>	CO3	T1 or T2	
30	De Broglie hypothesis	1	12-02-2018		<b>TLM1</b>	CO3	T1 or T2	
30	Experimental verification Davisson and Germer Experiment	1	14-02-2018		<b>TLM1</b> <b>TLM2</b>	CO3	T1 or T2	

30	Schrodinger wave equation	1	15-02-2018		TLM1	CO3	T1 or T2		
30	Physical significance of wave function	1	16-02-2018		TLM1	CO3	T1 or T2		
30	Particle in a box	1	19-02-2018		TLM1 TLM2	CO3	T1 or T2		
30	TUTORIAL-5	1	20-02-2018		TLM3	CO3	T1 or T2		
30	Classical free electron theory- postulates	1	21-02-2018		TLM1	CO3	T1 or T2		
30	Expression for electrical conductivity and drift velocity	1	22-02-2018		TLM1	CO3	T1 or T2		
30	Advantageous and drawbacks	1	23-02-2018		TLM1	CO3	T1 or T2		
30	Fermi –Dirac statistics	1	26-02-2018		TLM1	CO3	T1 or T2		
31	Classification of band theory of Solids	1	27-02-2018		TLM1 TLM2	CO3	T1 or T2		
31	Tutorial - 6	1	28-02-2018		TLM3	CO3	T1 or T2		
31	Assignment / Quiz - 3	1	01-03-2018		TLM1	CO3	T1 or T2		
No. of classes required to complete UNIT-III		14				No. of classes taken:			

#### UNIT-IV : 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
313.	Classification of semiconductors		05-03-2018		TLM1	CO4	T1 or T2	
314.	Carrier concentration in an intrinsic semiconductor	1	06-03-2018		TLM1	CO4	T1 or T2	
315.	Concentration and Fermi levels in an intrinsic semiconductor	1	07-03-2018		TLM1	CO4	T1 or T2	
316.	Conductivity of semiconductors	1	08-03-2018		TLM1	CO4	T1 or T2	
317.	Drift and diffusion, Einstein relation	1	09-03-2018		TLM1	CO4	T1 or T2	

318.	TUTORIAL-7	1	12-03-2018		<b>TLM3</b>	CO4	T1 or T2	
319.	Hall Effect	1	13-03-2018		<b>TLM1</b> <b>TLM2</b>	CO4	T1 or T2	
320.	Direct band gap and indirect band gap semiconductors - differences	1	14-03-2018		<b>TLM1</b> <b>TLM2</b>	CO4	T1 or T2	
321.	LED	1	15-03-2018		<b>TLM1</b>	CO4	T1 or T2	
322.	Photo Detectors	1	16-03-2018		<b>TLM1</b>	CO4	T1 or T2	
323.	Solar cell, Application of Solar cell	1	19-03-2018		<b>TLM1</b> <b>TLM2</b>	CO4	T1 or T2	
324.	TUTORIAL-8	1	20-03-2018		<b>TLM3</b>	CO4	T1 or T2	
325.	Assignment / Quiz - 4	1	21-03-2018		<b>TLM1</b>	CO4	T1 or T2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

#### UNIT-V : Dielectric 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
326.	<b>Introduction</b> , Dielectric parameters		22-03-2018		<b>TLM1</b>	CO5	T1 or R2	
327.	Electronic Polarization		23-03-2018		<b>TLM1</b>	CO5	T1 or R2	
328.	Ionic polarization		26-03-2018		<b>TLM1</b>	CO5	T1 or R2	
329.	Orientation and space charge polarization	1	27-03-2018		<b>TLM1</b>	CO5	T1 or R2	
330.	Local field and classius mosotti equation	1	28-03-2018		<b>TLM1</b>	CO5	T1 or R2	
331.	TUTORIAL-9	1	29-03-2018		<b>TLM3</b> <b>TLM2</b>	CO5	T1 or R2	
332.	Dielectric loss	1	02-04-2018		<b>TLM1</b>	CO5	T1 or R2	
333.	Dielectric breakdown	1	03-04-2018		<b>TLM1</b>	CO5	T1 or R2	
334.	Ferro electricity and Piezo electricity	1	04-04-2018		<b>TLM1</b> <b>TLM2</b>	CO5	T1 or R2	
335.	Applications of dielectric materials	1	05-04-2018		<b>TLM1</b> <b>TLM2</b>	CO5	T1 or R2	
336.	TUTORIAL-10	1	06-04-2018		<b>TLM3</b>	CO5	T1 or R2	
337.	Assignment / Quiz - 5	1	09-04-2018			CO5	T1 or R2	
338.	Revision	1	10-04-2018		<b>TLM1</b>	CO5	T1 or R2	
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
1.	Nano materials preparation		11-04-2018		<b>TLM1</b> <b>TLM2</b>	CO5	T1 or T2	
2.	applications		12-04-2018 13-04-2018		<b>TLM1</b> <b>TLM2</b>	CO5	T1 or T2	
3.	II MID EXAM		16-04-2018			CO3,CO4,CO5		
4.	II MID EXAM		17-04-2018			CO3,CO4,CO5		
5.	II MID EXAM		19-04-2018			CO3,CO4,CO5		
6.	II MID EXAM		20-04-2018			CO3,CO4,CO5		

### Teaching Learning Methods

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

### Part - C

#### EVALUATION PROCESS:

Evaluation Task	COs	Marks
I-Mid Examination (Descriptive) =A	1,2	A=20
II-Mid Examination (Descriptive) =B	3,4,5	B=20
Evaluation of Mid Marks: $A+B = 75\%$ of $\text{Max}(A,B) + 25\%$ of $\text{Min}(A,B)$	1,2,3,4,5	$A+B = 20$
I- QUIZ Examination( ONLINE ) = C	1,2	C =10
II- QUIZ Examination ( ONLINE ) =D	3,4,5	D =10
Evaluation of QUIZ Marks: $C+D = 75\%$ of $\text{Max}(C,D) + 25\%$ of $\text{Min}(C,D)$	1,2,3,4,5	$C+D = 10$
Evaluation of assignments /quiz =E	1,2,3,4,5	E = 5
Evaluation of attendance Marks = F	1,2,3,4,5	F = 5
<b>Cumulative Internal Examination : <math>(A + B) + (C + D) + E + F = 40</math></b>	<b>1,2,3,4,5</b>	<b>40</b>
<b>Semester End Examinations = G</b>	<b>1,2,3,4,5</b>	<b>G = 60</b>
<b>Total Marks: <math>(A + B) + (C + D) + E + F + G =</math></b>	<b>1,2,3,4,5</b>	<b>100</b>

#### PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

Graduates of Information Technology programme will be:

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

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

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

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

#### PROGRAM OUTCOMES:

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and 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 solution sin societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**PROGRAM SPECIFIC OUTCOMES (PSOs):**

Graduate of the Information Technology will have the ability to

1. Organize, Analyze and Interpret the data to extract meaningful conclusions.
2. Design, Implement and Evaluate a computer-based system to meet desired needs.
3. Develop IT application services with the help of different current engineering tools.

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Course Instructor	Course Coordinator	Module Coordinator	HOD

