L128 – DATA STRUCTURES LAB

Lab.	**: 3 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**:**	**External Marks**	**: 50**
Credits	**: 2**	**External Examination**	**: 3 Hrs**

Lab Programs:

S.No.	Name of the program
1	Write a C program to implement various operations on List using arrays.
2	Write a C program to implement various operations on Single linked List using pointers.
3	Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.
4	Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular single linked lists. a) Count the number of nodes. b) insert a node c) delete a node
5	Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list on an existing list. Also write a function to display the contents of the list.
6	Write a C program to implement a stack using array &linked list in which Push, Pop and display can be performed.
7	Write a program to convert infix expression to post fix expressions using array implementation of stack
8	Write a program for evaluating post fix expressions using array implementation of stack
9	Write a C program to implement a queue using arrays and linked list in which insertions, deletions and display can be performed.
10	Write a C program to implement insertion sort& shell sort
11	Write a C program to implement Selection sort.
12	Write a C Program to implement Merge Sort
13	Sort a sequence of n integers using Quick sort technique and then search for a key in the sorted array using Binary search, linear search techniques.
14	Write a C program to Heap sort
15	Write a C program to construct a binary tree and do inorder, preorder and

	post order traversals, printing the sequence of nodes visited in each case.
16	Write a C program to implement BST operations- insert, search and delete
17	Write a C program to implement the following graph Traversals a) DFS b) BFS

Pre-requisites:

- Students should have a good knowledge in C Programming Language

Course Educational Objectives(CEOs):

The course content enables students to:

1. Write algorithms to implement various operations involved in different data structures.
2. Implement stacks, queues and apply them to write complex algorithms.
3. Implement different tree structures.

Course Outcomes(COs):

By the completion of the course, the students are able to:

CO1. Implement various data structures like linked list, stacks, queues and trees.

CO2. Implement various searching, sorting and graph traversal techniques.

Session No	**Program to be executed**	**Date**	**Remarks**
1	Structure programs	30.12.2015	**Cycle-1**
2	1. Write a C program to implement various operations on List using arrays. 2. Write a C program to implement various operations on Single linked List using pointers.	06.01.2016	
3	3. Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The	20.01.2016	

	program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.		
4	4. Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular single linked lists. a) Count the number of nodes. b) insert a node c) delete a node	27.01.2016	
5	5. Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list on an existing list. Also write a function to display the contents of the list. 6. Write a C program to implement a stack using array &linked list in which Push, Pop and display can be performed.	03.02.2016	
6	7. Write a program to convert infix expression to post fix expressions using array implementation of stack 8. Write a program for evaluating post fix expressions using array implementation of stack	10.02.2016	
7	9. Write a C program to implement a queue using arrays and linked list in which insertions, deletions and display can be performed.	17.02.2016	
8	10. Write a C program to implement insertion sort& shell sort	24.02.2016	
9	11. Write a C program to implement Selection sort. 12. Write a C Program to implement Merge Sort	02.03.2016	
10	13. Sort a sequence of n integers using Quick sort technique and then search for a key in the sorted array using Binary search, linear search techniques.	09.03.2016	
11	14. Write a C program to Heap sort	16.03.2016	
12	15. Write a C program to construct a binary tree and do inorder, preorder and post order traversals, printing the sequence of nodes visited in each case.	30.03.2016	

13	16. Write a C program to implement BST operations- insert, search and delete	06.04.2016	**Cycle-2**
14	17. Write a C program to implement the following graph Traversals a) DFS	13.04.2016	
15	17. Write a C program to implement the following graph Traversals b) BFS	20.04.2016	
16	Practice Session	27.04.2016	
15	**LAB INTERNAL**	04.05.2016	

.No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
3	Solving problems	Group discussions	Tutorials
4	Designing of experiments	Industrial visit	Surprise Tests
5	Problems on environmental, economics, health & safety	Field work	Mid Exams
6	Problems on professional & ethics	Case studies	Model Exam
7	Seminar	Mini Projects	QAs
8	Problems using software	Numerical treatment	
9	Self study	Design / Exercises	

Assessment Summary:

Assessment Task	Weightage (Marks)	CO1	CO2
Assignments	--		
Quizzes	--		
Tutorials	--		
Surprise Tests	--		
Internal Exams	10		
Day-to-Day Evaluation	10		
Lab Record	05		
End Exam	50		
Total	75		

Mapping Course Outcomes with Programme Outcomes:

Course Code	**Unit**	**Course Outcomes**		**Programme Outcomes**										
		1	2	a	B	c	d	e	f	g	H	i	j	k
L128	I	S		M	L									
	II	S			L									
	III		S	L	L									
	IV	S			L									
	V		S		L									

	Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Name	A.Sudhakar			Dr. N. Ravi Shankar
Sign with Date				

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Tutorial	**:**	**External Marks**	**: 50**
Credits	**: 2**	**External Examination**	**: 3 Hrs**

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S.No.	Name of the program
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	post order traversals, printing the sequence of nodes visited in each case.
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By the completion of the course, the students are able to:

CO1. Implement various data structures like linked list, stacks, queues and trees.

CO2. Implement various searching, sorting and graph traversal techniques.

L128 – DATA STRUCTURES LAB

Lab.	**: 3 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**:**	**External Marks**	**: 50**
Credits	**: 2**	**External Examination**	**: 3 Hrs**

Lab Programs:

Session No	**Program to be executed**	**Date**	**Remarks**
1	Structure programs	30.12.2015	**Cycle-1**
2	1. Write a C program to implement various operations on List using arrays. 2. Write a C program to implement various operations on Single linked List using pointers.	06.01.2016	
3	3. Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.	20.01.2016	
4	4. Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular single linked lists. a) Count the number of nodes. b) insert a node c) delete a node	27.01.2016	
5	5. Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list on an existing list. Also write a function to display the contents of the list. 6. Write a C program to implement a stack using array &linked list in which Push, Pop and display can be performed.	03.02.2016	
6	7. Write a program to convert infix expression to post fix expressions using array implementation of stack 8. Write a program for evaluating post fix expressions using array implementation of stack	10.02.2016	

7	9. Write a C program to implement a queue using arrays and linked list in which insertions, deletions and display can be performed.	17.02.2016	
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13	16. Write a C program to implement BST operations- insert, search and delete	06.04.2016	
14	17. Write a C program to implement the following graph Traversals a) DFS	13.04.2016	
15	17. Write a C program to implement the following graph Traversals b) BFS	20.04.2016	**Cycle-2**
16	Practice Session	27.04.2016	
15	**LAB INTERNAL**	04.05.2016	

S.No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
3	Solving problems	Group discussions	Tutorials
4	Designing of experiments	Industrial visit	Surprise Tests
5	Problems on environmental, economics, health & safety	Field work	Mid Exams
6	Problems on professional & ethics	Case studies	Model Exam
7	Seminar	Mini Projects	QAs
8	Problems using software	Numerical treatment	
9	Self study	Design / Exercises	

Assessment Summary:

Assessment Task	Weightage (Marks)	CO1	CO2
Assignments	--		
Quizzes	--		
Tutorials	--		
Surprise Tests	--		
Internal Exams	10		
Day-to-Day Evaluation	10		
Lab Record	05		
End Exam	50		
Total	75		

Mapping Course Outcomes with Programme Outcomes:

Course Code	Unit	Course Outcomes		Programme Outcomes										
		1	2	a	B	c	d	e	f	g	H	i	j	k
L128	I	S		M	L									
	II	S			L									
	III		S	L	L									
	IV	S			L									
	V		S		L									

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	A.S.RC.Murthy			Dr. N. Ravi Shankar
Sign with Date				

S178 – DATA STRUCTURES

Lecture: 5 Periods/week	**Internal Marks : 25**
Tutorial : 1	**External Marks : 75**
Credits: 4	**External Examination : 3 Hrs**

UNIT - I

Algorithm Analysis:

Mathematical Background, Model, Analysis and Run Time Calculations, Lists: Abstract Data Types, List using arrays and pointers, Singly Linked, Doubly Linked, Circular Linked Lists, Polynomial ADT.

UNIT – II:

Stacks: The Stack: Definition, operations, implementation using arrays, linked list and Stack
Applications: Infix to postfix expression conversion, Evaluation of Postfix expressions, Balancing the symbols.Queue: definition, operations, implementation using arrays, linked list&it'sApplications.Circular queue: definition&its operations, implementation, De queue:
definition & its types, implementation.

UNIT - III

Searching: Linear and Binary Searching. Sorting: Insertion Sort, Selection sort, Shell Sort, Heap Sort, Merge Sort, Quick Sort, and Bucket Sort.

UNIT - IV

Trees: Terminology, Binary Trees: definition, types of binary trees, Representation, Implementation (linked list), Tree traversals: Recursive techniques, Expression Tress, Search Tree: Binary Search Tree-search, insert, Delete, Balanced Tree –Introduction to AVL tree and Rotations.

UNIT - V

Graphs: Fundamentals, Representation of graphs, Graph Traversals: BFS, DFS, Minimum cost spanning tree: Definition, Prim's Algorithm, Kruskal's algorithm.
Hashing: Hash Table, Hash Function, Collision resolution Techniques- separate Chaining, open addressing, rehashing, extendible hashing.

TEXT BOOKS :

1 Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Pearson Education, 2ndedition.
2. ReemaThareja ,Data Structures using c , Oxford Publications. 3. N.B.Venkateswarlu and E.V.Prasad ,C and Data Structures.

REFERENCES.

1. Langson, Augenstein&Tenenbaum, 'Data Structures using C and C++', 2nd ed, PHI.
2. RobertL.Kruse, Leung and Tando, 'Data Structures and Program Design in C',
2ndedition,PHI. 3. D Samantha ,Classic Data Structures.

Pre-requisite:

- Students should have a good knowledge in C Programming Language

Course Educational Objectives(CEOs):

To make students familiar with :

- Writing algorithms to implement operations involved in different data structures
- Implement stack and queue using arrays as well as linked list
- Apply stack and queue to write some complex algorithms
- Implement different types of trees and their application
- Implement various searching and sorting techniques
- Use Hash Tables to handle large amount of data

DATA STRUCTURES

Course Outcomes(COs):

By the completion of the course, the students are able to:

CO1: Analyze worst-case running times of algorithms using asymptotic analysis and implement various data structures like linked lists.

CO2: Understand and implement stacks and queues using arrays and linked lists.

CO3: Analyze and implement various searching and sorting algorithms.

CO4: Build various tree structures like Binary Trees, Binary Search Trees and AVL Trees.

CO5: Know the various graph traversal algorithms, implement suitable Hash Tables to handle large amount of data and design appropriate hash functions and collision-resolution algorithms.

.No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
3	Solving problems	Group discussions	Tutorials
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5	Problems on environmental, economics, health & safety	Field work	Mid Exams
6	Problems on professional & ethics	Case studies	Model Exam
7	Seminar	Mini Projects	QAs
8	Problems using software	Numerical treatment	
9	Self study	Design / Exercises	

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
UNIT –I:						
1	Introduction to Subject	28-12-2015		2	1	1,3,5,7
2	**Unit 1**:Introduction to Algorithms	29-12-2015		2	1	
3	Algorithms analysis -performance analysis	30-12-2015		2	1	
4	performance analysis- time complexity	31-12-2015		2	1	
5	**Tutorial Class**	02-01-2016		2	1	
6	Introduction to Data, The Abstract Data Type	04-01-2016		2	1,9	
7	concept of data structures	05-01-2016		2	1,9	
8	Introduction to Lists	06-01-2015		2	1,9	
9	List ADT	07-01-2015		2	1	
10	Single linked list operations	08-01-2016		2	1	
11	**Assignment/Quiz**	18-01-2016		2	1	
12	Single linked list operations	19-01-2016		2	1,9	
13	Single linked list operations	20-01-2016		2		
14	Single linked list operations	21-01-2016		2		
15	Single linked list operations	22-01-2016		2		

16	Polynomial ADT	23-01-2016		2		
17	Polynomial ADT operations	25-01-2016		2		
18	Polynomial ADT operations	27-01-2016		2		
19	Circular single linked list	28-01-2016		2		
20	Circular single linked list operations	29-01-2016		2		
21	Double linked list operations	30-01-2016		2		
22	Double linked list operations	01-02-2016		2		
23	Double linked list operations	02-02-2016		2		
24	Circular double linked list operations	03-02-2016				
25	Circular double linked list operations	04-02-2016				
UNIT –II:						
26	Introduction to Stack ,operations	01-02-2016		2	1	
27	Implementation using array	02-02-2016		2	1,9	
28	Implementation using linked list	03-02-2016		2	1,9	
29	Applications:Infix to postfix conversion	04-02-2016		2	1,9	1,3, 5,7
30	**Tutorial Class**	05-02-2016				
31	Evaluation of postfix expression	06-02-2016				
32	Evaluation of postfix expression	08-02-2016		2	1	

33	Balancing the symbols.	09-02-2016		2	1	
34	Queue ADT -Introduction	10-02-2016		2	1	
35	Implementations using arrays	11-02-2016		2	1	
36	Implementations using linked lists	12-02-2016		2	1,9	
37	Implementations using linked lists	13-02-2016		2	1,9	
38	Queue ADT applications: Circular Queue	15-02-2016		2	1	
39	Queue ADT applications: Circular Queue	16-02-2016		2	1,9	
40	Queue ADT applications: Circular Queue	17-02-2016		2	1,9	
41	Queue ADT applications: Deque Queue	18-02-2016		2		
42	Queue ADT applications: Deque Queue	19-02-2016		2		
43	Queue ADT applications: Deque Queue	20-02-2016				
	I-MID Exams	22-0216 To 27-02-16				
UNIT –III:						
44	**Unit-3:**Searching techniques-Linear, Binary	29-02-2016		2	1	1,3, 5,7
45	Introduction to sorting : Insertion sort	01-03-2016		2	1	
46	Selectin sort	02-03-2016		2	1,9	

47	Shell sort	03-03-2016		2	1	
48	Merge sort	04-03-2016		2	1	
49	Merge sort	05-03-2016		2	1,9	
50	**Tutorial Class**	08-03-2016		2		
51	Quick sort	09-03-2016		2		
52	Quick sort	10-03-2016		2	1	
53	Bucket sort	11-03-2016		2		
54	**Heap sort**	12-03-2016		2	1,2	
55	**Heap sort**	14-03-2016		2	1,2	
	UNIT –IV:					
56	**Unit-4:**Introduction to trees ,Tree terminology	15-03-2016		2		
	binary trees	16-03-2016		2	1,2	
57	**Tutorial Class**	17-03-2016		2	1,2	1,3, 5,7
58	binary tree traversals	18-03-2016		2	1,2	
59	representation and implementation.	19-03-2016		2	1,2	
60	binary tree traversals, Expression trees	21-03-2016		2	1,2	
61	Implementation of trees using Lists	22-03-2016		2	1,2	

62	Implementation of trees using Lists	24-03-2016				
63	Binary Search Tree	26-03-2016		2	1,2	
64	**Assignment/Quiz**	28-03-2016		2	1,2	
65	Recursive Techniques	29-03-2016		2	1,2	
66	Expression Trees	30-03-2016		2	1,2	
67	Binary Search Tree operations	31-03-2016		2	1,2	
68	Binary Search Tree operations	01-04-2016		2	1,2	
69	Binary Search Tree operations	11-03-2016		2	1,2	1,3, 5,7
70	Binary Search Tree operations	01-04-2016		2	1,2	
71	Balanced Tree: Introduction to AVL Trees	01-04-2016		2	1,2	
72	AVL Tree operations	02-04-2016		2	1,2	
	AVL Tree Rotations	04-04-2016		2	1,2	
73	AVL Tree Rotations	05-04-2016				
UNIT –V:						
74	**Unit 5: Graphs:** Fundamentals	06-04-2016		2		
75	Representation of graphs	07-04-2016		2		
76	Graphs Traversals: BFS, DFS					
77	Graphs Traversals: BFS, DFS	08-04-2016		2		

78	MCST definition, Prim's Algorithm	09-04-2016		2		1,3,5,7
79	Kruskal's Algoritm	11-04-2016		2		
80	**Assignment/Quiz**	12-04-2016		2		
81	Introduction to hashing	13-04-2016		2		
82	Hash Functions	16-04-2016		2		
83	Collision resolution techniques	18-04-2016		2		
84	Separate chaining, Open addressing	19-04-2016		2		
85	Rehashing, Extendible Hashing	21-04-2016		2		
86	Rehashing, Extendible Hashing	22-04-2016		2		
87	**Tutorial Class**	23-04-2016		2		
88	**Revision**	25-04-2016		2		
89	**Revision**	26-04-2016		2		
90	**Revision**	27-04-2016		2		
91	**Revision**	28-04-2016		2		
92	**Revision**	29-04-2016		2		
93	**Revision**	30-04-2016		2		
	II-MID EXAMS	02-05-2016 TO 07-05-2016				

Assessment Summary:

Assessment Task	Weightage (Marks)	Course Outcomes				
		CO1	CO2	CO3	CO4	CO5
Assignments	05					
Quizzes	--					
Tutorials	--					
Surprise Tests	--					
Mid Exams	20					
Model Exams	--					
End Exam	75					
Attendance	--					
Total	100					

Mapping Course Outcomes with Programme Outcomes:

Course Code	**Unit**	**Course Outcomes**					**Programme Outcomes**										
		1	2	3	4	5	a	B	c	d	e	f	g	h	i	j	k
S178	I						2	1	1		2				3	2	1
	II						2	1	1		2				3	2	1
	III						2	1	1		2				3	2	1
	IV						2	1	1		2				3	2	1
	V						2	1	1		2				3	2	1

	Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Name	A.Sudhakar			Dr. N. Ravi Shankar
Sign with Date				

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Tutorial : 1	**External Marks : 75**
Credits: 4	**External Examination : 3 Hrs**

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Mathematical Background, Model, Analysis and Run Time Calculations, Lists: Abstract Data Types, List using arrays and pointers, Singly Linked, Doubly Linked, Circular Linked Lists, Polynomial ADT.

UNIT – II:

Stacks: The Stack: Definition, operations, implementation using arrays, linked list and Stack

Applications: Infix to postfix expression conversion, Evaluation of Postfix expressions,

Balancing the symbols.Queue: definition, operations, implementation using arrays, linked

list&it'sApplications.Circular queue: definition&its operations, implementation, De queue:

definition & its types, implementation.

UNIT - III

Searching: Linear and Binary Searching. Sorting: Insertion Sort, Selection sort, Shell Sort, Heap Sort, Merge Sort, Quick Sort, and Bucket Sort.

UNIT - IV

Trees: Terminology, Binary Trees: definition, types of binary trees, Representation, Implementation (linked list), Tree traversals: Recursive techniques, Expression Tress, Search Tree: Binary Search Tree-search, insert, Delete, Balanced Tree –Introduction to AVL tree and Rotations.

UNIT - V

Graphs: Fundamentals, Representation of graphs, Graph Traversals: BFS, DFS, Minimum

cost spanning tree: Definition, Prim's Algorithm, Kruskal's algorithm.

Hashing: Hash Table, Hash Function, Collision resolution Techniques - separate Chaining, open addressing, rehashing, extendible hashing.

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REFERENCES.

1. Langson, Augenstein&Tenenbaum, 'Data Structures using C and C++', 2nd ed, PHI.

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- Implement stack and queue using arrays as well as linked list
- Apply stack and queue to write some complex algorithms
- Implement different types of trees and their application
- Implement various searching and sorting techniques
- Use Hash Tables to handle large amount of data

DATA STRUCTURES

Course Outcomes(COs):

By the completion of the course, the students are able to:

CO1: Analyze worst-case running times of algorithms using asymptotic analysis and implement various data structures like linked lists.

CO2: Understand and implement stacks and queues using arrays and linked lists.

CO3: Analyze and implement various searching and sorting algorithms.

CO4: Build various tree structures like Binary Trees, Binary Search Trees and AVL Trees.

CO5: Know the various graph traversal algorithms, implement suitable Hash Tables to handle large amount of data and design appropriate hash functions and collision-resolution algorithms.

S.No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
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9	Self study	Design / Exercises	

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
UNIT –I:						
1	Introduction to Subject	28-12-2015		2	1	1,3,5,7
2	**Unit 1**:Introduction to Algorithms	29-12-2015		2	1	
3	Algorithms analysis -performance analysis	30-12-2015		2	1	
4	performance analysis- time complexity	31-12-2015		2	1	
5	**Tutorial Class**	02-01-2016		2	1	
6	Introduction to Data, The Abstract Data Type	04-01-2016		2	1,9	
7	concept of data structures	05-01-2016		2	1,9	
8	Introduction to Lists	06-01-2015		2	1,9	
9	List ADT	07-01-2015		2	1	
10	Single linked list operations	08-01-2016		2	1	
11	**Assignment/Quiz**	18-01-2016		2	1	
12	Single linked list operations	19-01-2016		2	1,9	
13	Single linked list operations	20-01-2016		2		
14	Single linked list operations	21-01-2016		2		
15	Single linked list operations	22-01-2016		2		

16	Polynomial ADT	23-01-2016		2		
17	Polynomial ADT operations	25-01-2016		2		
18	Polynomial ADT operations	27-01-2016		2		
19	Circular single linked list	28-01-2016		2		
20	Circular single linked list operations	29-01-2016		2		
21	Double linked list operations	30-01-2016		2		
22	Double linked list operations	01-02-2016		2		
23	Double linked list operations	02-02-2016		2		
24	Circular double linked list operations	03-02-2016				
25	Circular double linked list operations	04-02-2016				
UNIT –II:						
26	Introduction to Stack ,operations	01-02-2016		2	1	
27	Implementation using array	02-02-2016		2	1,9	
28	Implementation using linked list	03-02-2016		2	1,9	
29	Applications:Infix to postfix conversion	04-02-2016		2	1,9	1,3, 5,7
30	**Tutorial Class**	05-02-2016				
31	Evaluation of postfix expression	06-02-2016				
32	Evaluation of postfix expression	08-02-2016		2	1	

33	Balancing the symbols.	09-02-2016		2	1	
34	Queue ADT -Introduction	10-02-2016		2	1	
35	Implementations using arrays	11-02-2016		2	1	
36	Implementations using linked lists	12-02-2016		2	1,9	
37	Implementations using linked lists	13-02-2016		2	1,9	
38	Queue ADT applications: Circular Queue	15-02-2016		2	1	
39	Queue ADT applications: Circular Queue	16-02-2016		2	1,9	
40	Queue ADT applications: Circular Queue	17-02-2016		2	1,9	
41	Queue ADT applications: Deque Queue	18-02-2016		2		
42	Queue ADT applications: Deque Queue	19-02-2016		2		
43	Queue ADT applications: Deque Queue	20-02-2016				
	I-MID Exams	22-0216 To 27-02-16				
UNIT –III:						
44	**Unit-3:**Searching techniques-Linear, Binary	29-02-2016		2	1	1,3, 5,7
45	Introduction to sorting : Insertion sort	01-03-2016		2	1	
46	Selectin sort	02-03-2016		2	1,9	

47	Shell sort	03-03-2016		2	1	
48	Merge sort	04-03-2016		2	1	
49	Merge sort	05-03-2016		2	1,9	
50	**Tutorial Class**	08-03-2016		2		
51	Quick sort	09-03-2016		2		
52	Quick sort	10-03-2016		2	1	
53	Bucket sort	11-03-2016		2		
54	**Heap sort**	12-03-2016		2	1,2	
55	**Heap sort**	14-03-2016		2	1,2	
UNIT –IV:						
56	**Unit-4:**Introduction to trees ,Tree terminology	15-03-2016		2		
	binary trees	16-03-2016		2	1,2	
57	**Tutorial Class**	17-03-2016		2	1,2	1,3, 5,7
58	binary tree traversals	18-03-2016		2	1,2	
59	representation and implementation.	19-03-2016		2	1,2	
60	binary tree traversals, Expression trees	21-03-2016		2	1,2	
61	Implementation of trees using Lists	22-03-2016		2	1,2	

62	Implementation of trees using Lists	24-03-2016				
63	Binary Search Tree	26-03-2016		2	1,2	
64	**Assignment/Quiz**	28-03-2016		2	1,2	
65	Recursive Techniques	29-03-2016		2	1,2	
66	Expression Trees	30-03-2016		2	1,2	
67	Binary Search Tree operations	31-03-2016		2	1,2	
68	Binary Search Tree operations	01-04-2016		2	1,2	
69	Binary Search Tree operations	11-03-2016		2	1,2	1,3, 5,7
70	Binary Search Tree operations	01-04-2016		2	1,2	
71	Balanced Tree: Introduction to AVL Trees	01-04-2016		2	1,2	
72	AVL Tree operations	02-04-2016		2	1,2	
	AVL Tree Rotations	04-04-2016		2	1,2	
73	AVL Tree Rotations	05-04-2016				
UNIT –V:						
74	**Unit 5: Graphs:** Fundamentals	06-04-2016		2		
75	Representation of graphs	07-04-2016		2		
76	Graphs Traversals: BFS, DFS					
77	Graphs Traversals: BFS, DFS	08-04-2016		2		

78	MCST definition, Prim's Algorithm	09-04-2016		2		1,3,5,7
79	Kruskal's Algoritm	11-04-2016		2		
80	**Assignment/Quiz**	12-04-2016		2		
81	Introduction to hashing	13-04-2016		2		
82	Hash Functions	16-04-2016		2		
83	Collision resolution techniques	18-04-2016		2		
84	Separate chaining, Open addressing	19-04-2016		2		
85	Rehashing, Extendible Hashing	21-04-2016		2		
86	Rehashing, Extendible Hashing	22-04-2016		2		
87	**Tutorial Class**	23-04-2016		2		
88	**Revision**	25-04-2016		2		
89	**Revision**	26-04-2016		2		
90	**Revision**	27-04-2016		2		
91	**Revision**	28-04-2016		2		
92	**Revision**	29-04-2016		2		
93	**Revision**	30-04-2016		2		
	II-MID EXAMS	02-05-2016 TO 07-05-2016				

Assessment Summary:

Assessment Task	Weightage (Marks)	Course Outcomes				
		CO1	CO2	CO3	CO4	CO5
Assignments	05					
Quizzes	--					
Tutorials	--					
Surprise Tests	--					
Mid Exams	20					
Model Exams	--					
End Exam	75					
Attendance	--					
Total	100					

Mapping Course Outcomes with Programme Outcomes:

Course Code	Unit	Course Outcomes					Programme Outcomes										
		1	2	3	4	5	a	B	c	d	e	f	g	h	i	j	k
S178	I						2	1	1		2				3	2	1
	II						2	1	1		2				3	2	1
	III						2	1	1		2				3	2	1
	IV						2	1	1		2				3	2	1
	V						2	1	1		2				3	2	1

	Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Name	A.S.R.C.Murthy			Dr. N. Ravi Shankar
Sign with Date				

LESSON PLAN

Course Code &Course Name: S 238, Engineering Physics SEM: II

Programme: I B. Tech Department: CSE-B

S.No	Tentative Date	Topics to be covered	No. of lectures	Actual date	Delivery Method
1.	28-12-15	**UNIT I INTERFERENCE:** Introduction	**01**		DM1
2.	29-12-15	Superposition of waves, Coherence	01		DM1
3.	30-12-15	Interference from thin films	01		DM1
4.	02-01-16	***Tutorial***	01		DM1
5.	04-01-16	Newton's rings	01		DM1
6.	05-01-16	Newton's rings			DM1
7.	06-01-16	**DIFFRACTION:** Introduction – Diffraction and wave theory of light	01		DM1
8.	08-01-16	Difference between interference and diffraction, Types of diffraction	01		DM2
9.	18-01-16	Single slit diffraction			DM1
10	19-01-16	Single slit diffraction	01		DM1
11	20-01-16	Double slit diffraction	01		DM1
12	22-01-16	diffraction –N parallel slits	01		DM1
13	23-01-16	***Tutorial***			DM1
14	25-01-16	Diffraction grating- Grating spectrum	01		DM2
15	27-01-16	**POLARISATION:** Introduction,	01		DM1
16	29-01-16	Polarization by reflection, Brewster's law	01		DM1
17	30-01-16	***Tutorial***	01		DM1
18	01-02-16	Polarization by scattering, Refraction and absorption			DM1
19	02-02-16	Double refraction, Nicol's prism	01		DM2
20	03-02-16	Optical Activity, QWP& HWP	01		DM1
21	05-02-16	**Unit II Principles of Quantum mechanics Introduction**	01		DM1
22	06-02-16	***Tutorial***	01		DM1
23	08-02-16	De Broglie Hypothesis,	01		DM1
24	09-02-16	Properties Matter waves			DM1
25	10-02-16	G.P Thomsons Experiment	01		DM1
26	12-02-16	Davission &Germers experiment	01		DM1
27	15-02-16	Heisenberg's uncertainty principle	01		DM1
28	16-02-16	Schrodinger independent wave equation	01		DM2
29	17-02-16	Physical significance of wave function	01		DM1
30	19-02-16	Particle in a box	01		DM2
31	20-02-16	***Assignment-1***	01		DM4
32	20-02-16	***Assignment-2***	01		DM4
33	29-02-16	**UNIT III LASERS:** Introduction - characteristics of Lasers	01		DM1
34	01-03-16	Principle of laser (Absorption, Spontaneous and stimulated emission of radiation)	01		DM1
35	02-03-16	Difference between Spontaneous and stimulated emission of radiation	01		DM1
36	04-03-16	Meta stable state ,life time	01		DM1
37	05-03-16	***Tutorial***	01		DM2
38	07-03-16	Three and For level pumping	01		DM1
39	08-03-16	Population inversion	01		DM1
40	09-03-16	Einstein's coefficients	01		DM2
41	11-03-16	Ruby laser	01		DM1
42	14-03-16	He-Ne gas laser	01		DM2
43	15-03-16	Applications	01		DM1
44	16-03-16	**FIBER OPTICS** Introduction- principle and structure of optical fibre	01		DM1

45	18-03-16	Acceptance angle –acceptance cone-numerical aperture	01		DM2
46	19-03-16	***Tutorial***	01		DM1
47	21-03-16	optical fibres based on refractive index profile	01		DM2
48	22-03-16	Applications of optical fibers	01		DM1
49	26-03-16	***Tutorial***	01		DM1
50	28-03-16	***Assignment-3***	01		DM4
51	29-03-16	**Unit IV Magnetic materials Introduction**	01		DM1
52	30-03-16	Origin of Magnetic moment	01		DM2
53	01-04-16	Classification of magnetic materials(Para Dia,& Ferro)	01		DM1
54	02-04-16	***Tutorial***	01		DM1
55	04-04-16	Domain theory of ferromagnetism	01		DM2
56	05-04-16	Hysteresie loop,Soft and Hard Magnetic materials	01		DM1
57	06-04-16	Antiferro magnetic and ferrimagnetic materials	01		DM1
58	08-04-16	Applications	01		DM8
59	11-04-16	***Assignment-4***	01		DM4
60	12-04-16	**UNIT V SUPERCONDUCTIVITY:** Phenomenon, Critical Parameters	01		DM1
61	13-04-16	Meissner Effect and effect on electricity on super conductors	01		DM2
62	16-04-16	***Tutorial***	01		DM1
63	18-04-16	Type I, Type II Super conductors	01		DM1
64	19-04-16	BCS theory of Super Conductivity	01		DM1
65	20-04-16	Flux Quatisation	01		DM1
66	22-04-16	London equations, penetration depth	01		DM2
67	23-04-16	***Tutorial***	01		DM1
68	25-04-16	Josephson effect	01		DM8
69	26-04-16	Applications	01		DM4
70	27-04-16	SQUIDS	01		DM-3
71	29-04-16	***Assignment-5***	01		DM-4
72	30-04-16	***Tutorial***	01		DM-9
73					

Note:DELIVERY METHODS(DM) DM1:Lecture interspersed with discussions/BB,DM:2Tutorial, DM:3Lecture with quiz,DM:4 Assignment/Test,DM:5 Demonstration(laboratory, field visit),DM:6 Group discussion,DM:7 Group assignment/Project,DM8: Presentations/PPT,DM:9 Asynchronous Discussion.

Signature	Name of the faculty Name of Course Co-ordinator	
		HOD
	N.Aruna	

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
L.B.Reddy Nagar, Mylavaram – 521 230. Andhra Pradesh, INDIA
Department of Freshman Engineering

Engineering Physics Lab - Schedule

Faculty Name: N.Aruna **Date**: 28-12-2015
Branch: I B. Tech –CSE-B **Semester :** II
Subject & Code: Engineering Physics Lab(L142) **A.Y.**: 2015-16

S.No	No. of lectures	Date	Planned Topics	Topics Covered	Remarks
74.	3	08-01-16	Introduction		
75.	3	22-01-16	Demonstration		
76.	3	29-01-16	Experiment 1		
77.	3	05-02-16	Experiment 2		
78.	3	12-02-16	Experiment 3		
79.	3	19-02-16	Experiment 4		
80.	3	26-02-16	MID I		
81.	3	04-03-16	Experiment 5		
82.	3	11-03-16	Demonstration		
83.	3	18-03-16	Experiment 6		
84.	3	25-03-16	Experiment 7		
85.	3	01-04-16	Experiment 8		
86.	3	08-04-16	Experiment 9		
87.	3	22-04-16	**Internal Exam**		
88.	3	29-04-16	**Internal Exam**		

Faculty **Head of the Department**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING, (AUTONOMOUS)
L.B.Reddy Nagar, Mylavaram – 521 230. Andhra Pradesh, INDIA
Department of Science & Humanities
(COMMON TO CSE, IT, MECH, CIVIL, AERO)

Engineering Physics Lab-I, Lesson Plan

Faculty Name : Dr. T. Vasanta Rao **Date** : 28-12-15
Branch : I B. Tech – CSE(A) **Semester** : II
Subject & Code : Engineering Physics Lab L-142 **A.Y.** : 2015-16

S.No	No.of hrs	Date	Planned Topics	Topics Covered	Remarks
1	03	29-12-15	Introduction		
2	03	05-01-16	Demonstration		
3	03	19-01-16	Experiment 1		
4	03	02-02-16	Experiment 2		
5	03	09-02-16	Experiment 3		
6	03	16-02-16	Experiment 4		
7	03	23-02-16	MID I		
8	03	01-03-16	Experiment 5		
9	03	08-03-16	Demonstration		
10	03	15-03-16	Experiment 6		
11	03	22-03-16	Experiment 7		
12	03	29-03-16	Experiment 8		
13	03	05-04-16	Experiment 9		
14	03	12- 04-16	Revision		
15	03	19-04-16	**Internal Exam**		
16	03	26-04-16	**Internal Exam**		

Faculty Signature **Signature of HOD**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

L.B.Reddy Nagar, Mylavaram – 521 230. Andhra Pradesh, INDIA

Department of Science & Humanities

(COMMON TO CSE, IT, MECH, CIVIL, AERO)

Engineering Physics, Lesson Plan

Faculty Name : **Dr.T.Vasantarao** **Date** : 28-12-2015

Branch : I B. Tech –CSE (A) **Semester** : II

Subject & Code : Engineering Physics&S238 **A.Y.** : 2015-16

S.NO	Tentative Date	Topics to be covered	Actual Date	Number of classes	Delivery Method
1	28-12-15	General introduction		1	DM 1
2	30-12-15	General introduction		1	DM 1
3	02-01-16	**UNIT I INTERFERENCE:** Introduction		1	DM 1
4	02-01-16	Superposition of waves		1	DM 1
5	04-01-16	Coherent sources		1	DM 1
6	06-01-16	Interference from thin films		1	DM 1
7	08-01-16	Wedge shaped film		1	DM 2
8	18-01-16	Newton's rings		1	
9	20-01-16	***Tutorial***		1	DM 1
10	22-01-16	**DIFFRACTION:** Introduction – Diffraction and wave theory of light		1	DM 1
11	23-01-16	Comparison between Fresnel and fraunhoffer diffractions,		1	DM 1
12	23-01-16	differences between interference and diffraction, fraunhofer Single slit diffraction		1	DM 1
13	25-01-16	intensity in single slit diffraction, calculating the intensity		1	DM 1
14	27-01-16	Double slit diffraction ,		1	DM 1
15	29-01-16	Diffraction grating- Grating spectrum		1	DM 2
16	30-01-16	R p and dispersive power		1	
17	30-01-16	***Tutorial***		1	DM 1
18	01-02-16	**POLARISATION:** Introduction plane of vibration and plane of polarisation.		1	DM 1
19	03-02-16	polarization by reflection, Brewster's law		1	DM 1
20	05-02-16	Geometry of Calcite crystal, Double refraction		1	DM 1
21	06-02-16	Nicol prism		1	DM 1
22	06-02-16	Quarter wave and half wave plates.		1	DM 2
23	08-02-16	***Tutorial***		1	DM 4
24	10-02-16	Assignment		1	DM 1

25	12-02-16	**UNIT-II: PRINCIPLES OF QUANTUM MECHANICS**: Introduction to quantum mechanics		1	DM 1
26	13-02-16	de-Broglie hypothesis- Matter waves		1	DM 1
27	13-02-16	Davisson and Germer experiment		1	DM 1
28	15-02-16	G.P Thomson experiment		1	DM 1
28	17-02-16	Schrödinger time independent wave equation		1	DM 1
29	19-02-16	Physical significance of wave function Heisenberg's Uncertainty principle		1	DM 1
30	20-02-16	particle in a box		1	DM 1
31	20-02-16	***Tutorial***		1	DM 2
32	29-02-16	**UNIT III LASERS:** Introduction – characteristics of Lasers		1	DM 4
33	02-03-16	Principle of laser (Absorption, Spontaneous and stimulated emission of radiation)		1	
34	04-03-16	Einstein coefficients		1	
35	05-03-16	Population inversion, three and four level schemes		1	
36	05-03-16	Pumping schemes, block diagram of laser		1	
37	09-03-16	Ruby laser		1	
38	11-03-16	He-Ne gas laser		1	
39	12-03-16	Applications of laser		1	
40	12-03-16	**FIBER OPTICS** Introduction-principle of optical fibre		1	
41	14-03-16	Acceptance angle –acceptance cone-numerical aperture		1	
42	16-03-16	Types of optical fibres		1	
43	18-03-16	Optical fibres based on refractive index profile**.**		1	DM 1
44	19-03-16	Applications of optical fibers		1	DM 1
45	19-03-16	***Tutorial***		1	DM 1
46	21-03-16	Assignment		1	DM 1
47	23-03-16	**UNIT-IV -: MAGNETIC MATERIALS:** Magnetic parameters-		1	DM 1
48	26-03-16	origin of magnetic moment.		1	DM 1
49	26-03-16	Classification of magnetic materials- Dia, para, ferromagnetic materials		1	DM 1
50	28-03-16	Anti ferromagnetic, ferrimagnetic materials-		1	DM 1
51	30-03-16	domain theory of ferromagnetism		1	DM 2
52	01-04-16	Hysteresis curve		1	DM 1
53	02-04-16	soft and hard magnetic materials		1	DM 1
54	02-04-16	applications of magnetic materials		1	DM 1
55	04-04-16	***Tutorial***		1	DM 1
56	06-04-16	Assignment		1	DM 1

57	09-04-16	**UNIT V -: SUPERCONDUCTIVITY:** Phenomenon, Critical Parameters		1	DM 2
58	09-04-16	Meissner Effect		1	DM 4
59	11-04-16	Type I, Type II Super conductors		1	DM 1
60	13-04-16	BCS theory of Super Conductivity		1	DM 1
61	16-04-16	Flux quantization		1	DM 1
62	16-04-16	Landon equations, penetration depth		1	DM 1
63	18-04-16	Josephson effects		1	DM 2
64	20-04-16	Applications of Super Conductors.		1	DM 1
64	22-04-16	***Tutorial***		1	DM 1
65	23-04-16	Assignment		1	DM 1
66	23-04-16	**Revision**		1	DM 2
67	25-04-16	**Revision**		1	DM 4
68	27-04-16	**Revision**		1	DM 1
69	29-04-16	**Revision**		1	DM 1
70	30-04-16	**Revision**		1	DM 1
71	30-04-16	**Revision**		1	DM 1
		Beyond the syllabus ……..			
		Total no of classes available as per academic calendar		71	
		Number of classes required to complete the syllabus		65	

Faculty Signature H O D Signature

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
UNIT-I: LAPLACE TRANSFORMS						
1	Course Objective, introduction, their applications	28/12/15		2	1	1,2,3,5,7
2	Laplace Transforms of Standard Functions	28/12/15		2,3	1	
3	Laplace Transforms of Standard Functions	29/12/15		2,3	1	
4	Problems	30/12/15		2,3	1	
5	First Shifting theorem, Change of Scale Property	31/12/15		2,3	1	
6	Multiplication and division by t	2/1/16		2,3	1	
7	Derivatives and integrals	4/1/16		2,3	1	
8	Problems	4/1/16		2,3	1	
9	Dirac's Delta functions	5/1/16		2,3		
10	Unit Step function, Periodic function	6/1/16		2,3	1	
11	Inverse Laplace Transforms	7/1/16		2,3	1	
12	Multiplication and division by s	8/1/16		2,3	1,9	
13	Derivatives and integrals	18/1/16		3	1	
14	**TUTORIAL-1**	18/1/16		2,3	1	
15	Inverse L T using Partial Fractions	19/1/16		2,3	1	
16	Inverse L T using Partial Fractions	20/1/16		2,3	1,9	
17	Convolution theorem	21/1/16		3	1	
18	Solving of O.D.E using L.T.	22/1/16		2,3	1	
19	Solving of O.D.E using L.T.	23/1/16		2,3	1	
20	**TUTORIAL-2**	25/1/16		2,3	1	
21	Problems	25/1/16		2,3	1	
22	**Assignment-I**	27/1/16		3		
23	**Quiz I**	28/1/16		3		
UNIT II: FOURIER SERIES						
24	Introduction to Fourier series	29/1/16		2,3	1	
25	Determination of Fourier coefficients	30/1//16		3	1,9	
26	Fourier Series Problems	1/2/16		2,3	1	
27	**TUTORIAL-3**	1/2/16		2,3	1	
28	Fourier Series Problems	2/2/16		2,3	1	
29	Fourier Series Problems	3/2/16		3	1,9	
30	Even and Odd Functions	4/2/16		2,3	1	

31	Fourier Cosine and Sine Series	5/2/16		2,3	1	
32	Fourier Cosine and Sine Series	6/2/16		2,3	1	
33	**TUTORIAL-4**	8/2/16		3	1,9	
34	**TUTORIAL-5**	8/2/16		2,3	1	
35	Fourier Series in an arbitrary interval	9/2/16		2,3	1	
36	Fourier Series in an arbitrary interval	10/2/16		3	1,9	
37	Half-range Sine and Cosine series	11/2/16		2,3	1	1,2,3,5,7
38	Half-range Sine and Cosine series	12/2/16		2,3	1	
39	Half-range series in an arbitrary interval	13/2/16		2,3	1	
40	**TUTORIAL-6**	15/2/16		3	1,9	
41	Problems	15/2/16		2,3	1	
42	Revision	16/2/16		2,3	1	
43	Revision	17/2/16		2,3	1	
44	**Assignment-II**	18/2/16		3		
45	**Quiz II**	19/2/16		3		
46	**TUTORIAL-7**	20/2/16				
47	I MID EXAM	22/2/16				
48	I MID EXAM	23/2/16				
49	I MID EXAM	24/2/16				
50	I MID EXAM	25/2/16				
51	I MID EXAM	26/2/16				
52	I MID EXAM	27/2/16				
53	I MID EXAM	27/2/16				
UNIT IV: Z -TRANSFORMS						
54	Introduction to Z-Transform	29/2/19		2,3	1	
55	Properties	29/2/19		2,3	1	
56	Damping Rule	1/3/16		2,3	1	1,2,3,5,7
57	Shifting Rule	2/3/16		2,3	1	
58	Initial and Final Value Theorems	3/3/16		2,3	1	
59	**TUTORIAL-8**	4/3/16		3	1,9	
60	Problems	5/3/16		2,3	1	
61	Inverse Z-Transform	8/3/16		2,3	1	
62	Inverse Z-Transform	9/3/16		2,3	1	
63	Convolution theorem	10/3/16		2,3	1	

64	Convolution theorem	11/3/16		2,3	1	
65	Sol. of difference equation by Z-Transform	14/3/16		2,3	1	
66	**TUTORIAL-9**	14/3/16		3	1,9	
67	Sol. of difference equation by Z-Transform	15/3/16		2,3	1	1,2,3,5,7
68	Problems	16/3/16		2,3	1	
69	**Assignment-IV**	17/3/16		3		
70	**Quiz IV**	18/3/16		3		
71	**TUTORIAL-10**	19/3/16			1,9	
UNIT III: FOURIER TRANSFORMS						
72	Fourier Integral theorem	21/3/16		2,3	1	
73	Fourier Integral theorem	21/3/16		2,3	1	
74	Fourier sine and cosine integrals	22/3/16		2,3	1	
75	Fourier Transform	24/3/16		3	1	
76	Fourier Transform	26/3/16		2,3	1,9	
77	**TUTORIAL-11**	28/3/16		2,3	1	
78	Sine and cosine transforms	28/3/16		2,3	1	1,2,3,5,7
79	Sine and cosine transforms	29/3/16		2,3	1	
80	Properties	30/3/16		2,3	1	
81	Inverse Transform	31/3/16		2,3	1	
82	Inverse Transform	1/4/16		2,3	1	
83	Finite Fourier Transforms	2/4/16		3	1,9	
84	**TUTORIAL-12**	4/4/16		2,3	1	
85	Finite Fourier Transforms	4/4/16		2,3	1	
86	Problems	5/4/16		3	1	
87	**Assignment-III**	6/4/16		3		1,2,3,5,7
88	**Quiz III**	7/4/16		3		
UNIT-V: MULTIPLE INTEGRALS						
89	Multiple Integrals	11/4/16		2,3	1	
90	**TUTORIAL 13**	11/4/16		2,3	1	
91	Double integrals- Cartesian	12/4/16		3	1,9	
92	Double integrals-Polar	13/4/16		2,3	1	
93	Triple integrals-Cartesian	16/4/16		2,3	1	
94	Triple integrals-Polar	18/4/16		2,3	1	

95	**TUTORIAL 14**	18/4/16		2,3	1	1,2,3,5,7
96	Triple integrals-Spherical	19/4/16		3	1,9	
97	Change of order of Integration	20/4/16		2,3	1	
98	Change of order of Integration	21/4/16		2,3	1	
99	**TUTORIAL 15**	22/4/16		3	1,9	
100	Change of order of Integration	23/4/16		2,3	1	
101	Applications to Areas	25/4/16		2,3	1	
102	Applications to Areas	25/4/16		2,3	1	
103	Applications to Volumes	26/4/16		2,3	1	
104	Applications to Volumes	27/4/16		2,3	1	
105	**TUTORIAL 16**	28/4/16		3		
106	**Assignment UNIT V**	29/4/16		3		
107	**Quiz UNIT V**	30/4/16				
108	II MID EXAM	2/5/16				
109	II MID EXAM	2/5/16				
110	II MID EXAM	3/5/16				
111	II MID EXAM	4/5/16				
112	II MID EXAM	5/5/16				
113	II MID EXAM	6/5/16				
114	II MID EXAM	7/5/16				

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

Signature of faculty Signature of Course Coordinator Signature of HOD

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
UNIT-I: LAPLACE TRANSFORMS						
1	Course Objective, introduction, their applications	28/12/15		2	1	1,2,3,5,7
2	Laplace Transforms of Standard Functions	28/12/15		2,3	1	
3	Laplace Transforms of Standard Functions	29/12/15		2,3	1	
4	Problems	30/12/15		2,3	1	
5	First Shifting theorem, Change of Scale Property	31/12/15		2,3	1	
6	Multiplication and division by t	2/1/16		2,3	1	
7	Derivatives and integrals	4/1/16		2,3	1	
8	Problems	4/1/16		2,3	1	
9	Dirac's Delta functions	5/1/16		2,3		
10	Unit Step function, Periodic function	6/1/16		2,3	1	
11	Inverse Laplace Transforms	7/1/16		2,3	1	
12	Multiplication and division by s	8/1/16		2,3	1,9	
13	Derivatives and integrals	18/1/16		3	1	
14	**TUTORIAL-1**	18/1/16		2,3	1	
15	Inverse L T using Partial Fractions	19/1/16		2,3	1	
16	Inverse L T using Partial Fractions	20/1/16		2,3	1,9	
17	Convolution theorem	21/1/16		3	1	
18	Solving of O.D.E using L.T.	22/1/16		2,3	1	
19	Solving of O.D.E using L.T.	23/1/16		2,3	1	
20	**TUTORIAL-2**	25/1/16		2,3	1	
21	Problems	25/1/16		2,3	1	
22	**Assignment-I**	27/1/16		3		
23	**Quiz I**	28/1/16		3		
UNIT II: FOURIER SERIES						
24	Introduction to Fourier series	29/1/16		2,3	1	
25	Determination of Fourier coefficients	30/1//16		3	1,9	
26	Fourier Series Problems	1/2/16		2,3	1	
27	**TUTORIAL-3**	1/2/16		2,3	1	
28	Fourier Series Problems	2/2/16		2,3	1	
29	Fourier Series Problems	3/2/16		3	1,9	
30	Even and Odd Functions	4/2/16		2,3	1	

31	Fourier Cosine and Sine Series	5/2/16		2,3	1	
32	Fourier Cosine and Sine Series	6/2/16		2,3	1	
33	**TUTORIAL-4**	8/2/16		3	1,9	
34	**TUTORIAL-5**	8/2/16		2,3	1	
35	Fourier Series in an arbitrary interval	9/2/16		2,3	1	
36	Fourier Series in an arbitrary interval	10/2/16		3	1,9	
37	Half-range Sine and Cosine series	11/2/16		2,3	1	1,2,3,5,7
38	Half-range Sine and Cosine series	12/2/16		2,3	1	
39	Half-range series in an arbitrary interval	13/2/16		2,3	1	
40	**TUTORIAL-6**	15/2/16		3	1,9	
41	Problems	15/2/16		2,3	1	
42	Revision	16/2/16		2,3	1	
43	Revision	17/2/16		2,3	1	
44	**Assignment-II**	18/2/16		3		
45	**Quiz II**	19/2/16		3		
46	**TUTORIAL-7**	20/2/16				
47	I MID EXAM	22/2/16				
48	I MID EXAM	23/2/16				
49	I MID EXAM	24/2/16				
50	I MID EXAM	25/2/16				
51	I MID EXAM	26/2/16				
52	I MID EXAM	27/2/16				
53	I MID EXAM	27/2/16				
UNIT IV: Z -TRANSFORMS						
54	Introduction to Z-Transform	29/2/19		2,3	1	
55	Properties	29/2/19		2,3	1	
56	Damping Rule	1/3/16		2,3	1	1,2,3,5,7
57	Shifting Rule	2/3/16		2,3	1	
58	Initial and Final Value Theorems	3/3/16		2,3	1	
59	**TUTORIAL-8**	4/3/16		3	1,9	
60	Problems	5/3/16		2,3	1	
61	Inverse Z-Transform	8/3/16		2,3	1	
62	Inverse Z-Transform	9/3/16		2,3	1	
63	Convolution theorem	10/3/16		2,3	1	

64	Convolution theorem	11/3/16		2,3	1	
65	Sol. of difference equation by Z-Transform	14/3/16		2,3	1	
66	**TUTORIAL-9**	14/3/16		3	1,9	
67	Sol. of difference equation by Z-Transform	15/3/16		2,3	1	1,2,3,5,7
68	Problems	16/3/16		2,3	1	
69	**Assignment-IV**	17/3/16		3		
70	**Quiz IV**	18/3/16		3		
71	**TUTORIAL-10**	19/3/16			1,9	
UNIT III: FOURIER TRANSFORMS						
72	Fourier Integral theorem	21/3/16		2,3	1	
73	Fourier Integral theorem	21/3/16		2,3	1	
74	Fourier sine and cosine integrals	22/3/16		2,3	1	
75	Fourier Transform	24/3/16		3	1	
76	Fourier Transform	26/3/16		2,3	1,9	
77	**TUTORIAL-11**	28/3/16		2,3	1	
78	Sine and cosine transforms	28/3/16		2,3	1	1,2,3,5,7
79	Sine and cosine transforms	29/3/16		2,3	1	
80	Properties	30/3/16		2,3	1	
81	Inverse Transform	31/3/16		2,3	1	
82	Inverse Transform	1/4/16		2,3	1	
83	Finite Fourier Transforms	2/4/16		3	1,9	
84	**TUTORIAL-12**	4/4/16		2,3	1	
85	Finite Fourier Transforms	4/4/16		2,3	1	
86	Problems	5/4/16		3	1	
87	**Assignment-III**	6/4/16		3		1,2,3,5,7
88	**Quiz III**	7/4/16		3		
UNIT-V: MULTIPLE INTEGRALS						
89	Multiple Integrals	11/4/16		2,3	1	
90	**TUTORIAL 13**	11/4/16		2,3	1	
91	Double integrals- Cartesian	12/4/16		3	1,9	
92	Double integrals-Polar	13/4/16		2,3	1	
93	Triple integrals-Cartesian	16/4/16		2,3	1	
94	Triple integrals-Polar	18/4/16		2,3	1	

95	**TUTORIAL 14**	18/4/16		2,3	1	1,2,3,5,7
96	Triple integrals-Spherical	19/4/16		3	1,9	
97	Change of order of Integration	20/4/16		2,3	1	
98	Change of order of Integration	21/4/16		2,3	1	
99	**TUTORIAL 15**	22/4/16		3	1,9	
100	Change of order of Integration	23/4/16		2,3	1	
101	Applications to Areas	25/4/16		2,3	1	
102	Applications to Areas	25/4/16		2,3	1	
103	Applications to Volumes	26/4/16		2,3	1	
104	Applications to Volumes	27/4/16		2,3	1	
105	**TUTORIAL 16**	28/4/16		3		
106	**Assignment UNIT V**	29/4/16		3		
107	**Quiz UNIT V**	30/4/16				
108	II MID EXAM	2/5/16				
109	II MID EXAM	2/5/16				
110	II MID EXAM	3/5/16				
111	II MID EXAM	4/5/16				
112	II MID EXAM	5/5/16				
113	II MID EXAM	6/5/16				
114	II MID EXAM	7/5/16				

(Dr. A. Rami Reddy) (Dr.A.RamiReddy)

Signature of faculty Signature of Course Coordinator Signature of HOD

	LESSON PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE** **Semester: III**	**Date: 18.07.11** **To 17.11.11**

CS351: DIGITAL LOGIC DESIGN LAB

Lecture : 3 Periods/week **Internal Marks : 25**

Tutorial **External Marks : 75**

Credits : 2 **External Examination : 3 Hrs**

CYCLE 1

1.a) Basic Gates Function Verification using truth tables.

i) AND Gate using 7408 IC

ii) OR Gate using 7432 IC

iii) NOT Gate using 7404 IC

b) Universal Gates Functional Verification

i) NAND Gate using 7400 IC

ii) NOR Gate using 7402 IC

c) Special Gates Functional verification

i) XOR Gate using 7486 IC

ii) 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. a) Design Half-adder and Full-adder circuits and verify its functionality.

b) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.

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.

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

9. a) Design a UP-Counter using JK/T Flip-Flop.

b) Design a MOD-3 Counter.

10. Design a DOWN-Counter using JK/T Flip-Flop.

11. Design a Bi-directional Counter using JK/T Flip-Flop.

12. Design a Synchronous Counter for 100-110-111-011-001

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-A)** **Semester: II**	**Date: 28.12.2015** **To 30.04.2016**

COURSE OBJECTIVE:

The course will provide the student with a firm foundation of the principles of digital design by building a working knowledge of digital electronics and its applications. By the end of the semester, the student shall have acquired the basic skill in using the digital design kit;

- Use of prototyping board.
- Use of basic gates, decoders and multiplexers.
- Use of PLDs
- Use of flip-flops, counters and shift registers.
- Use of logic probe.

COURSE OUTCOMES:

A student who successfully fulfills the course requirements will have demonstrated:

1. An ability to operate laboratory equipment.
2. An ability to construct, analyzes, and troubleshoots simple combinational and sequential circuits.
3. An ability to design and troubleshoot a simple state machine.
4. An ability to measure and record the experimental data, analyze the results, and prepare a formal laboratory report.

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-A)** **Semester: II**	**Date: Date: 28.12.2015** **To 30.04.2016**

Lesson Plan for CSE (SEC-A)

CYCLE-I

Program: 1

Basic gates (AND, OR, NOT), Universal gates (NAND, NOR) and Special gates (XOR, XNOR) function verification using truth tables.

Session No	Topics to be covered	Date	Teaching Method	Remarks
1	Introduction to logisim software	08.01.2016	BB	
2	Basic gates verification	22.01.2016	BB	

Program: 2

Realize the gates(AND,OR, NOT, XOR) using the universal gates(NAND, NOR) and also prove the theorems of Boolean algebra.

Session No	Topics to be covered	Date	Teaching Method	Remarks
3	Realization of AND, OR, NOT, XOR gates	29.01.2016	BB	

Program: 3

Designing the half adder, full adder, half subtractor, full subtractor and the ripple carry adder of digital circuits.

Session	Topics to be covered		Teaching Method	Remarks

No		Date		
6	Half adder, Full adder, Half subtractor	05.02.2016	BB	
7	Full subtractor, Ripple carry adder	12.02.2016	BB	

Program:4

Designing the four bit comparator and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
8	Four bit comparator	19.02.2016	BB	

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-A)** **Semester: II**	**Date: Date: 28.12.2015** **To 30.04.2016**

Program:5

Designing the BCD to Excess-3 code converter and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
9	BCD to Excess-3 code converter	26.02.2016	BB	

Program:6

Designing the BCD to Gray code converter and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
9	BCD to Gray code converter	04.03.2016	BB	

Program:7

Verify the functionality of decoders and multiplexers.

Session No	Topics to be covered	Date	Teaching Method	Remarks
10	Decoders, Multiplexer	11.03.2016	BB	

CYCLE-II

Program:8

Verify the functionality of J-K Flip-flop, D-Flip-flop, T- Flip-flop, S-R Flip-flop.

Session No	Topics to be covered	Date	Teaching Method	Remarks
11	Flip-flops	18.03.2016	BB	

Program:9

Design the UP and Mod-3 counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
12	UP counter	25.03.2016	BB	
13	Mod-3 counter	01.04.2016	BB	

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-A)** **Semester: II**	**Date: Date: 28.12.2015** **To 30.04.2016**

Program:10

Design the Down counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
14	Down counter	08.04.2016	BB	

Program:11

Design the Bidirectional counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
14	Bidirectional counter	15.04.2016	BB	

Program:12

Design a Synchronous Counter for 100-110-111-011-001

Session No	Topics to be covered	Date	Teaching Method	Remarks

15	Down counter	22.02.2016	BB	
16	exam	29.02.2016	BB	

	Prepared by	**Approved by**
Signature		
Name	**D.SRINIVASA RAO**	**HOD/CSE**
Designation	**Asst. Professor**	**Professor**
Date	**25.12.2015**	**27.12.2015**

	LakireddyBalireddy College of Engineering College L.B.Reddy Nagar, Mylavaram , Krishna District, A.P **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**				
	LESSON PLAN				
	Subject :	**L131 Digital Electronics Lab**			
	Academic Year :	**2015-16**	Semester :	**II**	**Date: 28.12.2015**
	Year :	**IV (2015-19)**	Section :	**B**	**To 30.04.2016**

L131 Digital Electronics Lab

Lecture : 3 Periods/week **Internal Marks : 25**

Tutorial **External Marks : 75**

Credits : 2 **External Examination : 3 Hrs**

CYCLE 1

1.a) Basic Gates Function Verification using truth tables.

i) AND Gate using 7408 IC

ii) OR Gate using 7432 IC

iii) NOT Gate using 7404 IC

b) Universal Gates Functional Verification

i) NAND Gate using 7400 IC

ii) NOR Gate using 7402 IC

c) Special Gates Functional verification

i) XOR Gate using 7486 IC

ii) 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. a) Design Half-adder and Full-adder circuits and verify its functionality.

b) Verify the functionality of four bit ripple carry adder for signed and unsigned integers with the verification of overflow condition.

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.

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

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.

CYCLE 3

11. IC555 Timer- Astable Operations-Monostable Operations.

12. PCB Drawing

13. Project**.**

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-B)** **Semester: II**	**Date: 28.12.15** **To 30.04.16**

COURSE OBJECTIVE:

The course will provide the student with a firm foundation of the principles of digital design by building a working knowledge of digital electronics and its applications. By the end of the semester, the student shall have acquired the basic skill in using the digital design kit;

- Use of prototyping board.
- Use of basic gates, decoders and multiplexers.
- Use of PLDs
- Use of flip-flops, counters and shift registers.
- Use of logic probe.

COURSE OUTCOMES:

A student who successfully fulfills the course requirements will have demonstrated:

1. An ability to operate laboratory equipment.
2. An ability to construct, analyzes, and troubleshoots simple combinational and sequential circuits.
3. An ability to design and troubleshoot a simple state machine.
4. An ability to measure and record the experimental data, analyze the results, and prepare a formal laboratory report.

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-B)** **Semester: II**	**Date: 28.12.15** **To 30.04.16**

Lesson Plan for CSE (SEC-B)

CYCLE-I

Program: 1

Basic gates (AND, OR, NOT), Universal gates (NAND, NOR) and Special gates (XOR, XNOR) function verification using truth tables.

Session No	Topics to be covered	Date	Teaching Method	Remarks
1	Introduction to logisim software	28.12.2016	BB	
2	Basic gates verification	04.01.2016	BB	

Program: 2

Realize the gates(AND,OR, NOT, XOR) using the universal gates(NAND, NOR) and also prove the theorems of Boolean algebra.

Session No	Topics to be covered	Date	Teaching Method	Remarks
3	Realization of AND, OR, NOT, XOR gates	18.01.2016	BB	

Program: 3

Designing the half adder, full adder, half subtractor, full subtractor and the ripple carry adder of digital circuits.

Session No	Topics to be covered	Date	Teaching Method	Remarks
6	Half adder, Full adder, Half subtractor	25.01.2016	BB	
7	Full subtractor, Ripple carry adder	01.02.2016	BB	

Program:4

Designing the four bit comparator and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
8	Four bit comparator	08.02.2016	BB	

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-B)** **Semester: II**	**Date: 28.12.15** **To 30.04.16**

Program:5

Designing the BCD to Excess-3 code converter and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
9	BCD to Excess-3 code converter	15.02.2016	BB	

Program:6

Designing the BCD to Gray code converter and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
9	BCD to Gray code converter	22.02.2016	BB	

Program:7

Verify the functionality of decoders and multiplexers.

Session No	Topics to be covered	Date	Teaching Method	Remarks
10	Decoders, Multiplexer	29.03.2016	BB	

CYCLE-II

Program:8

Verify the functionality of J-K Flip-flop, D-Flip-flop, T- Flip-flop, S-R Flip-flop.

Session No	Topics to be covered	Date	Teaching Method	Remarks
11	Flip-flops	14.03.2016	BB	

Program:9

Design the UP and Mod-3 and Down counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
12	UP counter, Mod-3 counter	21.03.2016	BB	
13	Down counter	28.03.2016	BB	

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-B)** **Semester: II**	**Date: 28.12.15** **To 30.04.16**

Program:10

Design the Bidirectional counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
14	Bidirectional counter	04.04.2016	BB	

Program:11

Design the Astable-Monostable Operations of IC 555 Timer

Session No	Topics to be covered	Date	Teaching Method	Remarks
14	IC 555 Timer – Astable-Monostable Operations	11.04.2016	BB	

Program:12

Design a Project of any Application.

Session No	Topics to be covered	Date	Teaching Method	Remarks

15	PCB Drawing Techniques	18.04.2016	BB	
16	Project	25.11.2011	BB	

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-B)** **Semester: II**	**Date: 28.12.15** **To 30.04.16**

Lesson plan For CSE(SEC-B)

CYCLE-I

Program: 1

Basic gates(AND, OR, NOT), Universal gates(NAND, NOR) and Special gates(XOR, XNOR) function verification using truth tables.

Session No	Topics to be covered	Date	Teaching Method	Remarks
1	Introduction to logisim software	19.07.2011	BB	
2	Basic gates verification	26.07.2011	BB	

Program: 2

Realize the gates(AND,OR, NOT, XOR) using the universal gates(NAND, NOR) and also prove the theorems of Boolean algebra.

Session No	Topics to be covered	Date	Teaching Method	Remarks
3	Realization of AND, OR, NOT, XOR gates	02.08.2011	BB	

Program: 3

Designing the half adder, full adder, half subtractor, full subtractor and the ripple carry adder of digital circuits.

Session No	Topics to be covered	Date	Teaching Method	Remarks
6	Half adder, Full adder, Half subtractor	09.08.2011	BB	
7	Full subtractor, Ripple carry adder	16.08.2011	BB	

Program:4

Designing the four bit comparator and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
8	Four bit comparator	23.08.2011	BB	

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-B)** **Semester: II**	**Date: 28.12.15** **To 30.04.16**

Program:5

Designing the BCD to Excess-3 code converter and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
9	BCD to Excess-3 code converter	30.08.2011	BB	

Program:6

Designing the BCD to Gray code converter and verify the functionality.

Session No	Topics to be covered	Date	Teaching Method	Remarks
9	BCD to Gray code converter	13.09.2011	BB	

Program:7

Verify the functionality of decoders and multiplexers.

Session No	Topics to be covered	Date	Teaching Method	Remarks
10	Decoders, Multiplexer	20.09.2011	BB	

CYCLE-II

Program:8

Verify the functionality of J-K Flip-flop, D-Flip-flop, T- Flip-flop, S-R Flip-flop.

Session No	Topics to be covered	Date	Teaching Method	Remarks
11	Flip-flops	27.09.2011	BB	

Program:9

Design the UP and Mod-3 counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
12	UP counter	04.10.2011	BB	
13	Mod-3 counter	11.10.2011	BB	

	LAB PLAN	
	Sub Name : **DIGITAL LOGIC DESIGN LAB** **Branch: CSE (sec-B)** **Semester: II**	**Date: 28.12.15** **To 30.04.16**

Program:10

Design the Down counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
14	Down counter	18.10.2011	BB	

Program:11

Design the Bidirectional counter using JK/T Flip-flops

Session No	Topics to be covered	Date	Teaching Method	Remarks
14	Bidirectional counter	25.10.2011	BB	

Program:12

Design a Synchronous Counter for 100-110-111-011-001

Session No	Topics to be covered	Date	Teaching Method	Remarks
15	Down counter	01.11.2011	BB	
16	Exam	15.11.2011	BB	

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	J.NAGESWARA RAO			Dr. N. Ravi Shankar
Sign with Date				

UNIT - I

Binary Systems: Digital Computers and Digital Systems, Binary Numbers, Number base Conversion, Octal and Hexadecimal Numbers, Complements, Binary Codes, Binary Storage and Registers, Binary Logic, Integrated Circuits. **Boolean Algebra And Logic Gates:** Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and Properties of Boolean Algebra, Boolean functions, Canonical and Standard Forms, Other operations, Digital Logic Gates.

UNIT - II

Simplification Of Boolean Expressions: Formulation of simplification problem, Prime Implicants and irredundant disjunctive and conjunctive expression, Karnaugh Maps, Minimal Expressions for complete and incomplete Boolean functions. Five and Six Variable K-Maps, Quine-McCluskey Method, Prime Implicants and Implicate tables and irredundant expressions, and Table reductions.

UNIT - III

Combinational Logic: Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, multilevel NAND and NOR circuits. Combinational Logic with MSI And LSI: Binary Parallel Adder, Decimal Adder, Magnitude Comparator, Decoders, Multiplexers.

UNIT - IV

Sequential Logic: Flip Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip-Flop Excitation tables, Design Procedure, Design of Counters, Design with state equations Registers, Counters and Memory : Registers. Shift registers, Ripple Counters, Synchronous Counters, Timing sequences, the memory unit.

UNIT - V

Programmable Logic: Read – Only Memory (ROM), PROM, Programmable Logic Device (PLD), Programmable Logic Array (PLA), Programmable Array Logic (PAL).

Course Description & Objectives:

This course concerns the design of digital systems using integrated circuits. The main emphasis is on the theoretical concepts and systematic synthesis techniques that can be applied to the design of practical digital systems.

Course Objectives:

The objective of the course is to explain how digital circuit of large complexity can be built in a methodological way, starting from Boolean logic and applying a set of rigorous techniques. Numerous examples and case studies will be used to illustrate how the concepts presented in the lectures are applied in practice, and how the need to accommodate different practically-motivated trade-offs can lead to alternative implementations. The students will apply their knowledge in the labs by building increasingly more complex digital logic circuits.

Course Outlines:

- First unit deals with the digital systems and various binary number systems. It deals with various methods for the conversion of numbers in one system to another. It covers various types of codes which includes codes for error correction and detection. It introduces the theory of Boolean algebra.
- Second unit introduces K-map method which is a straight forward graphical method for simplification and quine-Mcclusky method is explained.
- Third unit explains the principles of various combinational logic circuits. These Include adders, subtractors, multiplexer, demultiplexers, decoders, encoders and comparators.
- Fourth unit explains the basic theory behind various flip-flops. It also explain the design procedure for various asynchronous counters, synchronous counters and sequence generators. It also explain the registers and memory unit.
- Fifth unit deals with the various types of memories like ROM, PROM, PLA and PAL's.

Student Learning Outcomes:

Upon the successful completion of this course students will be able to:

1. Solve basic binary math operations using the logic gates.
2. Demonstrate programming proficiency using the various logical elements to design practically motivated logical units.
3. Design different units that are elements of typical computer's CPU.
4. Apply knowledge of the logic design course to solve problems of designing of control units of different input/output devices.
5. Wiring different logical elements, to analyze and demonstrate timing diagrams of the units modeled.
6. Design electrical circuitry using logical elements realized on the base of different technologies.

Session No	Topics to be covered	Date	Teaching Method	Remarks
1	Introduction to Digital Systems	28.12.2015	BB	
2	Digital Systems, Binary Numbers	29.12.2015	BB	
3	Number base Conversion	30.12.2015	BB	
4	Number base Conversion	31.12.2015	BB	
5	Octal and Hexadecimal Numbers	02.01.2016	BB	
6	Complements	04.01.2016	BB	
7	Binary Codes	05.01.2016	BB	
8	Binary Codes	06.01.2016	BB	
9	Binary Storage and Registers, Binary Logic	07.01.2015	BB	
10	Integrated Circuits	09.01.2016	BB	
11	Tutorial	18.01.2016	BB	
12	Introduction to Boolean algebra, Basic Definitions, Axiomatic definition of Boolean Algebra	19.01.2016	BB	
13	Basic theorems and Properties of Boolean Algebra	20.01.2016	BB	
14	Boolean functions	21.01.2016	BB	
15	Canonical and Standard Forms	23.01.2016	BB	
16	Canonical and Standard Forms	25.01.2016	BB	
17	Other operations, Digital Logic Gates	27.01.2016	BB	
18	Slip test on UNIT-1	28.01.2016	BB	
19	Simplification Of Boolean Expressions	30.01.2016	BB	
20	Introduction to Karnaugh Maps	01.02.2016	BB	
21	One Variable, Two variable, Three Variable maps	02.02.2016	BB	

22	Four Variable Map	03.02.2016	BB	
23	Tutorial	04.02.2016	BB	
24	Five Variable K-Map and Examples	06.02.2016	BB	
25	Six Variable K-Maps Examples	08.02.2016	BB	
26	Minimal Expressions for incomplete Boolean functions	09.02.2016	BB	
27	Quine-McCluskey Method	10.02.2016	BB	
28	Prime implicants and Essential Prime Implicants	11.02.2016	BB	
29	Pertickson Method for irredundant expression	13.02.2016	BB	
30	Slip Test on UNIT-2	15.02.2016	BB	
31	Introduction to Combinational Logic, Design Procedure, Analysis Procedure	16.02.2016	BB	
32	Adders	17.02.2016	BB	
33	Subtractors	18.02.2016	BB	
34	Code Conversion	20.02.2016	BB	
35	Multilevel NAND circuits	29.02.2016	BB	
36	Multilevel NOR circuits	01.03.2016	BB	
37	Tutorial	01.03.2016	BB	
38	Intoduction to Combinational Logic with MSI And LSI	01.03.2016	BB	
39	Binary Parallel Adder, Decimal Adder	02.03.2016	BB	
40	Decimal Adder	03.03.2016	BB	
41	Magnitude Comparator	07.03.2016	BB	
42	Decoders	08.03.2016	BB	
43	Multiplexers	09.03.2016	BB	
44	Tutorial	10.03.2016	BB	
45	Slip test on UNIT-3	12.03.2016	BB	
46	Introduction to Sequential Logic, Flip Flops	14.03.2016	BB	

47	Triggering of Flip-Flops,	15.03.2016	BB	
48	Analysis of Clocked Sequential Circuits	16.03.2016	BB	
49	State Reduction and Assignment	17.03.2016	BB	
50	Flip-Flop Excitation tables	19.03.2016	BB	
51	Design Procedure	21.03.2016	BB	
52	Design of Counters	22.03.2016	BB	
53	Introduction to Registers, Shift registers	23.03.2016	BB	
54	Ripple Counters	24.03.2016	BB	
56	Synchronous Counters	26.03.2016	BB	
57	Timing sequences	28.03.2016	BB	
58	the memory unit	29.03.2016	BB	
59	Tutorial	30.03.2016	BB	
61	Slip test on Unit-4	31.03.2016	BB	
62	Read – Only Memory (ROM)	02.04.2016	BB	
63	Programmable Read Only memory	04.04.2016	BB	
64	Programmable Logic Device (PLD)	05.04.2016	BB	
65	Programmable Logic Array	06.04.2016	BB	
66	Programmable Array Logic (PAL).	07.04.2016	BB	
67	Tutorial	09.04.2016	BB	
68	Slip Test on UNIT-5	11.04.2016	BB	
69	Revision	12.04.2016	BB	
70	Revision	13.04.2016	BB	
71	Revision	14.04.2016	BB	
72	Revision	16.04.2016	BB	
73	Content beyond syllabus/Tools	18.04.2016	BB	
74	Content beyond syllabus/Research papers	20.04.2016	BB	
75	Content beyond syllabus/New applications	21.04.2016	BB	

76	Content beyond syllabus/R & D	23.04.2016	BB	
77	Practice	25.04.2016	BB	
78	Practice	26.04.2016	BB	
79	Practice	27.04.2016	BB	
80	Practice	28.04.2016	BB	
81	Practice	30.04.2016	BB	

TEXT BOOKS :

M.Morris Mano, 'Digital Logic and Computer Design', PHI.

REFERENCES :

1. M.Morris Mano, 'Computer Engineering Hardware Design', PHI
2. Donald e Givone, Digital principles and Design, TMH (Unit II and V)

Course Delivery Plan:

Week	1	2	3	4	5	6	7	8	9	10		11	12	13	14		15	16
Units	1	1	1	1	2	2	2	3	3	3	4	4	4	5	5	R	R	R

	Prepared by	Approved by
Signature		
Name	**D.SRINIVASA RAO**	**HOD/CSE**
Designation	**Sr.Asst. Professor**	**Professor**
Date	**25.12.2015**	**26.12.2015**

S191 – DIGITAL LOGIC DESIGN

Lecture : 5 Periods/week	**Internal Marks : 25**
Tutorial : 1	**External Marks : 75**
Credits : 4	**External Examination : 3 Hrs**

UNIT - I

Binary Systems: Digital Computers and Digital Systems, Binary Numbers, Number base Conversion, Octal and Hexadecimal Numbers, Complements, Binary Codes, Binary Storage and Registers, Binary Logic, Integrated Circuits. **Boolean Algebra And Logic Gates:** Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and Properties of Boolean Algebra, Boolean functions, Canonical and Standard Forms, Other operations, Digital Logic Gates.

UNIT - II

Simplification Of Boolean Expressions: Formulation of simplification problem, Prime Implicants and irredundant disjunctive and conjunctive expression, Karnaugh Maps, Minimal Expressions for complete and incomplete Boolean functions. Five and Six Variable K-Maps, Quine-McCluskey Method, Prime Implicants and Implicate tables and irredundant expressions, and Table reductions.

UNIT - III

Combinational Logic: Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, multilevel NAND and NOR circuits. Combinational Logic with MSI And LSI: Binary Parallel Adder, Decimal Adder, Magnitude Comparator, Decoders, Multiplexers.

UNIT - IV

Sequential Logic: Flip Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction and Assignment, Flip-Flop Excitation tables, Design Procedure, Design of

Counters, Design with state equations Registers, Counters and Memory : Registers. Shift registers, Ripple Counters, Synchronous Counters, Timing sequences, the memory unit.

UNIT - V

Programmable Logic: Read – Only Memory (ROM), PROM, Programmable Logic Device (PLD), Programmable Logic Array (PLA), Programmable Array Logic (PAL), 555 Timer, Astable and Monostable timers.

Prerequisites:

1. Basic computer knowledge.
2. Basic Mathematics fundamentals.
3. Number systems.

Course Educational Objectives:

This course enables the students to know about

1. Apply the knowledge of mathematics, Computer science and engineering.
2. Realize complex logic functions utilizing programmable logic.
3. Design digital circuitry, analyze and interpret data

DIGITAL LOGIC DESIGN

Course Outcomes(COs):

By the completion of the course, the students are able to:

CO 1.Understand different Number systems, Codes,Logic Gates, Boolean laws &theorems.

CO 2. Simplify the Boolean functions to the minimum number of literals using K-Maps.

CO 3. Design & implement different types of combinational logic circuits using Logic gates.

CO 4. Design & implement different types of sequential logic circuits using Flip Flops.

CO 5. Design & implement different types of Counters, Registers, and Programmable Logic Devices.

S.No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
3	Solving problems	Group discussions	Tutorials
4	Designing of experiments	Industrial visit	Surprise Tests
5	Problems on environmental, economics, health & safety	Field work	Mid Exams
6	Problems on professional & ethics	Case studies	Model Exam
7	Seminar	Mini Projects	QAs
8	Problems using software	Numerical treatment	
9	Self study	Design / Exercises	

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
1	Introduction to Digital Systems	28.12.2015		2	1	
2	Digital Systems,	29.12.2015		2	1	
3	Binary Numbers	31.12.2015		2	1	
4	Number base Conversion	31.12.2015		2	1	
5	Number base Conversion	02.01.2016		2	1	
6	Octal and Hexadecimal Numbers	02.01.2016		2	1,9	
7	Complements	04.01.2016		2	1,9	
8	Complements	05.01.2016		2	1,9	
9	Binary Codes	07.01.2016		2	1	
10	Binary Codes	07.01.2016		2	1	
11	Binary Storage and Registers,	18.01.2016		2	1	
12	Binary Logic	19.01.2016		2	1,9	
13	Integrated Circuits	21.01.2016		2		1,3, 5,7
14	Tutorial	21.01.2016		2		
15	Introduction to Boolean algebra	23.01.2016		2		
16	Basic Definitions, Axiomatic definition of Boolean Algebra	23.01.2016		2		
17	Basic theorems and Properties of Boolean Algebra	25.01.2016		2		
18	Boolean functions	28.01.2016		2		
19	Canonical and Standard Forms	28.01.2016		2		
20	Canonical and Standard Forms	30.01.2016		2		
21	Other operations, Digital Logic Gates	30.01.2016		2		
22	Realization of basic gates	01.02.2016		2		
23	Slip test on UNIT-1	02.02.2016		2		
24	Simplification Of Boolean Expressions	04.02.2016				
25	Introduction to Karnaugh Maps	04.02.2016				

26	One Variable, Two variable, Three Variable maps	06.02.2016		2	1	
27	Four Variable Map	06.02.2016		2	1,9	
28	Four Variable Map	08.02.2016		2	1,9	
29	Problems	09.02.2016		2	1,9	
30	Five Variable K-Map and Examples	11.02.2016				
31	Six Variable K-Maps Examples	11.02.2016				
32	Minimal Expressions for incomplete Boolean functions	12.02.2016		2	1	
33	Quine-McCluskey Method	15.02.2016		2	1	
34	Quine-McCluskey Method	16.02.2016		2	1	1,3, 5,7
35	Prime implicants and Essential Prime Implicants	18.02.2016		2	1	
36	Pertickson Method for irredundant expression	18.02.2016		2	1,9	
37	Slip Test on UNIT-2	19.02.2016		2	1,9	
38	Introduction to Combinational Logic, Design Procedure, Analysis Procedure	20.02.2016		2	1	
39	Adders	29.02.2016		2	1,9	
40	Subtractors	01.03.2016		2	1,9	
41	Code Conversion	03.03.2016		2		
42	Multilevel NAND circuits	03.03.2016		2		
43	Multilevel NOR circuits	05.03.2016				
44	Tutorial	05.03.2016				
45	Intoduction to Combinational Logic with MSI And LSI	07.03.2016		2	1	
46	Binary Parallel Adder, Decimal Adder	10.03.2016		2	1	
47	Decimal Adder	10.03.2016		2	1,9	
48	Magnitude Comparator	14.03.2016		2	1	1,3, 5,7
49	Decoders	15.03.2016		2	1	
50	Multiplexers	17.03.2016		2	1,9	
51	Tutorial	17.03.2016		2		

52	Slip test on UNIT-3	19.03.2016		2		
53	Introduction to Sequential Logic, Flip Flops	19.03.2016		2	1	
54	Triggering of Flip-Flops,	21.03.2016		2		
55	Analysis of Clocked Sequential Circuits	22.03.2016		2	1,2	
56	State Reduction and Assignment	24.03.2016		2	1,2	
57	Flip-Flop Excitation tables	26.03.2016		2		
58	Design Procedure	26.03.2016		2	1,2	
59	Design of Counters	28.03.2016		2	1,2	
60	Introduction to Registers, Shift registers	29.03.2016		2	1,2	1,3, 5,7 Slip test on Unit-4
61	Ripple Counters	31.03.2016		2	1,2	
62	Synchronous Counters	31.03.2016		2	1,2	
63	Timing sequences	02.04.2016		2	1,2	
64	the memory unit	02.04.2016				
65	Tutorial	04.04.2016		2	1,2	
66	Slip test on Unit-4	05.04.2016		2	1,2	
67	Read – Only Memory (ROM)	07.04.2016		2	1,2	
68	Problems	07.04.2016		2	1,2	
69	Programmable Read Only memory	11.04.2016		2	1,2	
70	Problems	12.04.2016		2	1,2	
71	Programmable Logic Device (PLD)	14.04.2016		2	1,2	1,3, 5,7
72	Problems	14.04.2016		2	1,2	
73	Programmable Logic Array	16.04.2016		2	1,2	
74	Problems	16.04.2016		2	1,2	
75	Programmable Array Logic (PAL).	16.04.2016		2	1,2	
76	Problems	18.04.2016				
77	Tutorial	19.04.2016		2		

78	Slip Test on UNIT-5	21.04.2016		2		
79	Revision	21.04.2016				
80	Revision	23.04.2016		2		
81	Revision	23.04.2016		2		
82	Revision	25.04.2016		2		
83	Revision	26.04.2016		2		
84	Content beyond syllabus/Tools	28.04.2016		2		
85	Content beyond syllabus/Research papers	28.04.2016		2		
86	Content beyond syllabus/New applications	30.04.2016		2		1,3, 5,7
87	Content beyond syllabus/R & D	30.04.2016		2		
	II-MID EXAMS	02-05-2016 TO 07-05-2016				

Assessment Summary:

Assessment Task	Weightage (Marks)	**Course Outcomes**				
		CO1	CO2	CO3	CO4	CO5
Assignments	05					
Quizzes	--					
Tutorials	--					
Surprise Tests	--					
Mid Exams	20					
Model Exams	--					
End Exam	75					

Attendance	--					
Total	100					

Mapping Course Outcomes with Programme Outcomes:

Course Code	Unit	Course Outcomes					Programme Outcomes										
		1	2	3	4	5	a	b	c	d	e	f	g	h	i	j	k
S191	I						2	1	1		2				3	2	1
	II						2	1	1		2				3	2	1
	III						2	1	1		2				3	2	1
	IV						2	1	1		2				3	2	1
	V						2	1	1		2				3	2	1

	Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Name	J.NAGESWARA RAO			Dr. N. Ravi Shankar
Sign with Date				

S240 – ENGLISH - II

Lecture: 4 Periods/week Internal Marks : 25

Tutorial : External Marks : 75

Credits : 3 External Examination : 3 Hrs

UNIT - I

Environment (Learning English)

The World of Figures and Physics – Satyendranath Bose (Master Minds)

Grammar: Correction of sentences

Analytical Writing: Report Writing

UNIT - II

Inspiration (Learning English)

The Institution Builders– Santi Swarup Bhatnagar (Masterminds)

Grammar: If-clause; Question tags

Vocabulary: Idioms and Phrases

Analytical Writing: Resume'; Statement of Purpose

UNIT - III

Human Interest (Learning English)

The institution builders – Meghanadh Saha (Master Minds)

Grammar: Direct & Indirect Speeches

Vocabulary: Phrasal Verbs

Analytical Writing: Memo Drafting

UNIT – IV

Media (Learning English)

The New Age – Homi Jehangir Bhabha (Master Minds)

Grammar: Concord

Vocabulary: Analogy

Analytical Writing: Information Transfer/ Data Interpretation (Tables, Pie charts, Bar graphs, Tree diagrams, Pictograms, etc.)

UNIT – V

The New Age – Vikram Sarabhai (Master Minds)

Grammar: Gerunds & Infinitives; Correction of Sentences

Vocabulary: Words often confused

Analytical writing – Comprehension, Expansions (of a given topic/ proverbs)

TEXT BOOKS

1. "Learning English", Orient Longman Private Limited.JNTU edition,2008
2. EnakshiChatterjee, "Masterminds", Orient Longman Private Limited ,Reprint-2002

REFERENCES

1. KoneruAruna, "Professional Communication", Tata McGraw-Hill, New Delhi, 2007.
2. Rizvi, "Effective Technical Communication", Tata McGraw-Hills, New Delhi, 2009.
3. Andrea J. Rutherford, "Basic Communication Skills for Technology", Pearson Education., 1st edition, 2009
4. Kaplan and Baron's, "GRE and TOEFL', Latest editions.2008

Course Educational Objectives

In this course, the students will learn

- To write letters and reports effectively in formal and professional situations.
- To speak and write effectively in English in real life situations.
- To read speedily and meaningfully.
- Both active and passive vocabulary.
- The decision-making, while thinking logically and analyzing situations carefully.

Course Outcomes

After the completion of this course, prospective engineers will have the ability to

- Use English language effectively in written and spoken English
- Express the right ideas in right context
- Manage the situation and negotiate business with good English communication
- Think and analyze the situations and make good presentations of their work and decisions
- prepare oneself to face interviews and also to participate in group discussions

No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
3	Solving problems	Group discussions	Tutorials
4	Designing of experiments	Industrial visit	Surprise Tests
5	Problems on environmental, economics, health & safety	Field work	Mid Exams
6	Problems on professional & ethics	Case studies	Model Exam
7	Seminar	Mini Projects	END Exams
8	Problems using software	Numerical treatment	
9	Self study	Design / Exercises	

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
UNIT-I						
1	Introduction	28-12-2015	28-12-2015	2	1	1,2,3,5,7
2	Environment	29-12-2015	29-12-2015	2	1,3	
3	Environment	30-12-2016	30-12-2016	2	1,3	
4	Environment	02-01-2016	02-01-2016	2	1,3	
5	Correction of sentences	04-01-2016	04-01-2016	2	1,9	
6	Correction of sentences - Quiz	05-01-2016	05-01-2016	3	1,9	

7	Satyendranath Bose	06-01-2016	06-01-2016	2	1,9	
8	Satyendranath Bose	18-01-2016	18-01-2016	2	1,9	
9	Satyendranath Bose	19-01-2016	19-01-2016	3	1,9	
10	Report Writing	20-01-2016	20-01-2016	2	1,9	
11	Report Writing	23-01-2016	23-01-2016	2	1,9	
12	Report Writing	25-01-2016	25-01-2016	2	1,9	
13	Report Writing - Assignment	27-01-2016	27-01-2016	2	1	
UNIT-II						
14	Inspiration	30-01-2016	30-01-2016	2	1,3	1,2,3,5,7
15	Inspiration	01-02-2016	01-02-2016	2	1,3	
16	Inspiration - Tutorial	02-02-2016	02-02-2016	3	1,3	
17	If-Clause	03-02-2016	03-02-2016	2	1,9	
18	Question Tags	06-02-2016	06-02-2016	2	1,9	
19	If-Clause, Question Tags - Quiz	08-02-2016	08-02-2016	3	1,9	
20	Idioms and Phrases	09-02-2016	09-02-2016	2	1,9	
21	Idioms and Phrases	10-02-2016	10-02-2016	2	1,9	
22	Santi Swarup Bhatnagar	13-02-2016	13-02-2016	2	1,3	
23	Santi Swarup Bhatnagar	15-02-2016	15-02-2016	2	1,3	

24	Santi Swarup Bhatnagar - Tutorial	16-02-2016	16-02-2016	3	1,3	
25	Resume	17-02-2016	17-02-2016	2	1,9	
26	Statement of Purpose	20-02-2016	20-02-2016	2	1,9	
27	Resume; Statement of Purpose-Assignment	20-02-2016	20-02-2016	3	1,9	
	MID - I	23-02-2016 T0 27-02-2016	23-02-2016 T0 27-02-2016			5
UNIT-III						
28	Human Interest	29-02-2016	29-02-2016	2	1,3	1,2,3,5,7
29	Human Interest	01-03-2016	01-03-2016	2	1,3	
30	Human Interest	02-03-2016	02-03-2016	2	1,3	
31	Human Interest - Tutorial	05-03-2016	05-03-2016	3	1,3	
32	Direct and Indirect Speeches	08-03-2016	08-03-2016	2	1,9	
33	Direct and Indirect Speeches	09-03-2016	09-03-2016	2	1,9	
34	Phrasal Verbs	12-03-2016	12-03-2016	2	1,9	
35	Phrasal Verbs Direct and Indirect Speeches - Quiz	14-03-2016	14-03-2016	3	1,9	
36	Memo Drafting	15-03-2016	15-03-2016	2	1,9	
37	Memo Drafting	16-03-2016	16-03-2016	2	1,9	
38	Meghanadh Saha	19-03-2016	19-03-2016	2	1,3	

39	Meghanadh Saha	21-03-2016	21-03-2016	2	1,3	
40	Memo Drafting ; Meghanadh Saha - Assignment	22-03-2016	22-03-2016	3	1,9	
UNIT-IV						
41	Information Transfer	26-03-2016	26-03-2016	2	1,9	1,2,3,5,7
42	Media	28-03-2016	28-03-2016	2	1,3	
43	Media - Tutorial	30-03-2016	30-03-2016	2	1,3	
44	Concord	02-04-2016	02-04-2016	2	1,9	
45	Homi Jahagir Bhaba	04-04-2016	04-04-2016	2	1,3	
46	Homi Jahagir Bhaba	05-04-2016	05-04-2016	2	1,3	
47	Analogy	06-04-2016	06-04-2016	2	1,9	
UNIT-V						
48	Vikram Sarabhai	09-04-2016	09-04-2016	2	1,3	1,2,3,5,7
49	Vikram Sarabhai - Tutorial	11-04-2016	11-04-2016	3	1,3	
50	Gerunds and Infinitives	12-04-2016	12-04-2016	2	1,9	
51	Correction of sentences	13-04-2016	13-04-2016	2	1,9	
52	Words often confused	16-04-2016	16-04-2016	2	1,9	
53	Words often confused	18-04-2016	18-04-2016		1,9	
54	Words often confused; Correction of sentences; Gerunds and Infinitives - Quiz	19-04-2016	19-04-2016	3	1,9	

55	Expansions	20-04-2016	20-04-2016	2	1,9	
56	Expansions	23-04-2016	23-04-2016	2	1,9	
57	Comprehension	25-04-2016	25-04-2016	2	1,9	
58	Comprehension; Expansions - Assignment	26-04-2016	26-04-2016	3	1,9	
59	Revision	27-04-2016	27-04-2016			
60	Revision	30-04-2016	30-04-2016			
	MID-II	02-05-2016 To 07-05-2016	02-05-2016 To 07-05-2016			5

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	Mr B Sagar	Dr. B. Samrajya Lakshmi	Dr. B. Samrajya Lakshmi	Dr. A. Rami Reddy
Sign with Date				

S240 – ENGLISH - II

Lecture: 4 Periods/week	Internal Marks : 25
Tutorial :	External Marks : 75
Credits : 3	External Examination : 3 Hrs

UNIT - I

Environment (Learning English)

The World of Figures and Physics – Satyendranath Bose (Master Minds)

Grammar: Correction of sentences

Analytical Writing: Report Writing

UNIT - II

Inspiration (Learning English)

The Institution Builders– Santi Swarup Bhatnagar (Masterminds)

Grammar: If-clause; Question tags

Vocabulary: Idioms and Phrases

Analytical Writing: Resume'; Statement of Purpose

UNIT - III

Human Interest (Learning English)

The institution builders – MeghanadhSaha (Master Minds)

Grammar: Direct & Indirect Speeches

Vocabulary: Phrasal Verbs

Analytical Writing: Memo Drafting

UNIT – IV

Media (Learning English)

The New Age – HomiJehangirBhabha (Master Minds)

Grammar: Concord

Vocabulary: Analogy

Analytical Writing: Information Transfer/ Data Interpretation (Tables, Pie charts, Bar graphs, Tree diagrams, Pictograms, etc.)

UNIT – V

The New Age – Vikram Sarabhai (Master Minds)

Grammar: Gerunds & Infinitives; Correction of Sentences

Vocabulary: Words often confused

Analytical writing – Comprehension, Expansions (of a given topic/ proverbs)

TEXT BOOKS

1. "Learning English", Orient Longman Private Limited.JNTU edition,2008

2. EnakshiChatterjee, "Masterminds", Orient Longman Private Limited ,Reprint-2002

REFERENCES

1. KoneruAruna, "Professional Communication", Tata McGraw-Hill, New Delhi, 2007.

2. Rizvi, "Effective Technical Communication", Tata McGraw-Hills, New Delhi, 2009.

3. Andrea J. Rutherford, "Basic Communication Skills for Technology", Pearson Education., 1st edition, 2009

4. Kaplan and Baron's, "GRE and TOEFL', Latest editions.2008

Course Educational Objectives

In this course, the students will learn

- To write letters and reports effectively in formal and professional situations.
- To speak and write effectively in English in real life situations.
- To read speedily and meaningfully.
- Both active and passive vocabulary.
- The decision-making, while thinking logically and analyzing situations carefully.

Course Outcomes

After the completion of this course, prospective engineers will have the ability to

- Use English language effectively in written and spoken English
- Express the right ideas in right context
- Manage the situation and negotiate business with good English communication
- Think and analyze the situations and make good presentations of their work and decisions
- prepare oneself to face interviews and also to participate in group discussions

S.No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real world problem	Chalk & Talk	Assignments
2	Explaining application before theory	ICT tools	Quiz
3	Solving problems	Group discussions	Tutorials
4	Designing of experiments	Industrial visit	Surprise Tests
5	Problems on environmental, economics, health & safety	Field work	Mid Exams
6	Problems on professional & ethics	Case studies	Model Exam
7	Seminar	Mini Projects	END Exams
8	Problems using software	Numerical treatment	
9	Self-study	Design / Exercises	

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
UNIT-I						
1	Introduction	28-12-2015		2	1	1,2,3,5,7
2	Environment	31-12-2015		2	1,3	
3	Environment	02-01-2016		2	1,3	
4	Environment	04-01-2016		2	1,3	
5	Correction of sentences	07-01-2016		2	1,9	
6	Correction of sentences - Quiz	08-01-2016		3	3,9	

7	Satyendranath Bose	18-01-2016		2	1,9	
8	Satyendranath Bose	21-01-2016		2	1,9	
9	Satyendranath Bose	22-01-2016		3	1,9	
10	Report Writing	23-01-2016		2	1,9	
11	Report Writing	25-01-2016		2	1,9	
12	Report Writing	28-01-2016		2	1,9	
13	Report Writing - Assignment	29-01-2016		2	3,9	
UNIT-II						
14	Inspiration	30-01-2016		2	1,3	1,2,3,5,7
15	Inspiration	01-02-2016		2	1,3	
16	Inspiration - Tutorial	04-02-2016		3	3,9	
17	If-Clause	05-02-2016		2	1,9	
18	Question Tags	06-02-2016		2	1,9	
19	If-Clause, Question Tags - Quiz	08-02-2016		3	3,9	
20	Idioms and Phrases	11-02-2016		2	1,9	
21	Idioms and Phrases	12-02-2016		2	1,9	
22	Santi Swarup Bhatnagar	13-02-2016		2	1,3	
23	Santi Swarup Bhatnagar	15-02-2016		2	1,3	

24	Santi Swarup Bhatnagar - Tutorial	18-02-2016		3	3,9	
25	Resume	19-02-2016		2	1,9	
26	Statement of Purpose	20-02-2016		2	1,9	
27	Resume; Statement of Purpose-Assignment	22-02-2016		3	3,9	
	MID - I	23-02-2016 T0 27-02-2016				5
UNIT-III						
28	Human Interest	29-02-2016		2	1,3	1,2,3,5,7
29	Human Interest	03-03-2016		2	1,3	
30	Human Interest	04-03-2016		2	1,3	
31	Human Interest - Tutorial	05-03-2016		3	3,9	
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35	Phrasal Verbs Direct and Indirect Speeches - Quiz	14-03-2016		3	3,9	
36	Memo Drafting	17-03-2016		2	1,9	
37	Memo Drafting	18-03-2016		2	1,9	
38	MeghanadhSaha	19-03-2016		2	1,3	

39	MeghanadhSaha	21-03-2016		2	1,3	
40	Memo Drafting ; MeghanadhSaha - Assignment	24-03-2016		3	3,9	
	UNIT-IV					
41	Information Transfer	26-03-2016		2	1,9	
42	Media	28-03-2016		2	1,3	
43	Media - Tutorial	31-03-2016		2	1,3	
44	Concord	01-04-2016		2	1,9	1,2,3,5,7
45	HomiJahagirBhaba	02-04-2016		2	1,3	
46	HomiJahagirBhaba	04-04-2016		2	1,3	
47	Analogy	07-04-2016		2	1,9	
	UNIT-V					Infor
48	Vikram Sarabhai	09-04-2016		2	1,3	
49	Vikram Sarabhai	11-04-2016		2	1,3	
50	Vikram Sarabhai - Tutorial	16-04-2016		3	3,9	
51	Correction of sentences	18-04-2016		2	1,9	1,2,3,5,7
52	Words often confused	21-04-2016		2	1,9	
53	Words often confused; Correction of sentences; -Quiz	22-04-2016		3	3,9	
54	Gerunds and Infinitives	23-04-2016		2	1,9	
55	Expansions	25-04-2016		2	1,9	

56	Expansions	28-04-2016		2	1,9	
57	Comprehension	29-04-2016		2	1,9	
58	Comprehension; Expansions - Assignment	30-04-2016		3	3,9	
	MID-II	02-05-2016 To 07-05-2016				5

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	K.Sridevi	Dr.B.Samrajya Lakshmi	Dr.B.Samrajya Lakshmi	Dr.A.Samrajya Lakshmi
Sign with Date				