	LESSON PLAN	Date: 15/07/2016
	Sub. Name : DESIGN AND ANALYSIS OF ALGORITHMS Branch: CSE Semester& Sections: V&A	To 26/11/2016

S181 – DESIGN AND ANALYSIS OF ALGORITHMS

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

UNIT - I Introduction: Algorithm definition, Specifications, Performance Analysis- Time Complexity, Asymptotic Notations-Big-Oh, Omega, Theta. **Divide and Conquer:** General Method, Binary Search, Finding Maximum and Minimum, Merge Sort, Quick sort.

UNIT - II The Greedy Method – General Method, Knapsack Problem, Job sequencing with deadlines, Minimum-cost spanning trees, Optimal storage on tapes, Optimal merge pattern, Single source shortest paths.

UNIT - III Dynamic Programming - General method, Multistage graph, All pairs shortest path, Singlesource shortest path, Optimal Binary search trees, 0/1 Knapsack, Reliability design, the traveling salesman problem.

UNIT - IV Back tracking - The General Method, The 8-Queens Problem, Sum of subsets, Graph coloring, Hamiltonian cycles. **Branch and Bound** - The method, 0/1 Knapsack problem, Traveling salesperson

UNIT-V NP-hard and NP-Complete Problems - Basic concepts, Cook's Theorem, NP- Hard Graph problems. **Amortized Analysis:** An Unrelated Puzzle, Binomial Queues, Skew Heaps, Fibonacci Heaps, Splay Trees..

TEXT BOOK

1. Ellis Horowitz, SartajSahni, 'Fundamentals of Computer Algorithms', GalgotiaPubications

2. Data Structures and Algorithm Analysis in C++, 3/e, Mark Allen Weiss, Pearson , 2007.

REFERENCES 1. Aho, Hopcroft& Ullman, 'The Design and Analysis of Computer Algorithms', Addison Wesley publications

2. Thomas H. Corman et al, 'Introduction to Algorithms', PHI.

Course Educational objectives:

Students undergoing this course are expected to:

CEO1: Explain the fundamental concepts of various algorithm design techniques.

CEO2: Make the students familiar to conduct performance evaluation of algorithms.

CEO3: Expertise the students with the various existing algorithm design techniques .

CEO4: Motivate the students to design a new algorithms for various problems.

CEO5: Introduce the concepts of P&NP-class problems.

Course Outcomes:

After completion of this course student shall able to,

CO1: Understand the basic concepts regarding algorithms such as definition, properties, methods of expression and methods of analysis. And also learn the design aspects of divide and conquer paradigm of algorithm design through specific example problems.

CO2: Understand and design Greedy Heuristic algorithms for specific problems such as Knapsack problem, minimum cost spanning tree, single source –all destinations shortest path problem etc.

CO3: Understand and design dynamic programming methods for specific problems such as Travelling sales person problem,0/1 Knapsack problem ,Optimal Binary search Tree etc.

CO4: Analyze Back tracking search methods through example problems such as sum of subsets, 8-Queuens problem , 0/1 Knapsack problem etc. and Understand and Analyze Branch and Bound search methods through example problems such as 0/1 Knapsack problem and Travelling sales person problem

CO5: Investigate the principles regarding P,NP,NP Hard, NP complete classes of problems and algorithms and study example problem in each class.

Prerequisite: Knowledge of Programming ,Discrete Mathematics and Data Structures.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Design And Analysis Of Algorithms
	Programme: B.Tech	Unit No: 1 to 5
	Year &Sem: III & V	Section: A

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			
UNIT –I: INTRODUCTION						
1	Introduction	16-7-16		2	1	1,2,3,5,7
2	Algorithm	18-7-16		2	1	
3	Design & analysis of Algorithms	19-7-16		2	1	
4	Space Complexity	20-7-16		9	1	
5	Time complexity	21-7-16		2	1	
6	Asymptotic Notations	23-7-16		2	1	
7	Tutorial-1	25-7-16		9	9	
8	Divide &Conquer General method	26-7-16		2	1	

9	Binary Search	27-7-16		2	1,9	
10	Time complexity	28-7-16		2	1	
11	Finding Maximun and Minimum	30-7-16		2	1,9	
12	Time complexity	1-8-16		2	1	
13	Merge sort	2-8-16		2	1,9	
14	Time complexity	3-8-16		2	1	
15	Quick sort	4-8-16		2	1,9	
16	Time complexity	6-8-16		2	1	
17	Tutorial-2	8-8-16		9	9	
UNIT –II: The Greedy Method						
18	Greedy Method General method	9-8-16		2	1	1,2,3,5,7
19	Knapsack problem	10-8-16		2	1,9	
20	Examples	11-8-16		3	1,9	
21	Tree Vertex Splitting	13-8-16		2	1,9	
22	Job –Sequencing with deadlines	15-8-16		2	1,9	
23	Examples	16-8-16		3	1,9	
24	Tutorial-3	17-8-16		9	1,9	
25	Minimum cost spanning tree-prims algorithm	18-8-16		2	1,9	
26	Krushkals algorithm	20-8-16		2	1,9	
27	Optimal Storage on Tapes	22-8-16		2	1,9	
28	Optimal Merge Pattern	23-8-16		2	1,9	
29	Single source Shortest paths	24-8-16		2	1,9	
30	Example	25-8-16		3	1,9	
31	Tutorial-4	27-8-16		9	9	
UNIT – III Dynamic Programming						
32	Dynamic Programming-General method	29-8-16		2	1	1,2,3,5,7
33	Multistage Graph	30-8-16		2	1	
34	All pairs Shortest path	31-8-16		2	1	
35	Example	1-9-16		3	1	

36	Single source Shortest path	3-9-16		2	1,9	
37	Example	5-9-16		3	1	
38	Optimal Binary Search Trees	6-9-16		2	1,9	
39	Examples	7-9-16		3	1,9	
40	Tutorial-5	8-9-16		9	1,9	
41	String Editing	10-9-16		2	1,9	
42	0/1 Knapsack	12-9-16		2	1,9	
43	Examples	13-9-16		3	1,9	
44	Reliabilty Design	14-9-16		2	1,9	
45	Travelling Salesman Problem	15-9-16		2	1,9	
46	MID-I	16-9-16				5
47		17-9-16				
48		19-9-16				
49	Example	20-9-16		3	1,9	1,2,3,5,7
50	Flow shop Scheduling	21-9-16		2	1,9	
51	Example	22-9-16		3	1,9	
52	Tutorial-6	24-9-16		9	1,9	
UNIT –IV: Back Tracking AND Branch and Bound						
53	Back tracking –General method	26-9-16		2	1,9	1,2,3,5,7
54	The 8-Queens Problem	27-9-16		2	1,9	
55	Sum of Subsets	28-9-16		2	1,9	
56	Examples	29-9-16		3	1,9	
57	Graph Coloring	1-10-16		2	1,9	
58	Hamiltonian cycle	3-10-16		2	1,9	
59	Tutorial-7	4-10-16		9	1,9	
60	Branch and Bound –method	5-10-16		2	1,9	
61	0/1 Knapsack Problem	6-10-16		2	1,9	
62	Examples	8-10-16		3	1,9	
63	Travelling Sales person	17-10-16		2	1,9	
64	Example	18-10-16		3	1,9	

65	Tutorial-8	19-10-16		9		
UNIT – V NP-hard and NP-complete Problems AND Amortized Analysis						
66	NP hard and NP complete- Basic concepts	20-10-16		2	1,9	
67	Efficiency Considerations	22-0-16		2	1,9	
68	Cook's Theorem	24-10-16		2	1,9	
69	NP-hard Graph Problems	25-10-16		2	1,9	
70	Examples	26-10-16		3	1,9	1,2,3,5,7
71	Tutorial-9	27-10-16		9	1,9	
72	An Unrelated Puzzle	29-10-16		2	1,9	
73	Binomial Queues	31-10-16		2	1,9	
74	Examples	1-11-16		3	1,9	
75	Skew Heaps	2-11-16		2	1,9	
76	Fibonacci Heaps	3-11-16		2	1,9	
77	Splay trees	5-11-16		2	1,9	
78	Examples	7-11-16		3	1,9	
79	Tutorial-10	8-11-16		9	1,9	
80	Revision	9-11-16		3,7	8,9	
81	Revision	10-11-16		3,7	8,9	
82	Revision	12-11-16		3,7	8,9	
83	Revision	14-11-16		3,7	8,9	
84	Revision	15-11-16		3,7	8,9	1,2,3,5,7
85	Revision	15-11-16		3,7	8,9	
86	Revision	16-11-16		3,7	8,9	
87	Revision	17-11-16		3,7	8,9	
88	Revision	19-11-16		3,7	8,9	
89	Revision	21-11-16		3,7	8,9	
90	Revision	22-11-16		3,7	8,9	
91	Revision	23-11-16		3,7	8,9	
92	Revision	24-11-16		3,7	8,9	

93	Revision	26-11-16		3,7	8,9	
94	MID-II	28-11-16				5
95		29-11-16				
96		30-11-16				

Resources Used:

TEXT BOOK

1. Ellis Horowitz, SartajSahni, 'Fundamentals of Computer Algorithms', GalgotiaPubications

2. Data Structures and Algorithm Analysis in C++, 3/e, Mark Allen Weiss, Pearson , 2007.

REFERENCES 1. Aho, Hopcroft& Ullman, 'The Design and Analysis of Computer Algorithms', Addison Wesley publications

2. Thomas H. Corman et al, 'Introduction to Algorithms', PHI.

Assessment Summary:

Assessment Task	Weight age (Marks)	Course Outcomes				
		CO1	CO2	CO3	CO4	CO5
Assignments Quizes Tutorials	5					
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											PSO's					
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
S181	I	×					M		L												S			
	II		×				M	L													S			
	III			×			M	L													S			
	IV				×		M	L													S			
	V					×	M	L													S			

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	T.V.Nagaraju			Dr. N. Ravi Shankar
Sign with Date				

	LESSON PLAN	Date: 15/07/2016
	Sub. Name : DESIGN AND ANALYSIS OF ALGORITHMS Branch: CSE Semester& Sections: V&B	To 26/11/2016

S181 – DESIGN AND ANALYSIS OF ALGORITHMS

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

UNIT - I Introduction: Algorithm definition, Specifications, Performance Analysis- Time Complexity, Asymptotic Notations-Big-Oh, Omega, Theta. **Divide and Conquer:** General Method, Binary Search, Finding Maximum and Minimum, Merge Sort, Quick sort.

UNIT - II The Greedy Method – General Method, Knapsack Problem, Job sequencing with deadlines, Minimum-cost spanning trees, Optimal storage on tapes, Optimal merge pattern, Single source shortest paths.

UNIT - III Dynamic Programming - General method, Multistage graph, All pairs shortest path, Singlesource shortest path, Optimal Binary search trees, 0/1 Knapsack, Reliability design, the traveling salesman problem.

UNIT - IV Back tracking - The General Method, The 8-Queens Problem, Sum of subsets, Graph coloring, Hamiltonian cycles. **Branch and Bound** - The method, 0/1 Knapsack problem, Traveling salesperson

UNIT-V NP-hard and NP-Complete Problems - Basic concepts, Cook's Theorem, NP- Hard Graph problems. **Amortized Analysis:** An Unrelated Puzzle, Binomial Queues, Skew Heaps, Fibonacci Heaps, Splay Trees..

TEXT BOOK

1. Ellis Horowitz, SartajSahni, 'Fundamentals of Computer Algorithms', GalgotiaPubications

2. Data Structures and Algorithm Analysis in C++, 3/e, Mark Allen Weiss, Pearson , 2007.

REFERENCES 1. Aho, Hopcroft& Ullman, 'The Design and Analysis of Computer Algorithms', Addison Wesley publications

2. Thomas H. Corman et al, 'Introduction to Algorithms', PHI.

Course Educational objectives:

Students undergoing this course are expected to:

CEO1: Explain the fundamental concepts of various algorithm design techniques.

CEO2: Make the students familiar to conduct performance evaluation of algorithms.

CEO3: Expertise the students with the various existing algorithm design techniques .

CEO4: Motivate the students to design a new algorithms for various problems.

CEO5: Introduce the concepts of P&NP-class problems.

Course Outcomes:

After completion of this course student shall able to,

CO1: Understand the basic concepts regarding algorithms such as definition, properties, methods of expression and methods of analysis. And also learn the design aspects of divide and conquer paradigm of algorithm design through specific example problems.

CO2: Understand and design Greedy Heuristic algorithms for specific problems such as Knapsack problem, minimum cost spanning tree, single source –all destinations shortest path problem etc.

CO3: Understand and design dynamic programming methods for specific problems such as Travelling sales person problem,0/1 Knapsack problem ,Optimal Binary search Tree etc.

CO4: Analyze Back tracking search methods through example problems such as sum of subsets, 8-Queuens problem , 0/1 Knapsack problem etc. and Understand and Analyze Branch and Bound search methods through example problems such as 0/1 Knapsack problem and Travelling sales person problem

CO5: Investigate the principles regarding P,NP,NP Hard, NP complete classes of problems and algorithms and study example problem in each class.

Prerequisite: Knowledge of Programming ,Discrete Mathematics and Data Structures.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Design And Analysis Of Algorithms
	Programme: B.Tech	Unit No: 1 to 5
	Year &Sem: III & V	Section: B

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			
UNIT –I: INTRODUCTION						
1	Introduction	15-7-16		2	1	1,2,3,5,7
2	Algorithm	16-7-16		2	1	
3	Design & analysis of Algorithms	18-7-16		2	1	
4	Space Complexity	19-7-16		9	1	
5	Time complexity	21-7-16		2	1	
6	Asymptotic Notations	22-7-16		2	1	
7	Tutorial-1	23-7-16		9	9	
8	Divide &Conquer General method	25-7-16		2	1	

9	Binary Search	26-7-16		2	1,9	
10	Time complexity	28-7-16		2	1	
11	Finding Maximun and Minimum	29-7-16		2	1,9	
12	Time complexity	30-7-16		2	1	
13	Merge sort	1-8-16		2	1,9	
14	Time complexity	2-8-16		2	1	
15	Quick sort	4-8-16		2	1,9	
16	Time complexity	5-8-16		2	1	
17	Tutorial-2	6-8-16		9	9	
UNIT –II: The Greedy Method						
18	Greedy Method General method	8-8-16		2	1	1,2,3,5,7
19	Knapsack problem	9-8-16		2	1,9	
20	Examples	11-8-16		3	1,9	
21	Tree Vertex Splitting	12-8-16		2	1,9	
22	Job –Sequencing with deadlines	13-8-16		2	1,9	
23	Examples	15-8-16		3	1,9	
24	Tutorial-3	16-8-16		9	1,9	
25	Minimum cost spanning tree-prims algorithm	18-8-16		2	1,9	
26	Krushkals algorithm	19-8-16		2	1,9	
27	Optimal Storage on Tapes	20-8-16		2	1,9	
28	Optimal Merge Pattern	22-8-16		2	1,9	
29	Single source Shortest paths	23-8-16		2	1,9	
30	Example	25-8-16		3	1,9	
31	Tutorial-4	26-8-16		9	9	
UNIT – III Dynamic Programming						
32	Dynamic Programming-General method	27-8-16		2	1	1,2,3,5,7
33	Multistage Graph	29-8-16		2	1	
34	All pairs Shortest path	30-8-16		2	1	
35	Example	1-9-16		3	1	

36	Single source Shortest path	2-9-16		2	1,9	
37	Example	3-9-16		3	1	
38	Optimal Binary Search Trees	5-9-16		2	1,9	
39	Examples	6-9-16		3	1,9	
40	Tutorial-5	8-9-16		9	1,9	
41	String Editing	9-9-16		2	1,9	
42	0/1 Knapsack	10-9-16		2	1,9	
43	Examples	12-9-16		3	1,9	
44	Reliabilty Design	13-9-16		2	1,9	
45	Travelling Salesman Problem	15-9-16		2	1,9	
46	MID-I	16-9-16				5
47		17-9-16				
48		19-9-16				
49	Example	20-9-16		3	1,9	1,2,3,5,7
50	Flow shop Scheduling	22-9-16		2	1,9	
51	Example	23-9-16		3	1,9	
52	Tutorial-6	24-9-16		9	1,9	
UNIT –IV: Back Tracking AND Branch and Bound						
53	Back tracking –General method	26-9-16		2	1,9	1,2,3,5,7
54	The 8-Queens Problem	27-9-16		2	1,9	
55	Sum of Subsets	29-9-16		2	1,9	
56	Examples	30-9-16		3	1,9	
57	Graph Coloring	1-10-16		2	1,9	
58	Hamiltonian cycle	3-10-16		2	1,9	
59	Tutorial-7	4-10-16		9	1,9	
60	Branch and Bound –method	6-10-16		2	1,9	
61	0/1 Knapsack Problem	7-10-16		2	1,9	
62	Examples	8-10-16		3	1,9	
63	Travelling Sales person	17-10-16		2	1,9	
64	Example	18-10-16		3	1,9	

65	Tutorial-8	20-10-16		9		
UNIT – V NP-hard and NP-complete Problems AND Amortized Analysis						
66	NP hard and NP complete- Basic concepts	21-10-16		2	1,9	
67	Efficiency Considerations	22-0-16		2	1,9	
68	Cook's Theorem	24-10-16		2	1,9	
69	NP-hard Graph Problems	25-10-16		2	1,9	
70	Examples	27-10-16		3	1,9	1,2,3,5,7
71	Tutorial-9	28-10-16		9	1,9	
72	An Unrelated Puzzle	29-10-16		2	1,9	
73	Binomial Queues	31-10-16		2	1,9	
74	Examples	1-11-16		3	1,9	
75	Skew Heaps	3-11-16		2	1,9	
76	Fibonacci Heaps	4-11-16		2	1,9	
77	Splay trees	5-11-16		2	1,9	
78	Examples	7-11-16		3	1,9	
79	Tutorial-10	8-11-16		9	1,9	
80	Revision	10-11-16		3,7	8,9	
81	Revision	11-11-16		3,7	8,9	
82	Revision	12-11-16		3,7	8,9	
83	Revision	14-11-16		3,7	8,9	
84	Revision	15-11-16		3,7	8,9	1,2,3,5,7
85	Revision	17-11-16		3,7	8,9	
86	Revision	18-11-16		3,7	8,9	
87	Revision	19-11-16		3,7	8,9	
88	Revision	21-11-16		3,7	8,9	
89	Revision	22-11-16		3,7	8,9	
90	Revision	24-11-16		3,7	8,9	
91	Revision	25-11-16		3,7	8,9	
92	Revision	26-11-16		3,7	8,9	

93	MID-II	28-11-16				5
94		29-11-16				
95		30-11-16				

Resources Used:

TEXT BOOK

1. Ellis Horowitz, SartajSahni, 'Fundamentals of Computer Algorithms', GalgotiaPubications

2. Data Structures and Algorithm Analysis in C++, 3/e, Mark Allen Weiss, Pearson , 2007.

REFERENCES 1. Aho, Hopcroft& Ullman, 'The Design and Analysis of Computer Algorithms', Addison Wesley publications

2. Thomas H. Corman et al, 'Introduction to Algorithms', PHI.

Assessment Summary:

Assessment Task	Weight age (Marks)	**Course Outcomes**				
		CO1	CO2	CO3	CO4	CO5
Assignments	5					
Quizes						
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											PSO's					
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
S181	I	×					M		L												S			
	II		×				M	L													S			
	III			×			M	L													S			
	IV				×		M	L													S			
	V					×	M	L													S			

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	T.V.Nagaraju			Dr. N. Ravi Shankar
Sign with Date				

S No.	Tentative Date	Topics to be covered	Actual Date	Num. of classes	Content Delivery Methods
		UNIT-I: INTRODUCTION			
1.	15-07-2016	INTRODUCTION		1	DM1
2.	16-07-2016	INTRODUCTION		1	DM1
3.	18-07-2016	COMPUTER SYSTEM ORGANIZATION		1	DM1
4.	19-07-2016	COMPUTER SYSTEM ARCHITECTURE		1	DM1
5.	20-07-2016	OPERATING SYSTEM STRUCTURE		1	DM1
6.	21-07-2016	OPERATING SYSTEM STRUCTURE		1	DM1
7.	22-07-2016	OPERATING SYSTEM OPERATIONS		1	DM1
8.	23-07-2016	OPERATING SYSTEM OPERATIONS		1	DM1
9.	25-07-2016	PROCESS MANAGEMENT		1	DM1
10.	26-07-2016	MEMORY MANAGEMENT		1	DM1
11.	27-07-2016	PROGRAMS		1	DM6
12.	28-07-2016	PROGRAMS		1	DM6
13.	29-07-2016	MEMORY MANAGEMENT		1	DM1
14.	30-07-2016	MEMORY MANAGEMENT		1	DM1
15.	31-07-2016	MEMORY MANAGEMENT		1	DM1

16.	01-08-2016	STORAGE MANAGEMENT		1	DM1
17.	02-08-2016	PROTECTION AND SECURITY		1	DM1
18.	03-08-2016	DISTRIBUTED SYSTEMS		1	DM1
19.	04-08-2016	SPECIAL PURPOSE SYSTEMS		1	DM1
20.	05-08-2016	OPERATING SYSTEM SERVICES		1	DM1
21.	06-08-2016	USER OPERATING SYSTEM INTERFACE		1	DM1
22.	08-08-2016	SYSTEM CALLS		1	DM1
23.	09-08-2016	QUIZ		1	DM3
24.	10-08-2016	TYPES OF SYSTEM CALLS		1	DM1
25.	11-08-2016	SYSTEM PROGRAMS		1	DM1
26.	24-08-2016	OS DESIGN & IMPLEMENTATION		1	DM1
27.	25-08-2016	OPERATING SYSTEM STRUCTURE		1	DM1
28.	26-08-2016	VIRTUAL MACHINES		1	DM1
29.	27-08-2016	OPERATING SYSTEM GENERATION		1	DM1
30.	29-08-2016	SYSTEM BOOT		1	DM1
UNIT-II PROCESS CONCEPTS					
31.	30-08-2016	PROCESS SCHEDULING		1	DM1
32.	31-08-2016	OPERATIONS ON PROCESS		1	DM1
33.	01-09-2016	INTER-PROCESS COMMUNICATION		1	DM1
34.	02-09-2016	EXAMPLES OF IPC SYSTEMS		1	DM1
35.	03-09-2016	COMMUNICATION IN CLIENT SERVER SYSTEMS		1	DM1
36.	06-09-2016	MULTI THREADING MODELS		1	DM1
37.	07-09-2016	QUIZ		1	DM3
38.	08-09-2016	THREAD LIBRARIES		1	DM1
39.	09-09-2016	THREADING ISSUES		1	DM1
40.	10-09-2016	SCHEDULING CRITERIA		1	DM1
41.	13-09-2016	SCHEDULING ALGORITHMS		1	DM1
42.	14-09-2016	SCHEDULING ALGORITHMS		1	DM1
43.	15-09-2016	MULTI-PROCESSOR SCHEDULING		1	DM1
44.	16-09-2016	MID EXAMS		1	
45.	17-09-2016	MID EXAMS		1	
46.	19-09-2016	MID EXAMS		1	
UNIT-III SYNCHRONIZATION					
47.	20-09-2016	THE CRITICAL SECTION PROBLEM		1	DM1
48.	21-09-2016	PETERSON'S SOLUTION		1	DM1
49.	22-09-2016	SYNCHRONIZATION HARDWARE		1	DM1
50.	23-09-2016	SEMAPHORES		1	DM1
51.	24-09-2016	CLASSIC PROBLEMS OF SYNCHRONIZATION		1	DM1
52.	26-09-2016	MONITORS		1	DM1
53.	27-09-2016	SYNCHRONIZATION EXAMPLES		1	DM1
54.	28-09-2016	SYNCHRONIZATION EXAMPLES		1	DM1
55.	29-09-2016	ATOMIC TRANSACTIONS		1	DM1
56.	30-09-2016	SYSTEM MODEL		1	DM1
57.	01-10-2016	DEADLOCK CHARACTERIZATION		1	DM1
58.	02-10-2016	METHODS FOR HANDLING DEADLOCKS		1	DM1
59.	03-10-2016	METHODS FOR HANDLING DEADLOCKS		1	DM1
60.	04-10-2016	DEADLOCK PREVENTION		1	DM1
61.	05-10-2016	DEADLOCK AVOIDANCE		1	DM1
62.	06-10-2016	DEADLOCK DETECTION		1	DM1
63.	07-10-2016	RECOVERY FROM DEADLOCK		1	DM1
64.	08-10-2016	ASSIGNMENTS		1	DM4

65.	13-10-2016	QUIZ		1	DM3
		UNIT-IV MEMORY MANAGEMENT			
66.	14-10-2016	MEMORY MANAGEMENT STRATEGIES		1	DM1
67.	15-10-2016	MEMORY MANAGEMENT STRATEGIES		1	DM1
68.	17-10-2016	SWAPPING		1	DM1
69.	18-10-2016	CONTIGUOUS MEMORY ALLOCATION		1	DM1
70.	19-10-2016	PAGING		1	DM1
71.	20-10-2016	PAGING		1	DM1
72.	21-10-2016	STRUCTURE OF THE PAGE TABLE		1	DM1
73.	22-10-2016	SEGMENTATION		1	DM1
74.	23-10-2016	DEMAND PAGING		1	DM6
75.	24-10-2016	DEMAND PAGING		1	DM6
76.	25-10-2016	PAGE REPLACEMENT		1	DM1
77.	26-10-2016	ALLOCATION OF FRAMES		1	DM1
78.	27-10-2016	THRASHING		1	DM1
79.	28-10-2016	MEMORY MAPPING FILES		1	DM1
80.	29-10-2016	ALLOCATING KERNEL MEMORY		1	DM1
81.	31-10-2016	ASSIGNMENTS			DM4
82.	01-11-2016	QUIZ		1	DM3
		UNIT-V FILE SYSTEM			
83.	02-11-2016	FILE SYSTEM		1	DM1
84.	03-11-2016	FILE SYSTEM		1	DM1
85.	04-11-2016	THE CONCEPT OF A FILE		1	DM1
86.	05-11-2016	ACCESS METHODS		1	DM1
87.	07-11-2016	DIRECTORY STRUCTURE		1	DM6
88.	08-11-2016	DIRECTORY STRUCTURE		1	DM6
89.	09-11-2016	FILE SYSTEM MOUNTING		1	DM1
90.	10-11-2016	FILE SHARING		1	DM1
91.	11-11-2016	PROTECTION		1	DM1
92.	12-11-2016	FILE SYSTEM STRUCTURE		1	DM6
93.	14-11-2016	FILE SYSTEM STRUCTURE		1	DM6
94.	15-11-2016	FILE SYSTEM IMPLEMENTATION		1	DM4
95.	16-11-2016	FILE SYSTEM IMPLEMENTATION		1	DM1
96.	17-11-2016	DIRECTORY IMPLEMENTATION		1	DM1
97.	18-11-2016	ALLOCATION METHODS		1	DM2
98.	19-11-2016	ALLOCATION METHODS		1	DM1
99.	21-11-2016	FREE SPACE MANAGEMENT		1	DM1
100.	22-11-2016	FREE SPACE MANAGEMENT		1	DM1
101.	23-11-2016	EFFICIENCY AND PERFORMANCE		1	DM2
102.	24-11-2016	RECOVERY		1	DM1
103.	25-11-2016	QUIZ		1	DM3
104.	26-11-2016	ASSIGNMENTS		1	DM4
				104	
			Total number of classes required to complete the syllabus		**95**
			Total number of classes available as per Schedule		**104**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions-BB, **DM2:** Tutorial, **DM3:** Lecture with a quiz, **DM4**: Assignment-Test, **DM5**: Demonstration (laboratory, field visit), **DM6:** Presentations-PPT

At the End of the course, students attained the **Course Outcomes:CO1,CO2,CO3,CO4,CO5** & sample proofs are enclosed in Course file.

Signature			
	Name of the Faculty	**Name of Course Co-ordinator**	**HOD**

	LESSON PLAN	15/07/2016 To 26/11/2016
	Sub. Name : COMPUTER NETWORKS Branch: EIE Semester & Sections: V	

S168 – COMPUTER NETWORKS

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

UNIT - I

Introduction: Use of Computer Networks- Network Hardware- Network software-Reference models Example Networks- Network Standardization. Physical Layer: The theoretical basis for Data communication- Guided Transmission Media.

UNIT - II

Data link layer: design issues- framing, error detection and correction, CRC, Elementary data link protocols- sliding window protocols. Medium Access Control Sub layer: Channel allocation problem-multiple access protocols- Ethernet- Data link layer switching.

UNIT – III

Network layer: Network layer design issues- Routing algorithms- congestion control algorithms-Quality of service- Internetworking- network layer in the Internet.

UNIT - IV

Transport layer: Transport service- Elements of transport protocols- Internet transport protocols: TCP & UDP.

UNIT - V

Application Layer: Domain Name System- Electronic Mail -the World Wide Web, Network Security.

TEXT BOOK

Andrews S. Tanenbaum; “Computer Networks”; Fourth Edition, PHI.

REFERENCES

1. William Stallings; “Data and Computer Communications”; seventh Edition, Pearson Education.

2. Behrouz A .Fourouzan; “TCP/IP Protocol Suite“; Fourth Edition, Tata-McGraw Hill.

3. James F.Kurose, Keith W.ROSS; “Computer Networking - A Top-Down Approach featuring the Internet”; Pearson Education.

Pre requisite: Fundamentals of Computer.

Course Educational Objectives:

- Give students an understanding of the basic principles of computer networking
- Give students an overview of the main technologies used in computer networks.
- Give students an overview of internetworking principles and how the Internet protocols, routing, and applications operate.
- Give students the basic background in computer networks that will allow them to practice in this field, and that will form the foundation for more advanced courses in networking.

Course Outcomes:

After completion of this course a student can able to

CO1: Understand the concepts of various network architectures, physical media, and channel access techniques.

CO2: Interpret data link layer and medium access protocols for direct link networks.

CO3: Analyze and implement internetworking and routing algorithms

CO4: Visualize adaptive flow control, adaptive retransmission and congestion avoidance mechanisms in TCP.

CO5: Understand various applications like email, DNS, SNMP and PGP.

	Lakireddy Bali Reddy College of Engineering	
	Department of EIE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Computer Networks
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & I (V Sem)	Section:

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			
UNIT –I: INTRODUCTION AND PHYSICAL LAYER						
1	**Introduction** Use of Computer Networks	15-7-16		2	1	1,3,5,7
2	Network Hardware	16-7-16		2	1	
3	Network Hardware	18-7-16		2	1	
4	Network Software	19-7-16		2	1	
5	Network Software	20-7-16		2	1	
6	Reference models	22-7-16		2	1,9	
7	Reference models	23-7-16		2	1,9	

8	Example Networks	25-7-16		2	1,9	
9	Example Networks	26-7-16		2	1	
10	Network Standardization	27-7-16		2	1	
11	**Physical Layer**：The theoretical basis for Data communication	29-7-16		2	1	
12	Guided Transmission Media	30-7-16		2	1,9	
13	**Tutorial - I**	01-8-16				
UNIT –II: DATA LINK LAYER						
14	**Data link layer**: design issues framing	02-8-16		2	1	1,3,5,7
15	Error detection and correction	03-8-16		2	1,9	
16	CRC	05-8-16 06-8-16		2	1,9	
17	Elementary data link protocols	08-8-16 09-8-16		2	1,9	
18	Sliding Window Protocols	10-8-16 12-8-16		2	1	
19	Medium Access Control Sub layer	13-8-16 16-8-16		2	1	
20	Channel allocation problem	17-8-16 19-8-16		2	1	
21	Multiple Access Protocols	20-8-16 22-8-16		2	1	
22	Ethernet	22-8-16		2	1,9	
23	Data link layer switching	23-8-16 24-8-16		2	1,9	
24	Bridges	26-8-16 27-8-16 29-8-16		2	1	
25	Bridge learning algorithms	30-8-16 31-8-16		2	1	

26	Bridges from 802.x to 802.y	02-9-16 03-9-16		2	1	
27	Local internetworking	05-9-16 06-9-16 07-9-16		2	1	
28	Spanning Tree bridges	09-9-16 10-9-16		2	1	
29	Remote bridges	12-9-16 13-9-16		2	1	
30	**Tutorial - II**	14-9-16				
	MID EXAMS	16-9-16 17-9-16 19-9-16				
UNIT –III: NETWORK LAYER						
31	Network layer design issues	20-8-16 22-8-16		2	1	1,3,5,7
32	Network layer design issues	23-8-16 24-8-16		2	1	
33	Routing algorithms	26-8-16		2	1,9	
34	Routing algorithms	27-8-16		2	1	
35	Routing algorithms	29-8-16		2	1	
36	Routing algorithms	30-8-16				
37	Routing algorithms	31-8-16				
38	Congestion control algorithms	02-9-16 03-9-16		2	1,9	
39	Congestion control algorithms	05-9-16 06-9-16				
40	Quality of service	07-9-16 09-9-16 10-9-16		2	1	

41	Quality of service	12-9-16 13-9-16 14-9-16		2	1,9	
42	Internetworking	16-9-16 17-9-16 19-9-16		2	1	
43	Internetworking	20-9-16 21-9-16		2	1	
44	Network layer in the Internet	23-9-16 24-9-16 26-9-16		2	1,9	
45	Network layer in the Internet	27-9-16 28-9-16 30-9-16		2	1	
46	**Tutorial – III**	01-10-16				
UNIT –IV: TRANSPORT LAYER						
47	Transport service	01-10-16		2	1,2	
48	Transport service	03-10-16		2	1,2	
49	Transport service	04-10-16		2	1,2	
50	Elements of transport protocols	05-10-16		2	1,2	
51	Elements of transport protocols	07-10-16		2	1,2	
52	Elements of transport protocols	17-10-16		2	1,2	
53	Internet transport protocols	18-10-16		2	1,2	1,3,5,7
54	Internet transport protocols	19-10-16		2	1,2	
55	**Tutorial –IV**	21-10-16				
56	TCP & UDP	22-10-16		2	1,2	
57	TCP & UDP	24-10-16		2	1,2	
58	TCP & UDP	25-10-16		2	1,2	
59	TCP & UDP	26-10-16		2	1,2	
UNIT –V: APPLICATION LAYER						

60	Application Layer	28/10/16		2	1,2	
61	Application Layer	29/10/16		2	1,2	
62	Domain Name System	01/11/16		2	1,2	
63	Domain Name System	02/11/16		2	1,2	
64	Electronic Mail	04/11/16 05/11/16		2	1,2	
65	Electronic Mail	07/11/16 08/11/16		2	1,2	
66	World Wide Web	09/11/16 11/11/16		2	1,2	1,3,5,7
67	World Wide Web	12/11/16		2	1,2	
68	World Wide Web	14/11/16		2	1,2	
69	Network Security	15/11/16 16/11/16 18/11/16		2	1,2	
70	Network Security	19/11/16 21/11/16		2	1,2	
71	Network Security	22/11/16 23/11/16		2	1,2	
72	**Tutorial – V**	25/11/16				
73	**Tutorial – VI**	26/11/16				
74	**II MID EXAMS**	28/11/16				
75		29/11/16				
76		30/11/16				

Resources Used:

Text Book:

Andrews S. Tanenbaum; “Computer Networks”; Fourth Edition, PHI.

References:

1. William Stallings; “Data and Computer Communications”; seventh Edition, Pearson Education.

2. Behrouz A .Fourouzan; “TCP/IP Protocol Suite“; Fourth Edition, Tata-McGraw Hill.

3. James F.Kurose, Keith W.ROSS; “Computer Networking - A Top-Down Approach featuring the Internet”; Pearson Education.

Assessment Summary:

Assessment Task	Weight age (Marks)	Course Outcomes				
		CO1	**CO2**	**CO3**	**CO4**	**CO5**
Assignments Quizzes Surprise Tests	5					
Mid Exams	20					
End Exam	75					
Total	100					

Mapping Course Outcomes with PO’s & PSO’s:

POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	2	3	4	5	6
CO1	1																3	1
CO2	1																3	
CO3	1	3	2	1									1				3	
CO4	1	3	2	1									1				3	
CO5	1					1											3	

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	**G.V.Suresh**			**R. Anjaneyulu Naik**
Sign with Date				

	LESSON PLAN	15/07/2016
	Sub. Name : COMPUTER NETWORKS Branch: CSE Semester & Sections: V	To 26/11/2016

S168 – COMPUTER NETWORKS

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

UNIT - I

Introduction: Use of Computer Networks- Network Hardware- Network software-Reference models Example Networks- Network Standardization. Physical Layer: The theoretical basis for Data communication- Guided Transmission Media.

UNIT - II

Data link layer: design issues- framing, error detection and correction, CRC, Elementary data link protocols- sliding window protocols. Medium Access Control Sub layer: Channel allocation problem-multiple access protocols- Ethernet- Data link layer switching.

UNIT – III

Network layer: Network layer design issues- Routing algorithms- congestion control algorithms-Quality of service- Internetworking- network layer in the Internet.

UNIT - IV

Transport layer: Transport service- Elements of transport protocols- Internet transport protocols: TCP & UDP.

UNIT - V

Application Layer: Domain Name System- Electronic Mail -the World Wide Web, Network Security.

TEXT BOOK

Andrews S. Tanenbaum; “Computer Networks”; Fourth Edition, PHI.

REFERENCES

1. William Stallings; “Data and Computer Communications”; seventh Edition, Pearson Education.

2. Behrouz A .Fourouzan; “TCP/IP Protocol Suite“; Fourth Edition, Tata-McGraw Hill.

3. James F.Kurose, Keith W.ROSS; “Computer Networking - A Top-Down Approach featuring the Internet”; Pearson Education.

Pre requisite: Fundamentals of Computer.

Course Educational Objectives:

- Give students an understanding of the basic principles of computer networking
- Give students an overview of the main technologies used in computer networks.
- Give students an overview of internetworking principles and how the Internet protocols, routing, and applications operate.
- Give students the basic background in computer networks that will allow them to practice in this field, and that will form the foundation for more advanced courses in networking.

Course Outcomes:

After completion of this course a student can able to

CO1: Understand the concepts of various network architectures, physical media, and channel access techniques.

CO2: Interpret data link layer and medium access protocols for direct link networks.

CO3: Analyze and implement internetworking and routing algorithms

CO4: Visualize adaptive flow control, adaptive retransmission and congestion avoidance mechanisms in TCP.

CO5: Understand various applications like email, DNS, SNMP and PGP.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Computer Networks
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & I (V Sem)	Section:

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			
UNIT –I: INTRODUCTION AND PHYSICAL LAYER						
1	**Introduction** Use of Computer Networks	19/7/16		2	1	1,3,5,7
2	Network Hardware	20/7/16		2	1	
3	Network Hardware	21/7/16		2	1	
4	Network Software	22/7/16		2	1	
5	Network Software	23/7/16		2	1	
6	Reference models	26/7/16		2	1,9	

7	Reference models	27/7/16		2	1,9	
8	Example Networks	28/7/16		2	1,9	
9	Example Networks	29/7/16		2		
10	Example Networks	30/7/16		2	1	
11	Network Standardization	2/8/16		2	1	
12	**Physical Layer**：The theoretical basis for Data communication	3/8/16		2	1	
13	Guided Transmission Media	4/8/16		2	1,9	
14	Guided Transmission Media	5/8/16		2		
15	**Tutorial - I**	6/8/16		2		
UNIT –II: DATA LINK LAYER						
14	**Data link layer**: design issues framing	9/8/16		2	1	
15	Error detection and correction	10/8/16		2	1,9	
16	CRC	11/8/16		2	1,9	
17	CRC	16/8/16		2		
18	Elementary data link protocols	17/08/16		2	1,9	
19	Elementary data link protocols	18/08/16		2		
20	Elementary data link protocols	19/08/16		2		
21	Sliding Window Protocols	20/08/16		2	1	
22	Sliding Window Protocols	23/08/16		2		
23	Medium Access Control Sub layer	24/08/16		2	1	1,3,5,7
24	Medium Access Control Sub layer	26/08/16		2		
25	Channel allocation problem	27/08/16		2	1	
26	Channel allocation problem	30/08/16		2		
27	Multiple Access Protocols	31/08/16		2	1	
29	Multiple Access Protocols	1/09/16		2		
30	Multiple Access Protocols	2/09/16		2	1,9	
31	Ethernet	3/09/16		2		
32	Ethernet	6/09/16		2	1,9	
33	Ethernet	7/09/16		2		

34	Data link layer switching	8/09/16		2	1	
35	Data link layer switching	9/09/16		2	1,9	
36	Data link layer switching	13/09/16		2	1,9	
37	Revision	14/09/16				
38	**Tutorial - II**	15/09/16				
39	MID – I EXAMS	16/09/16				
40		17/09/16				
41		19/09/16				
UNIT –III: NETWORK LAYER						
42	Network layer design issues	20/09/16		2	1	1,3,5,7
43	Network layer design issues	21/09/16		2	1	
44	Routing algorithms	22/09/16		2	1,9	
45	Routing algorithms	23/09/16		2	1	
46	Routing algorithms	24/09/16		2	1	
47	Congestion control algorithms	27/09/16		2	1,9	
48	Congestion control algorithms	28/09/16		2		
49	Quality of service	29/09/16		2	1	
50	Quality of service	30/09/16		2	1,9	
51	Internetworking	1/10/16		2	1	
52	Internetworking	4/10/16		2	1	
53	Network layer in the Internet	5/10/16		2	1,9	
54	Network layer in the Internet	6/10/16		2	1	
55	**Tutorial – III**	7/10/16				
UNIT –IV: TRANSPORT LAYER						
	Transport service	18/10/16		2	1,2	1,3,5,7
	Transport service	19/10/16		2	1,2	
	Transport service	20/10/16		2	1,2	
	Elements of transport protocols	21/10/16		2	1,2	
	Elements of transport protocols	22/10/16		2	1,2	
	Elements of transport protocols	25/10/16		2	1,2	

	Internet transport protocols	26/10/16		2	1,2	
	Internet transport protocols	27/10/16		2	1,2	
56	**Tutorial –IV**	28/10/16				
57	TCP & UDP	29/10/16		2	1,2	
58	TCP & UDP	1/11/16		2	1,2	
59	TCP & UDP	2/11/16		2	1,2	
60	TCP & UDP	3/11/16		2	1,2	
UNIT –V: APPLICATION LAYER						
61	Application Layer	4/11/16		2	1,2	1,3,5,7
62	Application Layer	5/11/16		2	1,2	
63	Domain Name System	8/11/16		2	1,2	
64	Domain Name System	9/11/16		2	1,2	
65	Electronic Mail	10/11/16		2	1,2	
66	Electronic Mail	11/11/16		2	1,2	
67	World Wide Web	15/11/16		2	1,2	
68	World Wide Web	16/11/16		2	1,2	
69	World Wide Web	17/11/16		2	1,2	
70	Network Security	18/11/16		2	1,2	
71	Network Security	19/11/16		2	1,2	
72	Network Security	22/11/16		2	1,2	
73	**Tutorial – V**	23/11/16				
74	**Tutorial – VI**	24/11/16				
75	**Revision**	25/11/16				
76	**Revision**	26/11/16				
77	II MID EXAMS	28/11/16				
78		29/11/16				
		30/11/16				

Resources Used:

Text Book:

Andrews S. Tanenbaum; "Computer Networks"; Fourth Edition, PHI.

References:

1. William Stallings; "Data and Computer Communications"; seventh Edition, Pearson Education.

2. Behrouz A .Fourouzan; "TCP/IP Protocol Suite"; Fourth Edition, Tata-McGraw Hill.

3. James F.Kurose, Keith W.ROSS; "Computer Networking - A Top-Down Approach featuring the Internet"; Pearson Education.

Assessment Summary:

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

Mapping Course Outcomes with PO's & PSO's:

POs	PO1	2	3	4	5	6	7	8	9	10	11	12	PSO1	2	3	4	5	6
CO1	1																3	1
CO2	1																3	
CO3	1	3	2	1									1				3	
CO4	1	3	2	1									1				3	
CO5	1					1											3	

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	**K.N.Prasanthi**			**Dr.N.RaviSankar**
Sign with Date				

	CN & OS LAB-LESSON PLAN
	Department: CSE **Program:** B.Tech
	Course: CN and OS LAB (S168) **Lab:** 3 hours/week
	SEM: V SEM **Academic Year: 2016-17**
	Internal Marks: 25 **External marks:** 50

1. **Pre-requisites:** Knowledge on Operating system principles and network principles.

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

   In this course, students will learn about basic principles in Operating System and providing error detection methods. It will cover all the management modules present in the OS like process management, Memory management, File management, Disk management, Network management, I/O management.

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

CO1:	Evaluate different scheduling algorithms and page replacement algorithms
CO2:	Evaluate different file allocation strategies and functionalities of operating system
CO3:	Emulate various layered protocols of computer networks

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		2	2	**3**	**2**								3	**3**	
	CO2		2	2	**3**	**2**								3	**3**	
	CO3		2	2	**3**	**2**								3	**3**	
1 = Slight (Low) **2 = Moderate (Medium)** **3-Substantial(High)**																

5. **List of Experiments**

S No	**Program to be executed**	**Lab Cycle**
PART A: Computer Networks LAB		
1	Implement the data link layer framing methods such as character stuffing and bit stuffing.	**Cycle 1**

2	Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.	
3	Implement Dijkstra‘s algorithm to compute the Shortest path thru a graph.	
4	Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm	**Cycle 2**
5	Take an example subnet of hosts. Obtain broadcast tree for it.	
6	Take a 64 bit playing text and encrypt the same using DES algorithm.	
7	Write a program to break the above DES coding	
8	Using RSA algorithm Encrypt a text data and Decrypt the same .	
PART B: Operating systems LAB		
1	Simulate the following CPU scheduling algorithms a) Round Robin b) SJF c) FCFS d) Priority	**Cycle 1**
2	Simulate all file allocation strategies a) Sequential b) Indexed c) Linked	
3	Simulate MVT and MFT	
4	Simulate all File Organization Techniques a) Single level directory b) Two level c) Hierarchical d) DAG	**Cycle 2**
5	Simulate Bankers Algorithm for Dead Lock Avoidance	
6	Simulate Bankers Algorithm for Dead Lock Prevention	
7	Simulate all page replacement algorithms a) FIFO b) LRU c) LFU	
8	Simulate Paging Technique of memory management	
9	Experiments on fork, shared memory and semaphores	

6. Course Delivery Plan:

S No	**Program to be executed**	Tentative dates		DM
		Batch 1	Batch 2	
Part A: Computer Networks LAB				

1	Implement the data link layer framing methods such as character stuffing and bit stuffing.	21-06-17	23-06-2017	5,6
2	Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.	28-06-17	30-06-2017	1,5,6
3	Implement Dijkstra's algorithm to compute the Shortest path thru a graph.	19-07-17	21-07-2017	1,5,6
4	Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm	26-07-17	28-07-2017	1,5,6
5	Take an example subnet of hosts. Obtain broadcast tree for it.	09-08-17	11-08-2017	1,5,6
6	Take a 64 bit playing text and encrypt the same using DES algorithm.	16-08-17	18-08-2017	1,5,6
7	Write a program to break the above DES coding	06-09-17	08-09-2017	1,5,6
8	Using RSA algorithm Encrypt a text data and Decrypt the same.	13-09-17	15-09-2017	1,5,6
Operating systems LAB				
1	Simulate the following CPU scheduling algorithms a) Round Robin b) SJF c) FCFS d) Priority	05-07-17	07-07-2017	1,5,6
2	Simulate all file allocation strategies a) Sequential b) Indexed c) Linked	12-07-17	14-07-2017	5,6
3	Simulate MVT and MFT	02-08-17	04-08-2017	5,6
4	Simulate all File Organization Techniques a) Single level directory b) Two level c) Hierarchical d) DAG	23-08-17 30-08-17	01-09-2017	1,5,6
5	Simulate Bankers Algorithm for Dead Lock Avoidance	20-09-17	22-09-2017	1,5,6
6	Simulate Bankers Algorithm for Dead Lock Prevention	20-09-17	22-09-2017	1,5,6

7	Simulate all page replacement algorithms a) FIFO b) LRU c) LFU	27-09-17	29-10-2017	1,5,6
8	Simulate Paging Technique of memory management	04-10-17	06-10-2017	1,5,6
9	Experiments on fork, shared memory and semaphores	04-10-17	06-10-2017	5,6
LAB Internal Examination		11-10-17	13-10-2017	1,5,6

Delivery Methods (DM):

1. Chalk & Talk 2. ICT Tools 3. Tutorial 4. Assignment/Test/Quiz

5. Laboratory/Field Visit 6. Web based learning.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Signature				
Name of the Faculty	**P Vamsi Naidu/G V Suresh**			

	LESSON PLAN	Date:
	SUBJECT NAME : HUMAN COMPUTER INTERFACE BRANCH: CSE SEM & SECTION: V& A	15/07/2016 To 30/11/2016

S262 – HUMAN COMPUTER INTERACTION

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

UNIT - I

Introduction: Importance of user Interface – definition, importance of good design, benefits of good design. A brief history of Screen design.

The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT – II

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

UNIT - III

Screen Designing : Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

UNIT - IV

Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT - V

Components – text and messages, Icons and images – Multimedia, colors – uses, problems with choosing colors.

Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOK

The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.

REFERENCES

1. Designing the user interface. 3rd Edition Ben Shneidermann, Pearson Education Asia.
2. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.

Pre requisite: Basic knowledge regarding computer, graphics and screen designs

Course Educational Objectives:

- Demonstrate an understanding of guidelines, principles, and theories influencing human computer interaction.
- Recognize how a computer system may be modified to include human diversity.
- Select an effective style for a specific application.
- Design mock ups and carry out user and expert evaluation of interfaces.
- Carry out the steps of experimental design, usability and experimental testing, and evaluation of human computer interaction systems.
- Use the information sources available, and be aware of the methodologies and technologies supporting advances in HCI.

Course Outcomes: After completion of this course a student can able to

CO1: Understand the importance of the Graphical user interface and popularity of the graphics.

CO2: Understand the importance of human characteristics in design and how people interact with computers.

CO3: Students can articulate and apply common design principles for making good decisions in the design of user interfaces.

CO4: Understand various kinds of windows and their characteristics and have an ability to select the proper device based and screen based controls.

CO5: Understand different components that are available in the screens and various interaction devices which are used to interact with the computer.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Human Computer Interaction
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & V sem	Section: B

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			
UNIT –I: Introduction to Graphical User Interface						
1	**Introduction :** Importance of user Interface	15-7-16		2	1	1,3,5,7
2	Overview of user Interface	16-7-16		2	1	
3	Importance of good design	18-7-16		2	1	
4	Benefits of good design.	19-7-16		2	1	
5	A brief history of Screen design	21-7-16		2	1	
6	**The graphical user interface** – popularity of graphics	22-7-16		2	1	
7	the concept of direct manipulation	23-7-16		2	1	
8	graphical system Characteristics	25-7-16		2	1,3	

9	graphical system Characteristics	26-7-16		2	1,3	
10	Web user – Interface popularity	28-7-16		2	1,3	
11	Web user – Interface popularity	29-7-16		2	1	
12	Characteristics- Principles of user interface.	30-7-16		2	1	
13	Characteristics- Principles of user interface.	1-8-16		2	1	
14	**Tutorial-1**	2-8-16				
UNIT –II: Design Process						
15	**Design process** – Human interaction with computers	5-8-16		2	1	1,3,5,7
16	importance of human characteristics	5-8-16		2	1	
17	human consideration	6-8-16		2	1	
18	Human interaction speeds	8-8-16		2	1	
19	Human interaction speeds	9-8-16		2	1	
20	Understanding business junctions.	13-8-16		2	1,3	
21	Understanding business junctions.	16-8-16		2	1	
22	Revision	19-8-16				
23	**Tutorial - II**	19-8-16				
24	**MID – I EXAMS**					
25						
26						
UNIT –III: Screen Designing						
27	**Screen Designing :** Design goals	20-8-16		2	2	1,3,5,7
28	Screen planning and purpose	22-8-16		2	2	
29	Screen planning and purpose	23-8-16		2	2	
30	organizing screen elements	26-8-16		2	2	
31	organizing screen elements	26-8-16		2	2	
32	ordering of screen data and content	27-8-16		2	2	
33	ordering of screen data and content	29-8-16		2	2	
34	screen navigation and flow	30-8-16		2	2	
35	Visually pleasing composition	2-9-16		2	2	
36	amount of information	2-9-16		2	2	

37	Distinctiveness	3-9-16		2	2	
38	focus and emphasis	6-9-16		2	2	
39	Conveying Depth of levels or a Three dimensional appearance	9-9-16		2	2	
40	presentation information simply and meaningfully	9-9-16		2	2	
41	information retrieval on web	10-9-16		2	2	
42	Reading, Browsing, and Searching on the Web	13-9-16		2	2	
43	**I MID EXAMS**	16-9-16				
44		17-9-16				
45		19-9-16				
46	Intranet, extranet design guidelines	20-9-16		2	2	
47	statistical graphics	23-9-16		2	2	
48	Technological consideration in interface design	23-9-16		2	2	
49	Graphical systems, web systems	24-9-16		2	2	
50	Revision	26-9-16				
51	**Tutorial - 3**	27-9-16				
UNIT –IV: Windows						
52	**Windows** – New and Navigation schemes	26-9-16		2	1,2	1,3,5,7
53	Structure of Menus, Functions of Menus	27-9-16		2	1,2	
54	Functions of Menus	30-9-16		2	2	
55	Content of Menus, Formatting Menus	30-9-16		2	2	
56	Phrasing the Menu, Selecting Menu Choices	1-10-16		2	2	
57	Navigating Menus, Kinds of Graphical Menus	3-10-16		2	2	
58	selection of window	4-10-16		2	1,2	
59	Components of Window	7-10-16		2	2	
60	Window Presentation Styles, Types of Windows	7-10-16		2	2	
61	Selection of devices based controls	8-10-16		2	2	
62	Selection of devices based controls	17-10-16		2	2	

63	Selection of screen based controls.	18-10-16		2	1,2	
64	Selection of screen based controls.	21-10-16		2	1,2	
65	**Tutorial - 4**	21-10-16				
UNIT –V:Components & Interaction Devices						
66	**Components** – text and messages	22-10-16		2	1,2	1,3,5,7
67	**Text for web pages**	24-10-16		2	1,2	
68	Icons and increases	25-10-16		2	1,2	
69	Kinds of Icons, characteristics of Icons	28-10-16		2	1,2	
70	Multimedia	28-10-16		2	1,2	
71	Colors uses.	29-10-16		2	1,2	
72	problems with choosing colors	31-10-16		2	1,2	1,3,5,7
73	**Interaction Devices**	1-11-16		2	1,2	
74	Keyboard and function keys	4-11-16		2	1,2	
75	pointing devices	4-11-16		2	1,2	
76	speech recognition	5-11-16		2	1,2	
77	digitization and generation	7-11-16		2	1,2	
78	image and video displays	8-11-16		2	1,2	
79	Drivers.	11-11-16		2	1,2	
80	Revision	11-11-16		2	1,2	
81	**Tutorial – 5**	12-11-16		3,7	8,9	
82	Revision	11-11-16		3,7	8,9	
83	Revision	11-11-16		3,7	8,9	
84	Revision	12-11-16		3,7	8,9	
85	Revision	15-11-16		3,7	8,9	
86	Revision	18-11-16		3,7	8,9	
87	Revision	18-11-16		3,7	8,9	
88	Revision	19-11-16		3,7	8,9	
89	Revision	21-11-16		3,7	8,9	
90	Revision	22-11-16		3,7	8,9	

91	Revision	25-11-16		3,7	8,9	
92	Revision	25-11-16		3,7	8,9	
93	Revision	26-11-16		3,7	8,9	
94	**II MID EXAMS**	28-11-16				5
95		29-11-16				
96		30-11-16				

Resources Used:

TEXT BOOK

1. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.

REFERENCES

2. Designing the user interface. 3rd Edition Ben Shneidermann, Pearson Education Asia.
3. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.

Assessment Summary:

Assessment Task	Weight age (Marks)	**Course Outcomes**				
		CO1	CO2	CO3	CO4	CO5
Assignments	05					
Quiz	--					
Tutorials	--					
Surprise Tests	--					
Mid Exams	20					
Model Exams	--					
End Exam	75					
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
S262	I	×						×	×		×				×		×
	II		×					×	×		×				×		×
	III			×				×	×		×				×		×
	IV				×			×	×		×				×		×
	V					×		×	×		×				×		×

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

	LESSON PLAN	Date:
	SUBJECT NAME : HUMAN COMPUTER INTERFACE BRANCH: CSE SEM & SECTION: V& B	15/07/2016 To 30/11/2016

S262 – HUMAN COMPUTER INTERACTION

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

UNIT - I

Introduction: Importance of user Interface – definition, importance of good design, benefits of good design. A brief history of Screen design.

The graphical user interface – popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user – Interface popularity, characteristics- Principles of user interface.

UNIT – II

Design process – Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, understanding business junctions.

UNIT - III

Screen Designing : Design goals – Screen planning and purpose, organizing screen elements, ordering of screen data and content – screen navigation and flow – Visually pleasing composition – amount of information – focus and emphasis – presentation information simply and meaningfully – information retrieval on web – statistical graphics – Technological consideration in interface design.

UNIT - IV

Windows – New and Navigation schemes selection of window, selection of devices based and screen based controls.

UNIT - V

Components – text and messages, Icons and images – Multimedia, colors – uses, problems with choosing colors.

Interaction Devices – Keyboard and function keys – pointing devices – speech recognition digitization and generation – image and video displays – drivers.

TEXT BOOK

The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.

REFERENCES

3. Designing the user interface. 3rd Edition Ben Shneidermann, Pearson Education Asia.
4. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.

Pre requisite: Basic knowledge regarding computer, graphics and screen designs

Course Educational Objectives:

- Demonstrate an understanding of guidelines, principles, and theories influencing human computer interaction.
- Recognize how a computer system may be modified to include human diversity.
- Select an effective style for a specific application.
- Design mock ups and carry out user and expert evaluation of interfaces.
- Carry out the steps of experimental design, usability and experimental testing, and evaluation of human computer interaction systems.
- Use the information sources available, and be aware of the methodologies and technologies supporting advances in HCI.

Course Outcomes: After completion of this course a student can able to

CO1: Understand the importance of the Graphical user interface and popularity of the graphics.

CO2: Understand the importance of human characteristics in design and how people interact with computers.

CO3: Students can articulate and apply common design principles for making good decisions in the design of user interfaces.

CO4: Understand various kinds of windows and their characteristics and have an ability to select the proper device based and screen based controls.

CO5: Understand different components that are available in the screens and various interaction devices which are used to interact with the computer.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Human Computer Interaction
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & V sem	Section: B

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			
UNIT –I: Introduction to Graphical User Interface						
1	**Introduction :** Importance of user Interface	15-7-16		2	1	1,3,5,7
2	Overview of user Interface	16-7-16		2	1	
3	Importance of good design	18-7-16		2	1	
4	Benefits of good design.	19-7-16		2	1	
5	A brief history of Screen design	21-7-16		2	1	
6	**The graphical user interface** – popularity of graphics	22-7-16		2	1	
7	the concept of direct manipulation	23-7-16		2	1	
8	graphical system Characteristics	25-7-16		2	1,3	

9	graphical system Characteristics	26-7-16		2	1,3	
10	Web user – Interface popularity	28-7-16		2	1,3	
11	Web user – Interface popularity	29-7-16		2	1	
12	Characteristics- Principles of user interface.	30-7-16		2	1	
13	Characteristics- Principles of user interface.	1-8-16		2	1	
14	**Tutorial-1**	2-8-16				
UNIT –II: Design Process						
15	**Design process** – Human interaction with computers	5-8-16		2	1	1,3,5,7
16	importance of human characteristics	5-8-16		2	1	
17	human consideration	6-8-16		2	1	
18	Human interaction speeds	8-8-16		2	1	
19	Human interaction speeds	9-8-16		2	1	
20	Understanding business junctions.	13-8-16		2	1,3	
21	Understanding business junctions.	16-8-16		2	1	
22	Revision	19-8-16				
23	**Tutorial - II**	19-8-16				
24	**MID – I EXAMS**					
25						
26						
UNIT –III: Screen Designing						
27	**Screen Designing :** Design goals	20-8-16		2	2	1,3,5,7
28	Screen planning and purpose	22-8-16		2	2	
29	Screen planning and purpose	23-8-16		2	2	
30	organizing screen elements	26-8-16		2	2	
31	organizing screen elements	26-8-16		2	2	
32	ordering of screen data and content	27-8-16		2	2	
33	ordering of screen data and content	29-8-16		2	2	
34	screen navigation and flow	30-8-16		2	2	
35	Visually pleasing composition	2-9-16		2	2	
36	amount of information	2-9-16		2	2	

37	Distinctiveness	3-9-16		2	2	
38	focus and emphasis	6-9-16		2	2	
39	Conveying Depth of levels or a Three dimensional appearance	9-9-16		2	2	
40	presentation information simply and meaningfully	9-9-16		2	2	
41	information retrieval on web	10-9-16		2	2	
42	Reading, Browsing, and Searching on the Web	13-9-16		2	2	
43	**I MID EXAMS**	16-9-16				
44		17-9-16				
45		19-9-16				
46	Intranet, extranet design guidelines	20-9-16		2	2	
47	statistical graphics	23-9-16		2	2	
48	Technological consideration in interface design	23-9-16		2	2	
49	Graphical systems, web systems	24-9-16		2	2	
50	Revision	26-9-16				
51	**Tutorial - 3**	27-9-16				
UNIT –IV: Windows						
52	**Windows** – New and Navigation schemes	26-9-16		2	1,2	1,3,5,7
53	Structure of Menus, Functions of Menus	27-9-16		2	1,2	
54	Functions of Menus	30-9-16		2	2	
55	Content of Menus, Formatting Menus	30-9-16		2	2	
56	Phrasing the Menu, Selecting Menu Choices	1-10-16		2	2	
57	Navigating Menus, Kinds of Graphical Menus	3-10-16		2	2	
58	selection of window	4-10-16		2	1,2	
59	Components of Window	7-10-16		2	2	
60	Window Presentation Styles, Types of Windows	7-10-16		2	2	
61	Selection of devices based controls	8-10-16		2	2	
62	Selection of devices based controls	17-10-16		2	2	

63	Selection of screen based controls.	18-10-16		2	1,2	
64	Selection of screen based controls.	21-10-16		2	1,2	
65	**Tutorial - 4**	21-10-16				
UNIT –V:Components & Interaction Devices						
66	**Components** – text and messages	22-10-16		2	1,2	1,3,5,7
67	**Text for web pages**	24-10-16		2	1,2	
68	Icons and increases	25-10-16		2	1,2	
69	Kinds of Icons, characteristics of Icons	28-10-16		2	1,2	
70	Multimedia	28-10-16		2	1,2	
71	Colors uses.	29-10-16		2	1,2	1,3,5,7
72	problems with choosing colors	31-10-16		2	1,2	
73	**Interaction Devices**	1-11-16		2	1,2	
74	Keyboard and function keys	4-11-16		2	1,2	
75	pointing devices	4-11-16		2	1,2	
76	speech recognition	5-11-16		2	1,2	
77	digitization and generation	7-11-16		2	1,2	
78	image and video displays	8-11-16		2	1,2	
79	Drivers.	11-11-16		2	1,2	
80	Revision	11-11-16		2	1,2	
81	**Tutorial – 5**	12-11-16		3,7	8,9	
82	Revision	11-11-16		3,7	8,9	
83	Revision	11-11-16		3,7	8,9	
84	Revision	12-11-16		3,7	8,9	
85	Revision	15-11-16		3,7	8,9	
86	Revision	18-11-16		3,7	8,9	
87	Revision	18-11-16		3,7	8,9	
88	Revision	19-11-16		3,7	8,9	
89	Revision	21-11-16		3,7	8,9	
90	Revision	22-11-16		3,7	8,9	

91	Revision	25-11-16		3,7	8,9	
92	Revision	25-11-16		3,7	8,9	
93	Revision	26-11-16		3,7	8,9	
94	**II MID EXAMS**	28-11-16				5
95		29-11-16				
96		30-11-16				

Resources Used:

TEXT BOOK

4. The essential guide to user interface design, Wilbert O Galitz, Wiley DreamaTech.

REFERENCES

5. Designing the user interface. 3rd Edition Ben Shneidermann, Pearson Education Asia.
6. Human – Computer Interaction. ALAN DIX, JANET FINCAY, GRE GORYD, ABOWD, RUSSELL BEALG, PEARSON.

Assessment Summary:

Assessment Task	Weight age (Marks)	**Course Outcomes**				
		CO1	CO2	CO3	CO4	CO5
Assignments	05					
Quiz	--					
Tutorials	--					
Surprise Tests	--					
Mid Exams	20					
Model Exams	--					
End Exam	75					
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
S262	I	×						×	×		×				×		×
	II		×					×	×		×				×		×
	III			×				×	×		×				×		×
	IV				×			×	×		×				×		×
	V					×		×	×		×				×		×

	Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Name	V. Siva Krishna	V. Siva Krishna		Dr. N. Ravi Shankar
Sign with Date				

	LESSON PLAN MICROPROCESSORS AND INTERFACING Branch: CSE Semester & Sections: V & A,B	Date: 15/07/16 To 26/11/16

S312– MICROPROCESSORS AND INTERFACING

Lecture : 4 Periods/week **Internal Marks: 25**

Tutorial : 1 **External Marks: 75**

Credits : 4 **External**

Examination: 3 Hrs

Course Educational Objectives:

• To understand the architecture, programming and addressing modes of Intel 8086.

• To understand various interfacing circuits necessary for various applications

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

CO1: Identify the basic element and functions of microprocessor.

CO2: Describe the architecture of microprocessor and its peripheral devices.

CO3: Demonstrate fundamental understanding on the operation between the microprocessor and its interfacing devices.

CO4: Apply the programming techniques in developing the assembly language program for

Signature of the Faculty **Signature of the HOD**

	Lakireddy Bali Reddy College of Engineering	
	Department of ECE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Microprocessors and Interfacing
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & I (Vsem)	Section: A

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			
UNIT-I						
1	Introduction to Microprocessors-Purpose of Microprocessors	15/07/16		2	2	1,2,3,5,7
2	Different types of Microprocessors, their features and their comparison	16/07/16		2	2	

3	8086 Microprocessor-Architecture (Register Set)	18/07/16		2	1	
4	Memory Segmentation	20/07/16		2	1	
5	**Tutorial-I**	21/07/16		9	9	
6	Special functions of General purpose registers	22/07/16		2	1	
7	8086 flag register and function of 8086 Flags	23/07/16		2	1	
8	Operation of 8086 Processor	25/07/16		2	1	
9	**Tutorial-II**	27/07/16		9	9	
10	Addressing Modes of 8086	28/07/16		2	1	
11	Instruction set of 8086-Data Transfer	29/07/16		2	1	
12	Arithmetic instructions-Binary	30/07/16		2	1	
13	BCD&ASCII Arithmetic instructions	03/08/16		2	1	
14	Logical instructions, Shift instructions	04/08/16		2	1	
15	Rotate, Flag manipulation instructions	05/08/16		2	1,2	
16	Branch instructions-Unconditional	07/08/16		2	1,2	
17	Conditional Branch instructions, Process Control instructions	08/08/16		2	1,2	
18	String manipulation	10/08/16		2	1	
	UNIT-II					
19	Assembler Directives	11/08/16		2	2	
20	Programs using Logical instructions	12/08/16		3	1	1,2,3,5,7
21	Programs using Logical instructions	13/08/16		3	1	
22	**Tutorial III**	17/08/16		9	9	
23	Programs using String instructions	18/08/16		8	1	
24	Programs using branch instructions	19/08/16		2	1	
25	Programs using branch instructions	20/08/16		2	1	
26	Sorting of numbers	22/08/16		3	1	
27	**Tutorial IV**	24/08/16		9	9	
28	Procedures and Macros	26/08/16		2	1	
29	Programs using CALL instructions	27/08/16		2	1	1,2,3,5,7

30	Passing parameters to and from procedures	29/08/16		2	1	
31	Programs to evaluate arithmetic expressions	31/08/16		3	1	
32	Pin Description of 8086	01/09/16		**2**	**2**	
33	Address-Data de-multiplexing	02/09/16		2	1	
34	Min mode operation of 8086	03/09/16		2	1	
35	Min mode operation of 8086	07/09/16		2	1,2	
36	Max. Mode operation of 8086	08/09/16		2	1	
37	Max. Mode operation of 8086	09/09/16		2	2	
UNIT-III						
38	Machine cycles	10/09/16		2	1	
39	T- States	12/09/16		2	1	
40	Bus Cycle operation	14/09/16		2	1,2	1,2,3,5,7
41	Timing diagrams for read operation	15/09/16		2	1,2	
42	**MID-I EXAMS**	16/09/16				5
43		17/09/16				
44		19/09/16				
45	Timing diagrams for write operation	21/09/16		2	1,2	
46	Memory organization	22/09/16		2	1	
47	Memory interfacing Problems	23/09/16		2	1	
48	Memory interfacing Problems	24/09/16		2	1	
49	I/O Interfacing	26/09/16		2	1,2	
50	**Tutorial-V**	28/09/16		9	9	1,2,3,5,7
51	Need for DMA,DMA data transfer Method	29/09/16		2	1	
52	Interfacing with 8237/8257-Pin description of 8257	30/09/16		2	1,2	
53	Interfacing with 8257	01/10/16		2	2	
54	Programs on DMA Data transfer	03/10/16		2	1	
55	**Tutorial-VI**	05/10/16		9	9	
UNIT-IV						
56	8255 PPI – Pin Description	06/10/16		2	1,2	1,2,3,5,7

57	Various modes of operation.	07/10/16		2	1,2	
58	Interfacing problems on Various modes	08/10/16		2	1,2	
59	Interfacing Problems on Various modes	17/10/16		2	1	
60	Interfacing to 8086 Keyboard	19/10/16		2	1	
61	**Tutorial-VII**	20/10/16		9	9	
62	Seven segment Displays	21/10/16		2	1,2	
63	Stepper Motor	22/10/16		2	1	
64	D/A converter interfacing	24/10/16		2	1	
65	A/D converter interfacing	25/10/16		2	1	
66	**Tutorial-VIII**	26/10/16		9	9	
		UNIT –V				
67	Serial data transfer schemes, RS 232C	27/10/16		2	1	
68	8251 USART architecture and pin description	28/10/16		2	1	
69	USART interfacing with 8086	29/10/16		2	1	
70	Serial data Program using USART	31/10/16		2	1	
71	**Tutorial-IX**	02/11/16		9	9	
72	Interrupts: Interrupt structure of 8086, Interrupt Vector table;	03/11/16		2	1	
73	Interrupt service routines	04/11/16		2	1	
74	Programs using interrupts	05/11/16		2	1	
75	Introduction to DOS interrupts	07/11/16		2	1	
76	Introduction to BIOS interrupts	09/11/16		2	1	
77	8259 PIC Architecture and Pin Description	12/11/16		2	1,2	
78	Interfacing 8259 with 8086	14/11/16		2	1	1,2,3,5,7
79	Cascading of interrupt controller and its importance	16/11/16		2	1	
80	Introduction to microcontrollers	17/11/16		2	1,2	
81	Comparison of processor and controller	18/11/16		2	2	
82	**Tutorial-X**	19/11/16		9	9	
83	Revision of Unit-I	21/11/16		3,7	8,9	
84	Revision of Unit-II	23/11/16		3,7	8,9	

85	Revision of Unit-III	24/11/16		3,7	8,9	
86	Revision of Unit-IV	25/11/16		3,7	8,9	
87	Revision of Unit-V	26/11/16		3,7	8,9	
88	**MID-II EXAMS**	28/11/16				5
89		29/11/16				
90		30/11/16				

TEXT BOOKS

1. A.K.Ray and K.M. Bhurchandi, "Advanced Microprocessor and Peripherals", TMH Publishers, 2nd edition.

2. Douglas V. Hall, "Micro Processors & Interfacing", TMH, 2007

REFERENCES

1. J.K.Uffenbeck, "The 8088 and 8086 Micro Processors", PHI, 4th Edition, 2003.

2. Ajay Deshmukh, "Micro Controllers-Theory and Applications", Tata McGraw Hill Publishers.

3. Kenneth J.Ayala, "The 8051 Micro Controller", Cenage Learning Publishers.

	Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Name	R.Harikishan	Dr. M.Suman	Y.Amar Babu	Prof. B. Ramesh Redy
Sign with Date				

	LESSON PLAN MICROPROCESSORS AND INTERFACING	Date: 15/07/16 To 26/11/16
	Branch: CSE **Semester & Sections: V & A,B**	

S312– MICROPROCESSORS AND INTERFACING

Lecture : 4 Periods/week **Internal Marks: 25**

Tutorial : 1 **External Marks: 75**

Credits : 4 **External**

Examination: 3 Hrs

Course Educational Objectives:

• To understand the architecture, programming and addressing modes of Intel 8086.

• To understand various interfacing circuits necessary for various applications

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

CO1: Identify the basic element and functions of microprocessor.

CO2: Describe the architecture of microprocessor and its peripheral devices.

CO3: Demonstrate fundamental understanding on the operation between the microprocessor and its interfacing devices.

CO4: Apply the programming techniques in developing the assembly language program for

Signature of the Faculty **Signature of the HOD**

	Lakireddy Bali Reddy College of Engineering	
	Department of IT	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Microprocessors and Interfacing
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & I (Vsem)	Section: B

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			
UNIT-I						
1	Introduction to Microprocessors-Purpose of Microprocessors	15/07/16		2	2	1,2,3,5,7
2	Different types of Microprocessors, their features and their comparison	16/07/16		2	2	

3	8086 Microprocessor-Architecture (Register Set)	18/07/16		2	1	
4	Memory Segmentation	19/07/16		2	1	
5	**Tutorial-I**	20/07/16		9	9	
6	Special functions of General purpose registers	22/07/16		2	1	
7	8086 flag register and function of 8086 Flags	23/07/16		2	1	
8	Operation of 8086 Processor	25/07/16		2	1	
9	**Tutorial-II**	26/07/16		9	9	
10	Addressing Modes of 8086	27/07/16		2	1	
11	Instruction set of 8086-Data Transfer	29/07/16		2	1	
12	Arithmetic instructions-Binary	30/07/16		2	1	
13	BCD&ASCII Arithmetic instructions	03/08/16		2	1	
14	Logical instructions, Shift instructions	05/08/16		2	1	
15	Rotate, Flag manipulation instructions	07/08/16		2	1,2	
16	Branch instructions-Unconditional	08/08/16		2	1,2	
17	Conditional Branch instructions, Process Control instructions	09/08/16		2	1,2	
18	String manipulation	10/08/16		2	1	
UNIT-II						
19	Assembler Directives	11/08/16				1,3,5,7
20	Programs using Logical instructions	12/08/16				
21	Programs using Logical instructions	13/08/16				
22	**Tutorial III**	16/08/16				
23	Programs using String instructions	17/08/16				
24	Programs using branch instructions	19/08/16				
25	Programs using branch instructions	20/08/16		2	1	
26	Sorting of numbers	22/08/16				
27	Evaluating Arithmetic expressions	23/08/16				
28	**Tutorial IV**	24/08/16		2	1	
29	Procedures and Macros	26/08/16		2	1	

30	Programs using CALL instructions	27/08/16		2	1	
31	Programs to evaluate arithmetic expressions	29/08/16		2	1	
32	Pin Description of 8086	30/08/16				
33	Min mode operation of 8086	31/08/16				
34	Max. Mode operation of 8086	02/09/16				
35		03/09/16				
36		06/09/16				
37	**MID-I EXAMS**	07/09/16				
38		09/09/16				
39		10/09/16				
	UNIT-III					
40	Machine cycles	12/09/16		2	1,2	
41	T- States	14/09/16		2	1,2	
42	Timing diagrams	16/09/16		2	1,2	
43	Memory organization	17/09/16		2	1,2	
44	Memory interfacing Problems	19/09/16				
45		20/09/16				
46	I/O Interfacing	21/09/16				1,3,5,7
47	**Tutorial-V**	23/09/16				
48	Need for DMA. DMA data transfer Method	24/09/16		2	1,2	
49	Interfacing with 8237/8257-Pin description of 8257	26/09/16		2	1,2	
50	Interfacing with 8257	27/09/16				
51	**Tutorial-VI**	28/09/16				
	UNIT-IV					
52	8255 PPI – Pin Description	30/09/16		2	1,2	
53	Various modes of operation.	01/10/16				
54	Interfacing to 8086 Keyboard	03/10/16		2	1,2	1,3,5,7
55	**Tutorial-VII**	04/10/16				
56	Seven segment Displays	05/10/16		2	1,2	
57	Stepper Motor interfacing	07/10/16		2	1,2	

58	D/A converter interfacing	08/10/16		2	1,2	
59	A/D converter interfacing	17/10/16				
60	**Tutorial-VIII**	18/10/16				
		UNIT-V				
61	Serial data transfer schemes, RS 232C	19/10/16		2	1,2	
62	8251 USART architecture and pin description	21/10/16		2	1,2	
63	USART interfacing with 8086	22/10/16				
64	Serial data Program using USART	24/10/16				
65	**Tutorial-IX**	25/10/16				
66	Interrupts: Interrupt structure of 8086, Interrupt Vector table;	26/10/16		2	1	
67	Interrupt service routines	28/10/16		2	1	
68	Introduction to DOS interrupts	29/10/16		2	1	
69	Introduction to BIOS interrupts	31/10/16				
70	8259 PIC Architecture and Pin Description	01/11/16		2	1,2	1,3,5,7
71	Interfacing 8259 with 8086	02/11/16				
72	Cascading of interrupt controller and its importance	04/11/16		2	1	
73	. Introduction to microcontrollers	05/11/16		2	1	
74	Comparison of processor and controller	07/11/16				
75	**Tutorial-X**	08/11/16				
76	Revision	09/11/16				
77	Revision	11/11/16				
78	Revision	12/11/16				
79	Revision	14/11/16				
80	Revision	15/11/16				
81	Revision	16/11/16				
82	Revision	18/11/16				
83	Revision	19/11/16				
84	Revision	21/11/16				
85	Revision	22/11/16				

86	Revision	23/11/16				
87	Revision	25/11/16				
88	Revision	26/11/16				
89	**MID-II EXAMS**	28/11/16				
90		29/11/16				
91		30/11/16				

TEXT BOOKS

1. A.K.Ray and K.M. Bhurchandi, "Advanced Microprocessor and Peripherals", TMH Publishers, 2nd edition.

2. Douglas V. Hall, "Micro Processors & Interfacing", TMH, 2007

REFERENCES

1. J.K.Uffenbeck, "The 8088 and 8086 Micro Processors", PHI, 4th Edition, 2003.

2. Ajay Deshmukh, "Micro Controllers-Theory and Applications", Tata McGraw Hill Publishers.

3. Kenneth J.Ayala, "The 8051 Micro Controller", Cenage Learning Publishers.

	Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**
Name	R.Harikishan	Dr. M.Suman	Y.Amar Babu	Dr. D.Naga Raju
Sign with Date				

	LESSON PLAN	Date
	OPERATING SYSTEMS Branch: CSE Semester & Section: V & B	15/07/2016 To 26/11/2016

S284 – OPERATING SYSTEMS

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

UNIT - I

Introduction Computer-System Organization, Computer-System Architecture, Operating System Structure, Operating-System Operations, Process Management, Memory Management, Storage Management, Protection and Security, Distributed Systems, Special-Purpose Systems

Operating-System Structures- Operating-System Services , User Operating-System Interface, System Calls , Types of System Calls, System Programs , Operating-System Design and Implementation, Operating-System Structure, Virtual Machines, Operating-System Generation, System Boot.

UNIT - II

Processes-Concept, Process Scheduling, Operations on Processes, Inter-process Communication, Examples of IPC Systems, Communication in Client-Server Systems

Multithreaded Programming- Multithreading Models, Thread Libraries, Threading Issues.

Process Scheduling: Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling.

UNIT – III

Synchronization-The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization Examples, and Atomic Transactions.

Deadlocks- System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention. Deadlock Avoidance, Deadlock Detection, Recovery from deadlock.

UNIT – IV

Memory Management Strategies Swapping, Contiguous Memory Allocation, Paging, Structure of the Page Table, Segmentation.

Virtual Memory Management Demand Paging, Page Replacement, Allocation of Frames, Thrashing, Memory-Mapped Files, Allocating Kernel Memory.

UNIT-V

Virtual Memory Management Demand Paging, Page Replacement, Allocation of Frames, Thrashing, Memory-Mapped Files, Allocating Kernel Memory.

Implementing File System: File-System Structure, File-System Implementation, Directory Implementation, Allocation Methods, Free-Space Management, Efficiency and Performance, Recovery.

TEXT BOOK

1. Silberschatz & Galvin, 'Operating System Concepts', 7th edition, Wiley.

REFERENCES

1. William Stallings-"Operating Systems"- 5th Edition - PHI

2. Charles Crowley, 'Operating Systems: A Design-Oriented Approach', TMH Publications, 1998 edition.

3. Andrew S.Tanenbaum, 'Modern Operating Systems', 2nd edition, 1995, PHI.

Pre requisite: Knowledge of system and its resources fur running a process.

Course Educational Objectives:

- ✓ The main objective of the course is to provide basic knowledge of computer operating system structure and functioning.
- ✓ Students able to understand how Operating Systems evolved with advent of computer architecture. Comprehend the different CPU scheduling algorithms, page replacement algorithms and identify best one.
- ✓ Able to understand and find the best mechanism for handling deadlocks. Also understand File and directory management.

Course Outcomes

- ✓ After successful completion of this course student shall able to,

- ✓ Understand the Operating System (OS) in different viewpoints. Learn the basic reasons for necessity of an OS in our computer and what necessary services it provides to the computer users. Also know the primary concepts of different operating systems structure.
- ✓ Understand the concept of process management, CPU scheduling algorithms and able to identify which CPU scheduling algorithm is efficient.
- ✓ Understand the importance of synchronization and how to handle deadlocks.
- ✓ Know how memory management strategies such as paging and segmentation.
- ✓ Appreciate concepts of virtual memory, demand paging and page replacement algorithms. Comprehend and analyze the importance of different file structures that are used in file storage system.
- ✓ Learn the basic concepts of directory implementation, free-space management and file recovery.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome Based Lesson Plan	
	Academic year: 2016-17	Course: Operating Systems
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & I (V Semester)	Section: B

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			
UNIT-I: Introduction &Operating-System Structures						
1	Introduction to Operating Systems	15/07/2016		2	1	1,3,5,7
2	Evolution Operating Systems	15/07/2016		2	1	
3	Computer-System Organization	19/07/2016		2	1	
4	Computer-System Architecture	20/07/2016		2	1	
5	Operating System Structures	21/07/2016		2	1	
6	Operating System Structures (Continued...)	22/07/2016		2	1	

7	Operating-System Operations	22/07/2016		2	1	
8	Process Management	26/07/2016		2	1,2	
9	Memory Management	27/07/2016		2	1	
10	Storage Management	28/07/2016		2	1,9	
11	Protection and Security	29/07/2016		2	1,9	
12	Distributed Systems	29/07/2016		2	1,9	
13	Special-Purpose Systems	02/08/2016		2	1,9	
14	Operating-System Services	03/08/2016		2	1,9	
15	User Operating-System Interface	04/08/2016		2	1,9	
16	Difference between CLI and GUI	05/08/2016		2	1,9	
17	System Calls	05/08/2016		2	1,9	
18	Types of System Calls	09/08/2016		2	1	
19	System Programs	10/08/2016		2	1	
20	Operating-System Design and Implementation	11/08/2016		2	1,9	
21	Operating-System Design and Implementation (Continued...)	12/08/2016		2	1,9	
22	Virtual Machines	12/08/2016		2	1,9	
23	Operating-System Generation and System Boot	16/08/2016		2	1,9	
24	**Tutorial – I**	17/08/2016				
25	**Tutorial – II**	18/08/2016				
UNIT –II: Processes-Concept and **Multithreaded Programming** and **Process Scheduling**						
26	Introduction to Processes in Operating Systems	19/08/2016		2	1,2,9	
27	Explanation about Process State Diagram	19/08/2016		2	1,9	
28	Process Scheduling	23/08/2016		2	1,9	
29	Operations on Processes	24/08/2016		2	1,9	
30	Inter-process Communication	25/08/2016		2	1	
31	Inter-process Communication (Continued...)	26/08/2016		2	1	
32	Examples of IPC Systems	26/08/2016		2	1,9	

33	Communication in Client-Server Systems	30/08/2016		2	1,9	1,3,5,7
34	Introduction Multithreading Programming	31/08/2016		2	1,9	
35	Multithreading Models	01/09/2016		2	1,9	
36	Thread Libraries	02/09/2016		2	1,9	
37	Thread Libraries (Continued...)	02/09/2016		2	1,9	
38	Threading Issues	06/09/2016		2	1,9	
39	Introduction Process Scheduling	07/09/2016		2	1,9	
40	Scheduling Criteria	08/09/2016		2	1	
41	Scheduling Algorithms	09/09/2016		2	1	
42	Scheduling Algorithms (Continued...)	09/09/2016		2	1	
43	Multiple-Processor Scheduling	13/09/2016		2	1	
44	**Tutorial – III**	14/09/2016				
45	**Tutorial – IV**	15/09/2016				
46	MID – I EXAMS	16/09/2016				
47		17/09/2016				
48		18/09/2016				
49		19/09/2016				
UNIT –III: Synchronization and Deadlocks						
50	The Critical-Section Problem	20/09/2016		2	1	1,3,5,7
51	Peterson's Solution	21/09/2016		2	1	
52	Synchronization Hardware	22/09/2016		2	1,9	
53	Semaphores	23/09/2016		2	1,9	
54	Classic Problems of Synchronization	23/09/2016		2	1,9	
55	Monitors	27/09/2016		2	1,9	
56	Synchronization Examples	28/09/2016		2	1,9	
57	Atomic Transactions	29/09/2016		2	1,9	
58	System Model	30/09/2016		2	1,9	
59	Deadlock Characterization	30/09/2016		2	1,9	
60	Methods for Handling Deadlocks	04/10/2016		2	1,9	
61	Deadlock Prevention	05/10/2016		2	1,9	

62	Deadlock Avoidance	06/10/2016		2	1,9	
63	Deadlock Detection	07/10/2016		2	1,9	
64	Recovery from deadlock	07/10/2016		2	1,9	
65	**Tutorial – V**	18/10/2016				
UNIT –IV: Memory Management Strategies and **Virtual Memory Management**						
66	Swapping	19/10/2016		2	1,9	1,3,5,7
67	Contiguous Memory Allocation	20/10/2016		2	1,9	
68	Paging	21/10/2016		2	1,9	
69	Structure of the Page Table	21/10/2016		2	1,9	
70	Segmentation	25/10/2016		2	1,9	
71	Demand Paging	26/10/2016		2	1,9	
72	Page Replacement	27/10/2016		2	1,9	
73	Allocation of Frames	28/10/2016		2	1,9	
74	Thrashing	28/10/2016		2	1,9	
75	Memory-Mapped Files	01/11/2016		2	1,9	
76	Allocating Kernel Memory	02/11/2016		2	1,9	
77	**Tutorial – VI**	03/11/2016				
UNIT –V: File-System and **Implementing File System**						
78	The Concept of a File	04/11/2016		2	1	1,3,5,7
79	Access Methods	04/11/2016		2	1	
80	Directory Structure	08/11/2016		2	1	
81	File-System Mounting	09/11/2016		2	1	
82	File-System Mounting (Continued...)	10/11/2016		2	1	
83	File Sharing	11/11/2016		2	1	
84	Protection	11/11/2016		2	1	
85	File-System Structure	15/11/2016		2	1	
86	File-System Implementation	16/11/2016		2	1	
87	Directory Implementation	17/11/2016		2	1	

88	Allocation Methods	18/11/2016		2	1	
89	Allocation Methods (Continued...)	18/11/2016		2	1	
90	Free-Space Management	22/11/2016		2	1	
91	Efficiency and Performance	23/11/2016		2	1	
92	Recovery	24/11/2016		2	1	
93	**Tutorial – VII**	25/11/2016				
94	**Tutorial – IIX**	25/11/2016				
95	MID-II EXAMS	28/11/2016				
96		29/11/2016				
97		30/11/2016				

Resources Used:

TEXT BOOKS

1. Silberschatz & Galvin, 'Operating System Concepts', 7th edition, Wiley.

REFERENCES

1. William Stallings-"Operating Systems"- 5th Edition - PHI

2. Charles Crowley, 'Operating Systems: A Design-Oriented Approach', TMH Publications, 1998 edition.

3. Andrew S.Tanenbaum, 'Modern Operating Systems', 2nd edition, 1995, PHI.

Asessment Summary:

Assessment Task	Weight age (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											PSO's					
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
S284	I	×					L	L	M										M					S
	II		×				M	L	L										L					S
	III			×			M	L	L										M	M				S
	IV				×		L													M				S
	V					×	L																	S

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	P Vamsi Naidu			Dr. N. Ravi Shankar
Sign with Date				

	LESSON PLAN	Date: 15/07/2016
	Sub. Name : THEORY OF COMPUTATION Branch: CSE Semester& Sections: V&B	To 26/11/2016

S401 – THEORY OF COMPUTATION

Lecture	**: 4 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**: 1**	**External Marks**	**: 75**
Credits	**: 43**	**External Examination**	**: 3 Hrs**

UNIT - I

Introduction to Finite Automata

strings, and languages, deterministic finite automaton and non deterministic finite automaton, transition diagrams , NFA with ϵ-transitions - Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without ϵ-transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSM's, Finite Automata with output- Moore and Melay machines.

UNIT - II

Regular Expressions: Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets.

UNIT - III

Context Free Grammar: Regular grammars-right linear and left linear grammars, Context free grammar, derivation trees, Right most and leftmost derivation of strings, Ambiguity in context free grammars.

Minimization of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL

UNIT - IV

Push Down Automata: Push down automata, definition, model, acceptance of CFL,

Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA and Interco version.

UNIT - V

Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, Techniques of Turing Machine Construction Undesirability: Properties of Recursive and Recursively Enumerable Languages; Universal Turing Machines (without any reference to undecidable problems), undesirability of posts. Correspondence problem, The Chomsky Hierarchy: Regular grammars, unrestricted grammars, Context sensitive languages.

TEXT BOOKS

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education
2. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.

REFERENCES

1. Introduction to languages and the Theory of Computation, John C Martin, TMH

2. "Elements of Theory of Computation", Lewis H.P. & Papadimition C.H. Pearson /PHI.

Course Educational objectives:

Students undergoing this course are expected to:

CEO1: Basic understanding of the notion of a regular set and its representation by DFA's, NFA's, and regular expressions.

CEO2: To study abstract models of information processing machines and limits of digital computation

CEO3: Basic understanding of the notion of a context-free language and its representation by context-free grammars and push-down automata.

.

Course Outcomes:

After completion of this course student shall able to,

CO1: Able toUnderstand the functioning of Finite-State Machines, Deterministic FiniteState Automata and Nondeterministic Finite-State Automata.

CO2: Able to Create Automata to accept strings from various simple languages.

CO3: Able to Discuss the different languages like Regular, Context-Free and ContextSensitive languages.

CO4: Able to Convert from Push Down Automata to Context –Free Grammars and ViceVersa

CO5: Able to Design the Turing Machines and understanding of the notion of an undecidable problems.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Theory Of Computation
	Programme: B.Tech	Unit No: 1 to 5
	Year &Sem: III & V	Section: A

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			
UNIT –I: INTRODUCTION TO FINITE AUTOMATA						
1	Fundamentals	16-7-16		2	1	1,2,3,5,7
2	Introduction to Finite Automata	18-7-16		2	1	
3	Finite automaton model	20-7-16		2	1	
4	Finite automaton model	21-7-16		9	1	
5	Time complexity	22-7-16		2	1	
6	Acceptance of Strings and languages	23-7-16		2	1	

7	Tutorial-1	25-7-16		9	9	
8	Deterministic finite automaton	27-7-16		2	1	
9	Non deterministic finite automaton, transition diagrams	28-7-16		2	1,9	
10	NFA with ϵ-transitions	29-7-16		2	1	
11	Significance, acceptance of languages	30-7-16		2	1,9	
12	Conversions and Equivalence: Equivalence between NFA with and without ϵ-transitions	1-8-16		2	1	
13	NFA to DFA conversion	3-8-16		2	1,9	
14	Minimization of FSM	4-8-16		2	1	
15	Equivalence between two FSM's	5-8-16		2	1,9	
16	Finite Automata with output- Moore and Melay machines.	6-8-16		2	1	
17	Tutorial-2	8-8-16		9	9	
UNIT –II: REGULAR EXPRESSIONS						
18	Regular Expressions	10-8-16		2	1	1,2,3,5,7
19	Regular Languages	11-8-16		2	1,9	
20	Regular Sets	12-8-16		3	1,9	
21	Examples	13-8-16		2	1,9	
22	Constructing Finite Automata for a given Regular expression	15-8-16		2	1,9	
23	Examples	17-8-16		3	1,9	
24	Tutorial-3	18-8-16		9	1,9	
25	Construction of FA to RE	19-8-16		2	1,9	
26	Examples	20-8-16		2	1,9	
27	Pumping Lemma Of Regular Sets	22-8-16		2	1,9	
28	Examples	24-8-16		2	1,9	
29	Closure properties of regular sets	25-8-16		2	1,9	
30	Example	26-8-16		3	1,9	

31	Tutorial-4	27-8-16		9	9	
UNIT – III CONTEXT FREE GRAMMAR						
32	Regular Grammars	29-8-16		2	1	1,2,3,5,7
33	Right Linear Grammars	31-8-16		2	1	
34	Left Linear Grammars	1-9-16		2	1	
35	Example	2-9-16		3	1	
36	Context Free Grammar	3-9-16		2	1,9	
37	Example	5-9-16		3	1	
38	Derivation Trees	7-9-16		2	1,9	
39	RMD of Strings	8-9-16		3	1,9	
40	LMD of Strings	9-9-16		9	1,9	
41	Tutorial-5	10-9-16		2	1,9	
42	Ambiguity in Context Free Grammars	12-9-16		2	1,9	
43	Chomsky Normal Form	14-9-16		3	1,9	
44	Examples	15-9-16		2	1,9	
45	Greiback Normal Form	15-9-16		2	1,9	
46	MID-I	16-9-16				5
47		17-9-16				
48		19-9-16				
49	Example	21-9-16		3	1,9	1,2,3,5,7
50	Pumping Lemma for CFL	22-9-16		2	1,9	
51	Closure Properties of CFL	23-9-16		3	1,9	
52	Tutorial-6	24-9-16		9	1,9	
UNIT –IV: PUSH DOWN AUTOMATA						
53	Introduction to PDA	26-9-16		2	1,9	1,2,3,5,7
54	Definition of PDA	28-9-16		2	1,9	
55	PDA model	29-9-16		2	1,9	
56	Examples	30-9-16		3	1,9	
57	Acceptance of CFL	1-10-16		2	1,9	
58	Acceptance by final state	3-10-16		2	1,9	

59	Tutorial-7	5-10-16		9	1,9	
60	Acceptance by empty stack	6-10-16		2	1,9	
61	Equivalence of CFL and PDA	7-10-16		2	1,9	
62	Examples	8-10-16		3	1,9	
63	Interco version	17-10-16		2	1,9	
64	Example	19-10-16		3	1,9	
65	Tutorial-8	20-10-16		9		
UNIT – V TURING MACHINES						
66	Introduction to TM	21-10-16		2	1,9	
67	The Turing Machine Model	22-0-16		2	1,9	
68	Computable Languages and functions	24-10-16		2	1,9	
69	Techniques of TM construction	26-10-16		2	1,9	
70	Un-desirability: Properties of recursive and Recursively Enumerable Languages	27-10-16		3	1,9	
71	Tutorial-9	28-10-16		9	1,9	1,2,3,5,7
72	Universal TM	29-10-16		2	1,9	
73	Un-desidability of posts-Correspondence problem	31-10-16		2	1,9	
74	The Chomsky Hierarchy	2-11-16		3	1,9	
75	Regular Grammars	3-11-16		2	1,9	
76	Unrestricted grammars	4-11-16		2	1,9	
77	Context Sensitive languages	5-11-16		2	1,9	
78	Examples	7-11-16		3	1,9	
79	Tutorial-10	9-11-16		9	1,9	
80	Revision	10-11-16		3,7	8,9	
81	Revision	11-11-16		3,7	8,9	1,2,3,5,7
82	Revision	12-11-16		3,7	8,9	
83	Revision	14-11-16		3,7	8,9	
84	Revision	16-11-16		3,7	8,9	
85	Revision	16-11-16		3,7	8,9	
86	Revision	17-11-16		3,7	8,9	

87	Revision	18-11-16		3,7	8,9	
88	Revision	19-11-16		3,7	8,9	
89	Revision	21-11-16		3,7	8,9	
90	Revision	23-11-16		3,7	8,9	
91	Revision	24-11-16		3,7	8,9	
92	Revision	25-11-16		3,7	8,9	
93	Revision	26-11-16		3,7	8,9	
94	MID-II	28-11-16				5
95		29-11-16				
96		30-11-16				

Resources Used:

TEXT BOOKS

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education
2. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.

REFERENCES

1. Introduction to languages and the Theory of Computation, John C Martin, TMH

2. "Elements of Theory of Computation", Lewis H.P. & Papadimition C.H. Pearson /PHI.

Assessment Summary:

Assessment Task	Weight age (Marks)	Course Outcomes				
		CO1	CO2	CO3	CO4	CO5
Assignments	5					
Quizes						
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											PSO's					
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
S181	I	×					M		L												S			
	II		×				M	L													S			
	III			×			M	L													S			
	IV				×		M	L													S			
	V					×	M	L													S			

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	l v Krishna Rao			Dr. N. Ravi Shankar
Sign with Date				

	LESSON PLAN	Date: 15/07/2016
	Sub. Name : THEORY OF COMPUTATION Branch: CSE Semester& Sections: V&A	To 26/11/2016

S401 – THEORY OF COMPUTATION

Lecture	**: 4 Periods/week**	**Internal Marks**	**: 25**
Tutorial	**: 1**	**External Marks**	**: 75**
Credits	**: 43**	**External Examination**	**: 3 Hrs**

UNIT - I

Introduction to Finite Automata

strings, and languages, deterministic finite automaton and non deterministic finite automaton, transition diagrams , NFA with ϵ-transitions - Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without ϵ-transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSM's, Finite Automata with output- Moore and Melay machines.

UNIT - II

Regular Expressions: Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets.

UNIT - III

Context Free Grammar: Regular grammars-right linear and left linear grammars, Context free grammar, derivation trees, Right most and leftmost derivation of strings, Ambiguity in context free grammars.

Minimization of Context Free Grammars. Chomsky normal form, Greiback normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL

UNIT - IV

Push Down Automata: Push down automata, definition, model, acceptance of CFL,

Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA and Interco version.

UNIT - V

Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, Techniques of Turing Machine Construction Undesirability: Properties of Recursive and Recursively Enumerable Languages; Universal Turing Machines (without any reference to undecidable problems), undesirability of posts. Correspondence problem, The Chomsky Hierarchy: Regular grammars, unrestricted grammars, Context sensitive languages.

TEXT BOOKS

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education
2. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.

REFERENCES

1. Introduction to languages and the Theory of Computation, John C Martin, TMH

2. "Elements of Theory of Computation", Lewis H.P. & Papadimition C.H. Pearson /PHI.

Course Educational objectives:

Students undergoing this course are expected to:

CEO1: Basic understanding of the notion of a regular set and its representation by DFA's, NFA's, and regular expressions.

CEO2: To study abstract models of information processing machines and limits of digital computation

CEO3: Basic understanding of the notion of a context-free language and its representation by context-free grammars and push-down automata.

.

Course Outcomes:

After completion of this course student shall able to,

CO1: Able toUnderstand the functioning of Finite-State Machines, Deterministic FiniteState Automata and Nondeterministic Finite-State Automata.

CO2: Able to Create Automata to accept strings from various simple languages.

CO3: Able to Discuss the different languages like Regular, Context-Free and ContextSensitive languages.

CO4: Able to Convert from Push Down Automata to Context –Free Grammars and ViceVersa

CO5: Able to Design the Turing Machines and understanding of the notion of an undecidable problems.

	Lakireddy Bali Reddy College of Engineering	
	Department of CSE	
	Outcome based lesson plan	
	Academic year: 2016-17	Course: Theory Of Computation
	Programme: B.Tech	Unit No: 1 to 5
	Year &Sem: III & V	Section: A

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			
UNIT –I: INTRODUCTION TO FINITE AUTOMATA						
1	Fundamentals	16-7-16		2	1	1,2,3,5,7
2	Introduction to Finite Automata	18-7-16		2	1	
3	Finite automaton model	20-7-16		2	1	
4	Finite automaton model	21-7-16		9	1	
5	Time complexity	22-7-16		2	1	
6	Acceptance of Strings and languages	23-7-16		2	1	

7	Tutorial-1	25-7-16		9	9	
8	Deterministic finite automaton	27-7-16		2	1	
9	Non deterministic finite automaton, transition diagrams	28-7-16		2	1,9	
10	NFA with ϵ-transitions	29-7-16		2	1	
11	Significance, acceptance of languages	30-7-16		2	1,9	
12	Conversions and Equivalence: Equivalence between NFA with and without ϵ-transitions	1-8-16		2	1	
13	NFA to DFA conversion	3-8-16		2	1,9	
14	Minimization of FSM	4-8-16		2	1	
15	Equivalence between two FSM's	5-8-16		2	1,9	
16	Finite Automata with output- Moore and Melay machines.	6-8-16		2	1	
17	Tutorial-2	8-8-16		9	9	
UNIT –II: REGULAR EXPRESSIONS						
18	Regular Expressions	10-8-16		2	1	1,2,3,5,7
19	Regular Languages	11-8-16		2	1,9	
20	Regular Sets	12-8-16		3	1,9	
21	Examples	13-8-16		2	1,9	
22	Constructing Finite Automata for a given Regular expression	15-8-16		2	1,9	
23	Examples	17-8-16		3	1,9	
24	Tutorial-3	18-8-16		9	1,9	
25	Construction of FA to RE	19-8-16		2	1,9	
26	Examples	20-8-16		2	1,9	
27	Pumping Lemma Of Regular Sets	22-8-16		2	1,9	
28	Examples	24-8-16		2	1,9	
29	Closure properties of regular sets	25-8-16		2	1,9	
30	Example	26-8-16		3	1,9	

31	Tutorial-4	27-8-16		9	9	
UNIT – III CONTEXT FREE GRAMMAR						
32	Regular Grammars	29-8-16		2	1	1,2,3,5,7
33	Right Linear Grammars	31-8-16		2	1	
34	Left Linear Grammars	1-9-16		2	1	
35	Example	2-9-16		3	1	
36	Context Free Grammar	3-9-16		2	1,9	
37	Example	5-9-16		3	1	
38	Derivation Trees	7-9-16		2	1,9	
39	RMD of Strings	8-9-16		3	1,9	
40	LMD of Strings	9-9-16		9	1,9	
41	Tutorial-5	10-9-16		2	1,9	
42	Ambiguity in Context Free Grammars	12-9-16		2	1,9	
43	Chomsky Normal Form	14-9-16		3	1,9	
44	Examples	15-9-16		2	1,9	
45	Greiback Normal Form	15-9-16		2	1,9	
46	MID-I	16-9-16				5
47		17-9-16				
48		19-9-16				
49	Example	21-9-16		3	1,9	1,2,3,5,7
50	Pumping Lemma for CFL	22-9-16		2	1,9	
51	Closure Properties of CFL	23-9-16		3	1,9	
52	Tutorial-6	24-9-16		9	1,9	
UNIT –IV: PUSH DOWN AUTOMATA						
53	Introduction to PDA	26-9-16		2	1,9	1,2,3,5,7
54	Definition of PDA	28-9-16		2	1,9	
55	PDA model	29-9-16		2	1,9	
56	Examples	30-9-16		3	1,9	
57	Acceptance of CFL	1-10-16		2	1,9	
58	Acceptance by final state	3-10-16		2	1,9	

59	Tutorial-7	5-10-16		9	1,9	
60	Acceptance by empty stack	6-10-16		2	1,9	
61	Equivalence of CFL and PDA	7-10-16		2	1,9	
62	Examples	8-10-16		3	1,9	
63	Interco version	17-10-16		2	1,9	
64	Example	19-10-16		3	1,9	
65	Tutorial-8	20-10-16		9		
UNIT – V TURING MACHINES						
66	Introduction to TM	21-10-16		2	1,9	
67	The Turing Machine Model	22-0-16		2	1,9	
68	Computable Languages and functions	24-10-16		2	1,9	
69	Techniques of TM construction	26-10-16		2	1,9	
70	Un-desirability: Properties of recursive and Recursively Enumerable Languages	27-10-16		3	1,9	
71	Tutorial-9	28-10-16		9	1,9	1,2,3,5,7
72	Universal TM	29-10-16		2	1,9	
73	Un-desidability of posts-Correspondence problem	31-10-16		2	1,9	
74	The Chomsky Hierarchy	2-11-16		3	1,9	
75	Regular Grammars	3-11-16		2	1,9	
76	Unrestricted grammars	4-11-16		2	1,9	
77	Context Sensitive languages	5-11-16		2	1,9	
78	Examples	7-11-16		3	1,9	
79	Tutorial-10	9-11-16		9	1,9	
80	Revision	10-11-16		3,7	8,9	
81	Revision	11-11-16		3,7	8,9	1,2,3,5,7
82	Revision	12-11-16		3,7	8,9	
83	Revision	14-11-16		3,7	8,9	
84	Revision	16-11-16		3,7	8,9	
85	Revision	16-11-16		3,7	8,9	
86	Revision	17-11-16		3,7	8,9	

87	Revision	18-11-16		3,7	8,9	
88	Revision	19-11-16		3,7	8,9	
89	Revision	21-11-16		3,7	8,9	
90	Revision	23-11-16		3,7	8,9	
91	Revision	24-11-16		3,7	8,9	
92	Revision	25-11-16		3,7	8,9	
93	Revision	26-11-16		3,7	8,9	
94	MID-II	28-11-16				5
95		29-11-16				
96		30-11-16				

Resources Used:

TEXT BOOKS

1. "Introduction to Automata Theory Languages and Computation". Hopcroft H.E. and Ullman J. D. Pearson Education
2. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.

REFERENCES

1. Introduction to languages and the Theory of Computation, John C Martin, TMH

2. "Elements of Theory of Computation", Lewis H.P. & Papadimition C.H. Pearson /PHI.

Assessment Summary:

Assessment Task	Weight age (Marks)	Course Outcomes				
		CO1	CO2	CO3	CO4	CO5
Assignments	5					
Quizes						
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											PSO's					
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
S181	I	×					M		L												S			
	II		×				M	L													S			
	III			×			M	L													S			
	IV				×		M	L													S			
	V					×	M	L													S			

	Instructor	Course Coordinator	Module Coordinator	HOD
Name	T.N.V.S Praveen			Dr. N. Ravi Shankar
Sign with Date				