	LESSON PLAN
	DEPARTMENT: CSE **PROGRAM:** B.Tech **COURSE:** DESIGN AND ANALYSIS OF ALGORITHMS **Semester& Sections:** V & A-sec **Academic year**: 2017-18

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

2. Course Educational objectives:

Students undergoing this course are expected to:

Identify the fundamental concepts of various algorithm design techniques. Make the students familiar to conduct performance evaluation of algorithms. Expertise the students with the various existing algorithm design techniques. Motivate the students to design new algorithms for various problems.

3. Course Outcomes:

After the completion of the course, students should be able to

CO1: Identify the basic properties and analysis methods of algorithms and design divide and conquer paradigm for solving a few example problems and analyze them.

CO2:Design Greedy algorithms for knapsack problem, minimum cost spanning tree,single source shortest path problem and analyze them.

CO3:Apply dynamic programming paradigm to solve travelling sales person problem,0/1 knapsack problem,Optimal binary search tree.

CO4:Apply traversal methods on search trees and search methods on graphs and backtracking search methods on state space trees for few example problems.

CO5:Analyse branch and Bound search methods through problems such as 0/1 knapsack problem,Travelling sales personn problem and evaluate P ,NP,NP hard,NP complete class of problems and algorithms.

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
S181	CO1	3	3	2										3		
	CO2	2	3	1										3		
	CO3	2	3	1										3		
	CO4	2	3	1										1		
	CO5	2	3	1										1		
1 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

5.Course Delivery Plan

S.NO	TOPIC TO BE COVERED	Number of classes		Date	DM
		As per schedule	Taken		
UNIT-I					
1	Introduction	1			1
2	Algorithm specifications	1			1
3	Space Complexity	1			1
4	Time complexity	1			1
5	Asymptotic Notations	1			1
6	Tutorial-1	1			3
7	Divide &Conquer General method	1			1
8	Binary Search	1			1
9	Time complexity	1			1
10	Finding Maximun and Minimum	1			1
11	Time complexity	1			1
12	Merge sort	1			1
13	Time complexity	1			1

14 15	Quick sort Time complexity	1 1			1 1
16	Tutorial-2	1			3
	NUMBER OF CLASSES	16			
UNIT-II					
17	Greedy Method General method	1			1
18	Knapsack problem	1			1
19	Examples	1			1
20	Job –Sequencing with deadlines	1			1
21	Examples	1			1
22	Minimum cost spanning tree-prims algorithm	1			1
23	Krushkals algorithm	1			1
24	Optimal Storage on Tapes	1			1
25	Optimal Merge Pattern	1			1
26	Single source Shortest paths	1			1
27	Example	1			1
28	Tutorial-3	1			3
	NUMBER OF CLASSES	12			
29	Mid-1				
30					
31					
32					
UNIT-III					
33	Dynamic Programming-General method	1			1
34	Multistage Graph	1			1
35	All pairs Shortest path	1			1
36	Single source Shortest path	1			1
37	Example	1			1

38 39	Optimal Binary Search Trees Example	1 1			1 1
40	0/1 Knapsack	1			1
41	Examples	1			1
42	Reliabilty Design	1			1
43	Travelling Salesman Problem	1			1
44	Tutorial-4	1			3
	NUMBER OF CLASSES	12			
UNIT-IV					
45	Back tracking –General method	1			1
46	The 8-Queens Problem	1			1
47	Sum of Subsets	1			1
48	Examples	1			1
49	Graph Coloring	1			1
50	Hamiltonian cycle	1			1
51	Tutorial-5	1			3
52	Branch and Bound –method	1			1
53	0/1 Knapsack Problem	1			1
54	Examples	1			1
55	Travelling Sales person	1			1
56	Example	1			1
57	Tutorial-6	1			3
	NUMBER OF CLASSES	13			
UNIT-V					
58	NP hard and NP complete- Basic concepts	1			1
59	Cook's Theorem	1			1
60	NP-hard Graph Problems	1			1
61	Examples	1			1
62	An Unrelated Puzzle	1			1

63 64	Binomial Queues Examples	1 1			1 1
65	Skew Heaps	1			1
66	Fibonacci Heaps	1			1
67	Splay Trees	1			1
68	Tutorial-7	1			3
	NUMBER OF CLASSES	11			
68	MID-II				
69					
70					
71					

Delivery Methods (DM):

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

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	T.V.NAGARAJU			Dr. N. Ravi Shankar

PRINCIPAL

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

COURSE HANDOUT

PROGRAM : B.Tech., V-Sem., CSE, section- A & B

ACADEMIC YEAR : 2017-18

COURSE NAME & CODE : Computer Networks & S168

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : Dr. Ch. V. Nrayana

COURSE COORDINATOR : Dr. Ch. V. Nrayana

COURSE OBJECTIVE: This course provides an overview of network hardware and software for different computer networks. It also gives knowledge about the design issues and protocols of data link layer, network layer, transport layer and application layer of OSI/TCP/IP reference models. The course also introduces routing, congestion control, flow control algorithms and Domain Name System to design secure computer networks.

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

CO	Statement At the end of the course, student will be able to	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	Analyze need of network hardware and software for different computer networks	2												3		
2	Solve design issues and implement protocols at data link layer	2		3	3									3		
3	Realize routing and congestion control algorithms at network layer	2		3	3									3		
4	Classify services and implement TCP/UDP protocols at transport layer	2		3	3									3		
5	Design secure computer network with various protocols			3	3				2					3	2	1

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

BOS APPROVED TEXT BOOKS:

1 Andrews S. Tanenbaum, "Computer Networks", Fourth Edition, PHI, 2002.

BOS APPROVED REFERENCE BOOKS:

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

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT-I: Introduction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	20-06-17			
2.	Use of Computer Networks	1	22-06-17			
3.	Network Hardware LAN, WAN, MAN	1	23-06-17			
4.	Network software-protocols, layer issues	1	24-06-17			
5.	connection oriented and connection less services, Service primitives and protocols	1	27-06-17			
6.	Tutorial	1	29-06-17			
7.	Reference models-OSI, TCP/IP, Comparison between OSI and TCP/IP	1	30-06-17			
8.	Example Networks, ARPANET, X.25, Frame Relay	1	01-07-17			
9.	ATM, ETHERNET, WIRLESS LAN	1	04-07-17			
10.	Network Standardization	1	06-07-17			
11.	Physical Layer- Theoretical basis for Data communications	1	07-07-17			
12.	Guided transmission Media	1	11-07-17			
13.	Tutorial	1	12-07-17			
Number of Classes required to complete UNIT-I		13				

UNIT-II : Data Link Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	Design Issues of DLL	1	13-07-17			
15.	Framing, Error Detection and Correction, CRC	1	15-07-17			
16.	Elementary Data protocols, simplex, Stop & wait	1	16-07-17			
17.	Sliding window, one bit, go-back - n, Selective repeat protocols	1	18-07-17			
18.	Medium Access control sub layer, channel allocation problem	1	19-07-17			

19.	Multiple Access protocols-ALOHA, CSMA protocols	1	21-07-17			
20.	Tutorial	1	22-07-17			
21.	Ethernet, collision free protocols	1	25-07-17			
22.	Data link Layer switching, bridges, Bridge learning algorithms	1	26-07-17			
23.	Bridges from 802.x to 802.y	1	27-07-17			
24.	Local networking, spanning Tree bridges , Remote Bridges	1	29-07-17			
25.	Tutorial	1	01-08-17			
No. of classes required to complete UNIT-II		12	No. of classes taken:			

UNIT-III : Network Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Network Layer Design Issues	1	02-08-17			
27.	Routing algorithms- Shortest Path	1	03-08-17			
28.	Flooding, Distance vector routing	1	05-08-17			
29.	Link state routing, Hierarchical routing	1	16-08-17			
30.	Board cast routing & Multicast Routing	1	18-08-17			
31.	Routing algs conclusion	1	19-08-17			
32.	Tutorial	1	22-08-17			
33.	Congestion control algorithms-Leaky Bucket, Token Bucket	1	23-08-17			
34.	Quality of service	1	26-08-17			
35.	Internetworking	1	29-08-17			
36.	Network layer in the Internet	1	30-08-17			
37.	ICMP, ARP, RARP, BOOTP, DHCP	1	1-09-17			
No. of classes required to complete UNIT-III		12	No. of classes taken:			

UNIT-IV : Transport Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
38.	Introduction to TL, Transport Service	1	2-09-17			
39.	Elements of transport protocols -I	1	5-09-17			
40.	Elements of transport protocols -II	1	9-09-17			
41.	Congestion Control	1	12-09-17			
42.	Tutorial	1	13-09-17			
43.	Internet transport protocols: TCP-I	1	15-09-17			
44.	Internet transport protocols: TCP-II	1	16-09-17			

45.	Internet transport protocols: UDP-I	1	19-09-17			
46.	Internet transport protocols: UDP-II	1	21-09-17			
47.	Flow control-Segments	1	22-09-17			
48.	TCP Timers	1	23-09-17			
49.	Tutorial	1	26-09-17			
No. of classes required to complete UNIT-IV		12	No. of classes taken:			

UNIT-V : Application Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
50.	Domain Name System	1	27-09-17			
51.	Electronic Mail	1	29-09-17			
52.	The world wide web	1	03-10-17			
53.	Tutorial	1	04-10-17			
54.	Network Security	1	05-10-17			
55.	Cryptography	1	10-10-17			
56.	Symmetric Key Algorithms -DES	1	11-10-17			
57.	Public Key Algorithms - RSA	1	13-10-17			
58.	Communication Security -I	1	14-10-17			
59.	Communication Security-II	1	II-MID			
60.	Tutorial	1				
No. of classes required to complete UNIT-V		11	No. of classes taken:			

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I: Introduction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	20-06-17			
2.	Use of Computer Networks	1	21-06-17			
3.	Network Hardware LAN, WAN, MAN	1	23-06-17			
4.	Network software-protocols, layer issues	1	24-06-17			
5.	connection oriented and connection less services, Service primitives and protocols	1	27-06-17			
6.	Tutorial	1	28-06-17			

7.	Reference models-OSI, TCP/IP, Comparison between OSI and TCP/IP	1	30-06-17			
8.	Example Networks, ARPANET, X.25, Frame Relay	1	01-07-17			
9.	ATM, ETHERNET, WIRLESS LAN	1	04-07-17			
10.	Network Standardization	1	05-07-17			
11.	Physical Layer- Theoretical basis for Data communications	1	07-07-17			
12.	Guided transmission Media	1	11-07-17			
13.	Tutorial	1	12-07-17			
Number of Classes required to complete UNIT-I		13				

UNIT-II : Data Link Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	Design Issues of DLL	1	14-07-17			
15.	Framing, Error Detection and Correction, CRC	1	15-07-17			
16.	Elementary Data protocols, simplex, Stop & wait	1	16-07-17			
17.	Sliding window, one bit, go-back - n, Selective repeat protocols	1	18-07-17			
18.	Medium Access control sub layer, channel allocation problem	1	19-07-17			
19.	Multiple Access protocols- ALOHA, CSMA protocols	1	21-07-17			
20.	Tutorial	1	22-07-17			
21.	Ethernet, collision free protocols	1	25-07-17			
22.	Data link Layer switching, bridges, Bridge learning algorithms	1	26-07-17			
23.	Bridges from 802.x to 802.y	1	28-07-17			
24.	Local networking, spanning Tree bridges , Remote Bridges	1	29-07-17			
25.	Tutorial	1	01-08-17			
No. of classes required to complete UNIT-II		12	No. of classes taken:			

UNIT-III : Network Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Network Layer Design Issues	1	02-08-17			
27.	Routing algorithms- Shortest Path	1	04-08-17			
28.	Flooding, Distance vector routing	1	05-08-17			

29.	Link state routing, Hierarchical routing	1	16-08-17			
30.	Board cast routing & Multicast Routing	1	18-08-17			
31.	Routing algs conclusion	1	19-08-17			
32.	Tutorial	1	22-08-17			
33.	Congestion control algorithms-Leaky Bucket, Token Bucket	1	23-08-17			
34.	Quality of service	1	26-08-17			
35.	Internetworking	1	29-08-17			
36.	Network layer in the Internet	1	30-08-17			
37.	ICMP, ARP, RARP, BOOTP, DHCP	1	1-09-17			
No. of classes required to complete UNIT-III		12	No. of classes taken:			

UNIT-IV : Transport Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
38.	Introduction to TL, Transport Service	1	2-09-17			
39.	Elements of transport protocols -I	1	5-09-17			
40.	Elements of transport protocols -II	1	8-09-17			
41.	Congestion Control	1	12-09-17			
42.	Tutorial	1	13-09-17			
43.	Internet transport protocols: TCP-I	1	15-09-17			
44.	Internet transport protocols: TCP-II	1	16-09-17			
45.	Internet transport protocols: UDP-I	1	19-09-17			
46.	Internet transport protocols: UDP-II	1	20-09-17			
47.	Flow control-Segments	1	22-09-17			
48.	TCP Timers	1	23-09-17			
49.	Tutorial	1	26-09-17			
No. of classes required to complete UNIT-IV		12	No. of classes taken:			

UNIT-V : Application Layer

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
50.	Domain Name System	1	27-09-17			
51.	Electronic Mail	1	29-09-17			
52.	The world wide web	1	03-10-17			
53.	Tutorial	1	04-10-17			

54.	Network Security	1	06-10-17			
55.	Cryptography	1	10-10-17			
56.	Symmetric Key Algorithms -DES	1	11-10-17			
57.	Public Key Algorithms - RSA	1	13-10-17			
58.	Communication Security -I	1	14-10-17			
59.	Communication Security-II	1	II-MID			
60.	Tutorial	1				
No. of classes required to complete UNIT-V		11	No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
61.	Authentication Protocols	1	7-11-17			
62.	Web Security	1	8-11-17			

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	27-06-17	19-08-17	7 W
I Mid Examinations	21-08-17	26-08-17	1 W
II Phase of Instructions	28-08-17	04-11-17	9 W
II Mid Examinations	06-11-17	11-11-17	1 W
Preparation and Practicals	13-11-17	22-11-17	2 W
Semester End Examinations	23-11-17	04-12-17	2 W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20

Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

Dr. Ch V Narayana — **Course Instructor**

Dr. Ch V Narayana — **Course Coordinator**

Module Coordinator

Dr. N Ravi shankar — **Prof. & HOD**

No	Tentative Date	Topics to be covered	No of classes	Content Delivery Method	Actual Date	Remarks/ sign
		Unit-I				
1	19-06-2017	Introduction to Microprocessors-Purpose of Microprocessors, Different types of Microprocessors, their features and their comparison	1			
2	21-06-2017	Special functions of General purpose registers, 8086 flag register and function of 8086 Flags	1			
3	22-06-2017	**Tutorial-I**	1			
4	24-06-2017	8086 Microprocessor-Architecture	1			
5	28-06-2017	Addressing Modes of 8086	1			
6	29-06-2017	Instruction set of 8086	6			
7	10-07-2017	**Tutorial-II**	1			
		UNIT-II				
8	12-07-2017	Assembler Directives	1			
9	13-07-2017	Programs using Logical instructions	1			
10	15-07-2017	**Tutorial III**	1			

11	17-07-2017	Programs using String instructions	1			
12	19-07-2017	Programs using branch instructions	1			
13	20-07-2017	Sorting of numbers	1			
14	22-07-2017	**Tutorial IV**	1			
15	24-07-2017	Procedures and Macros	1			
16	26-07-2017	Programs using CALL instructions	1			
17	27-07-2017	Programs to evaluate arithmetic expressions	1			
18	29-07-2017	Pin Description of 8086	2			
19	02-08-2017	Max. Mode operation of 8086	1			
20	03-08-2017	Min mode operation of 8086	1			
21	05-08-2017	**Tutorial V**	1			
UNIT-III						
22	16-08-2017	Machine cycles, T- States	1			
23	17-08-2017	Bus Cycle operation	1			
24	19-08-2017	Timing diagrams for read operation	1			
25	21-08-2017	Timing diagrams for write operation	1			
26	23-08-2017	Memory interfacing	1			
27	24-08-2017	I/O Interfacing	1			
28	26-08-2017	**Tutorial-VI**	1			
29	28-08-2017	Need for DMA,DMA data transfer Method	1			
30	30-08-2017	Interfacing with 8237/8257-Pin description of 8257	1			
31	01-09-2017	Programs on DMA Data transfer	1			
32	04-09-2017	**Tutorial-VII**	1			
UNIT-IV						
33	06-09-2017	8255 PPI	1			
34	07-09-2017	Various modes of operation.	1			
35	11-09-2017	Interfacing to 8086 Keyboard	1			
36	13-09-2017	**Tutorial-VIII**	1			
37	14-09-2017	Seven segment Displays	1			

38	16-09-2017	Stepper Motor	1			
39	18-09-2017	D/A converter interfacing	1			
40	20-09-2017	A/D converter interfacing	1			
41	21-09-2017	**Tutorial-IX**	1			
UNIT-V						
42	23-09-2017	Serial data transfer schemes, RS 232C	1			
43	25-09-2017	8251 USART architecture and pin description , USART interfacing with 8086	1			
44	27-09-2017	**Tutorial-X**	1			
45	28-09-2017	Interrupts: Interrupt structure of 8086, Interrupt Vector table;	1			
46	04-10-2017	Interrupt service routines	1			
47	05-10-2017	**Tutorial-XI**	1			
48	07-10-2017	Introduction to DOS, BIOS interrupts	1			
49	09-10-2017	8259 PIC Architecture and Pin Description	1			
50	11-10-2017	Interfacing 8259 with 8086, Cascading of interrupt controller and its importance				
51	12-10-2017	Introduction to microcontrollers	1			
52	14-10-2017	**Tutorial-XII**	1			

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/DM 1, **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 **K.V.Ashok**	**Name of Course Coordinator**	**HOD**

	LESSON PLAN
	Department: CSE **Program: B.Tech** **Course: – Theory of Computation** **SEM: V** **Academic Year: 2017-18**

1. Pre-requisites: Knowledge in mathematics, including a course in Discrete mathematics, and in programming.

2. Course Educational Objectives (CEOs):

1. Basic understanding of the notion of a regular set and its representation by DFA's, NFA's, and regular expressions.
2. To study abstract models of information processing machines and limits of digital computation
3. Basic understanding of the notion of a context-free language and its representation by context-free grammars and push-down automata.

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

CO1: Able to Understand the functioning of Finite-State Machines, Deterministic Finite-State 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 Context-Sensitive languages;
CO4: Able to Convert from Push Down Automata to Context –Free Grammars and Vice-Versa.
CO5 Able to Design the Turing Machines and understanding of the notion of an undecidable problems.

4. Course Articulation Matrix:

COs	POs												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	1											1		
CO2	2	1	1	2									1		
CO3	2	2	2	2	2								1		
CO4	2		2	3									1		
CO5	2		3	3									1		
S=3=STRONGLY AGREE (100%), M=2= MODERATELY (66%), L=1=LIGHTLY (33%)															

5. Course Delivery Plan:

S.NO	TOPIC TO BE COVERED	No.of Classes		Date	DM
		As per the Schedule	Taken		
Unit-1 (INTRODUCTION TO DMDW)					
1	Strings, Alphabet, Language, Finite state machine	2	2		1
2	Deterministic Finite Automaton	8	10		1
3	NFA	2	1		1
4	Conversion from NFA to DFA	2	2		1
5	NFA with epsilon transitions	1	1		1
6	Conversion of NFA with epsilon to NFA without epsillon	2	1		1
7	FA with output	2	3		1,2
12	**Tutorial -1**	1	1		3
Number of classes		**16**	21		
Unit-II (PRE PROCESSING TECHNIQUES)					
13	Regular Expressions	2	3		1
14	NFA for regular expressions	2	4		1
15	DFA for regular expressions	2	2		1
16	Pumping lemma for regular languages	2	3		1
17	DFA to regular expression conversion	1	4		1
18	Closure properties of regular sets	1	1		1
22	**Tutorial -2**	1	1		3
Number of classes		**11**	**18**		
Unit –III ASSOCIATION RULE MINING)					
23	Regular grammars	1			1
24	RLG-LLG inter conversion	1			1,2
25	Context free grammars, derivation trees	2			1,2
26	Ambiguity in grammars	1			1,2
27	Simplification of context free grammars	4			1,2
	CNF and GNF	2			
	Pumping lemma for CFLs and Closure properties of CFLs	1			
28	**Tutorial - 3**	1			3

Total Number of classes		**13**			
Unit – IV (CLASIFICATION AND CLUSTERING)					
29	PDA	8			1
30	PDA-CFG inter conversion	2			1
41	**Tutorial-4**	1			3
		11			
Unit – V (DATA MINING APPLICATIONS)					
42	Turing Machines	8			1,2
43	Properties of RLs and RELs	1			1,2
45	Variations of TMs	1			1,2
46	Universal Turing machines	1			1,2
47	PCP	1			1,2
48	Chomsky's Hierarchy, CSLs, LBA	1			1,2
49	**Tutorial-5**	1			3
Number of classes		**14**			
Total Number of classes		**65**			

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				

	LESSON PLAN
	DEPARTMENT: CSE **PROGRAM:** B.Tech **COURSE:** DESIGN AND ANALYSIS OF ALGORITHMS **Semester & Sections:** V & A-sec **Academic year**: 2017-18

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

5. Course Educational objectives:

Students undergoing this course are expected to:

Identify the fundamental concepts of various algorithm design techniques. Make the students familiar to conduct performance evaluation of algorithms. Expertise the students with the various existing algorithm design techniques. Motivate the students to design new algorithms for various problems.

6. Course Outcomes:

After the completion of the course, students should be able to

CO1: Identify the basic properties and analysis methods of algorithms and design divide and conquer paradigm for solving a few example problems and analyze them.

CO2:Design Greedy algorithms for knapsack problem, minimum cost spanning tree,single source shortest path problem and analyze them.

CO3:Apply dynamic programming paradigm to solve travelling sales person problem,0/1 knapsack problem,Optimal binary search tree.

CO4:Apply traversal methods on search trees and search methods on graphs and backtracking search methods on state space trees for few example problems.

CO5:Analyse branch and Bound search methods through problems such as 0/1 knapsack problem,Travelling sales personn problem and evaluate P ,NP,NP hard,NP complete class of problems and algorithms.

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
S181	CO1	3	3	2										3		
	CO2	2	3	1										3		
	CO3	2	3	1										3		
	CO4	2	3	1										1		
	CO5	2	3	1										1		
2 = Slight (Low) 2 = Moderate (Medium) 3-Substantial(High)																

5.Course Delivery Plan

S.NO	TOPIC TO BE COVERED	Number of classes		Date	DM
		As per schedule	Taken		
UNIT-I					
1	Introduction	1			1
2	Algorithm specifications	1			1
3	Space Complexity	1			1
4	Time complexity	1			1
5	Asymptotic Notations	1			1
6	Tutorial-1	1			3
7	Divide &Conquer General method	1			1
8	Binary Search	1			1
9	Time complexity	1			1
10	Finding Maximun and Minimum	1			1
11	Time complexity	1			1
12	Merge sort	1			1
13	Time complexity	1			1

14	Quick sort	1			1
15	Time complexity	1			1
16	Tutorial-2	1			3
	NUMBER OF CLASSES	16			
UNIT-II					
17	Greedy Method General method	1			1
18	Knapsack problem	1			1
19	Examples	1			1
20	Job –Sequencing with deadlines	1			1
21	Examples	1			1
22	Minimum cost spanning tree-prims algorithm	1			1
23	Krushkals algorithm	1			1
24	Optimal Storage on Tapes	1			1
25	Optimal Merge Pattern	1			1
26	Single source Shortest paths	1			1
27	Example	1			1
28	Tutorial-3	1			3
	NUMBER OF CLASSES	12			
29	Mid-1				
30					
31					
32					
UNIT-III					
33	Dynamic Programming-General method	1			1
34	Multistage Graph	1			1
35	All pairs Shortest path	1			1
36	Single source Shortest path	1			1
37	Example	1			1

38 39	Optimal Binary Search Trees Example	1 1			1 1
40	0/1 Knapsack	1			1
41	Examples	1			1
42	Reliabilty Design	1			1
43	Travelling Salesman Problem	1			1
44	Tutorial-4	1			3
	NUMBER OF CLASSES	12			
UNIT-IV					
45	Back tracking –General method	1			1
46	The 8-Queens Problem	1			1
47	Sum of Subsets	1			1
48	Examples	1			1
49	Graph Coloring	1			1
50	Hamiltonian cycle	1			1
51	Tutorial-5	1			3
52	Branch and Bound –method	1			1
53	0/1 Knapsack Problem	1			1
54	Examples	1			1
55	Travelling Sales person	1			1
56	Example	1			1
57	Tutorial-6	1			3
	NUMBER OF CLASSES	13			
UNIT-V					
58	NP hard and NP complete- Basic concepts	1			1
59	Cook's Theorem	1			1
60	NP-hard Graph Problems	1			1
61	Examples	1			1
62	An Unrelated Puzzle	1			1

63	Binomial Queues	1			1
64	Examples	1			1
65	Skew Heaps	1			1
66	Fibonacci Heaps	1			1
67	Splay Trees	1			1
68	Tutorial-7	1			3
	NUMBER OF CLASSES	11			
68	MID-II				
69					
70					
71					

Delivery Methods (DM):

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

	Course Instructor	Course Coordinator	Module Coordinator	HOD
Signature				
Name of the Faculty	T.V.NAGARAJU			Dr. N. Ravi Shankar

No	Tentative Date	Topics to be covered	No of classes	Content Delivery Method	Actual Date	Remarks/ sign
		Unit-I				
1	19-06-2017	Introduction to Microprocessors-Purpose of Microprocessors, Different types of Microprocessors, their features and their comparison	1			
2	21-06-2017	Special functions of General purpose registers, 8086 flag register and function of 8086 Flags	1			
3	22-06-2017	**Tutorial-I**	1			
4	24-06-2017	8086 Microprocessor-Architecture	1			
5	28-06-2017	Addressing Modes of 8086	1			
6	29-06-2017	Instruction set of 8086	6			
7	10-07-2017	**Tutorial-II**	1			
		UNIT-II				
8	12-07-2017	Assembler Directives	1			
9	13-07-2017	Programs using Logical instructions	1			
10	15-07-2017	**Tutorial III**	1			
11	17-07-2017	Programs using String instructions	1			
12	19-07-2017	Programs using branch instructions	1			
13	20-07-2017	Sorting of numbers	1			
14	22-07-2017	**Tutorial IV**	1			
15	24-07-2017	Procedures and Macros	1			
16	26-07-2017	Programs using CALL instructions	1			
17	27-07-2017	Programs to evaluate arithmetic expressions	1			

18	29-07-2017	Pin Description of 8086	2			
19	02-08-2017	Max. Mode operation of 8086	1			
20	03-08-2017	Min mode operation of 8086	1			
21	05-08-2017	**Tutorial V**	1			
UNIT-III						
22	16-08-2017	Machine cycles, T- States	1			
23	17-08-2017	Bus Cycle operation	1			
24	19-08-2017	Timing diagrams for read operation	1			
25	21-08-2017	Timing diagrams for write operation	1			
26	23-08-2017	Memory interfacing	1			
27	24-08-2017	I/O Interfacing	1			
28	26-08-2017	**Tutorial-VI**	1			
29	28-08-2017	Need for DMA,DMA data transfer Method	1			
30	30-08-2017	Interfacing with 8237/8257-Pin description of 8257	1			
31	01-09-2017	Programs on DMA Data transfer	1			
32	04-09-2017	**Tutorial-VII**	1			
UNIT-IV						
33	06-09-2017	8255 PPI	1			
34	07-09-2017	Various modes of operation.	1			
35	11-09-2017	Interfacing to 8086 Keyboard	1			
36	13-09-2017	**Tutorial-VIII**	1			
37	14-09-2017	Seven segment Displays	1			
38	16-09-2017	Stepper Motor	1			
39	18-09-2017	D/A converter interfacing	1			
40	20-09-2017	A/D converter interfacing	1			
41	21-09-2017	**Tutorial-IX**	1			
UNIT-V						
42	23-09-2017	Serial data transfer schemes, RS 232C	1			
43	25-09-2017	8251 USART architecture and pin description , USART interfacing with 8086	1			

44	27-09-2017	**Tutorial-X**	1			
45	28-09-2017	Interrupts: Interrupt structure of 8086, Interrupt Vector table;	1			
46	04-10-2017	Interrupt service routines	1			
47	05-10-2017	**Tutorial-XI**	1			
48	07-10-2017	Introduction to DOS, BIOS interrupts	1			
49	09-10-2017	8259 PIC Architecture and Pin Description	1			
50	11-10-2017	Interfacing 8259 with 8086, Cascading of interrupt controller and its importance				
51	12-10-2017	Introduction to microcontrollers	1			
52	14-10-2017	**Tutorial-XII**	1			

Total	
Total number of classes required to complete the syllabus	**58**
Total number of classes available as per Schedule	**58**

NOTE: DELIVERY METHODS : **DM1**: Lecture interspersed with discussions/DM 1, **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 **K.V.Ashok**	**Name of Course Coordinator**	**HOD**

	LESSON PLAN	Date
	OPERATING SYSTEMS Branch: CSE Semester & Section: V & A	19/06/2017 To 21/10/2017

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.

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: 2017-18	Course: Operating Systems
	Programme: B.Tech	Unit No: 1 to 5
	Year & Sem: III & I (V Semester)	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 &Operating-System Structures						
1	Introduction to Operating Systems, Evolution Operating Systems, Computer-System Organization, Computer-System Architecture	20-06-2017		2	1	1,3,5,7
2	Operating System Structures, Operating-System Operations	22-06-2017		2	1	

3	Process Management, Memory Management Storage Management,	23-06-2017		2	1	
4	Protection and Security	24-06-2017		2	1	
5	Distributed Systems Special-Purpose Systems Operating-System Services	27-06-2017		2	1	
6	User Operating-System Interface Difference between CLI and GUI	29-06-2017		2	1	
7	System Calls Types of System Calls System Programs	30-06-2017		2	1	
8	Operating-System Design and Implementation	01-07-2017		2	1,2	
9	Virtual Machines, Operating-System Generation and System Boot	04-07-2017		2	1	
10	**Tutorial – I**	06-07-2017		2	1,9	
11	**Tutorial – II**	07-07-2017		2	1,9	
UNIT –II: Processes-Concept and **Multithreaded Programming** and **Process Scheduling**						
12	Introduction to Processes in Operating Systems, Explanation about Process State Diagram, Process Scheduling	08-07-2017		2	1,2,9	1,3,5,7
13	Operations on Processes, Inter-process Communication	11-07-2017		2	1,9	
14	Examples of IPC Systems, Communication in Client-Server Systems	13-07-2017		2	1,9	
15	Introduction Multithreading Programming, Multithreading Models, Thread Libraries	14-07-2017		2	1,9	
16	Threading Issues,	15-07-2017		2	1	

	Introduction Process Scheduling					
17	Scheduling Criteria, Scheduling Algorithms	18-07-2017		2	1	
18	Scheduling Algorithms (Continued...)	20-07-2017		2	1,9	
19	Scheduling Algorithms (Continued...)	21-07-2017		2	1,9	
20	Multiple-Processor Scheduling	22-07-2017		2	1,9	
21	**Tutorial – III**	25-07-2017		2	1,9	
22	**Tutorial – IV**	27-07-2017		2	1,9	
23	MID – I EXAMS	08-08-2017				
24		10-08-2017				
25		11-08-2017				
26		12-08-2017				
UNIT –III: Synchronization and Deadlocks						
27	The Critical-Section Problem, Peterson's Solution	17-08-2017		2	1	
28	Synchronization Hardware, Semaphores	18-08-2017		2	1,9	
29	Classic Problems of Synchronization	19-08-2017		2	1,9	
30	Monitors, Synchronization Examples	22-08-2017		2	1,9	
31	Atomic Transactions, System Model	24-08-2017		2	1,9	1,3,5,7
32	Deadlock Characterization, Methods for Handling Deadlocks	25-08-2017		2	1,9	
33	Deadlock Prevention	26-08-2017		2	1,9	
34	Deadlock Avoidance	29-08-2017		2	1,9	
35	Deadlock Detection, Recovery from deadlock	31-08-2017		2	1,9	
36	**Tutorial – V**	01-09-2017				
37	**Tutorial – VI**	02-09-2017				

UNIT-IV Memory Management Strategies, Virtual Memory Management						
38	Swapping	05-09-2017		2	1,9	1,3,5,7
39	Contiguous Memory Allocation	07-09-2017		2	1,9	
40	Paging, Structure of the Page Table	08-09-2017		2	1,9	
41	Segmentation	09-09-2017		2	1,9	
42	Demand Paging	12-09-2017		2	1,9	
43	Page Replacement	14-09-2017		2	1,9	
44	Allocation of Frames	15-09-2017		2	1,9	
45	Thrashing, Memory-Mapped Files	16-09-2017		2	1,9	
46	Allocating Kernel Memory	19-09-2017		2	1,9	
47	**Tutorial – VII**	21-09-2017				
48	**Tutorial – VIII**	22-09-2017				
UNIT-V Implementing File System:						
49	The Concept of a File, Access Methods	23-09-2017		2	1	1,3,5,7
50	Directory Structure, File-System Mounting	26-09-2017		2	1	
51	File Sharing, Protection	28-09-2017		2	1	
52	File-System Structure	29-09-2017		2	1	
53	File-System Implementation	30-09-2017		2	1	
54	Directory Implementation	03-10-2017		2	1	
55	Allocation Methods	05-10-2017		2	1	
56	Free-Space Management	06-10-2017		2	1	
57	Efficiency and Performance, Recovery	07-10-2017		2	1	
58	**Tutorial – IX**	10-10-2017				
59	**Tutorial – X**	12-10-2017				
60	MID-II EXAMS	17-10-2017				
61		19-10-2017				
62		20-10-2017				
63		21-10-2017				

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.

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Assessment Summary:

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

Mapping Course Outcomes with Programme Outcomes:

Course Code	Unit	Course Outcomes					Programme Outcomes											PSO's		
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
S284	I	×																			
	II		×																		
	III			×																	
	IV				×																
	V					×															

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

	LESSON PLAN	Date
	OPERATING SYSTEMS Branch: CSE Semester & Section: V & B	19/06/2017 To 21/10/2017

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.

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

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UNIT – IV

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

UNIT-V.

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

TEXT BOOK

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REFERENCES

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

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

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- ✓ 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: 2017-18	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,	20-06-2017		2	1	1, 3, 5, 7

	Evolution Operating Systems, Computer-System Organization, Computer-System Architecture					
2	Operating System Structures, Operating-System Operations	22-06-2017		2	1	
3	Process Management, Memory Management	23-06-2017		2	1	
4	Storage Management, Protection and Security	24-06-2017		2	1	
5	Distributed Systems Special-Purpose Systems Operating-System Services	27-06-2017		2	1	
6	User Operating-System Interface Difference between CLI and GUI	29-06-2017		2	1	
7	System Calls Types of System Calls System Programs	30-06-2017		2	1	
8	Operating-System Design and Implementation	01-07-2017		2	1,2	
9	Virtual Machines, Operating-System Generation and System Boot	04-07-2017		2	1	
10	**Tutorial – I**	06-07-2017		2	1,9	
11	**Tutorial – II**	07-07-2017		2	1,9	
UNIT –II: Processes-Concept and **Multithreaded Programming** and **Process Scheduling**						
12	Introduction to Processes in Operating Systems, Explanation about Process State Diagram, Process Scheduling	08-07-2017		2	1,2,9	
13	Operations on Processes, Inter-process Communication	11-07-2017		2	1,9	
14	Examples of IPC Systems,	13-07-2017		2	1,9	

	Communication in Client-Server Systems					
15	Introduction Multithreading Programming, Multithreading Models, Thread Libraries	14-07-2017		2	1,9	1,3,5,7
16	Threading Issues, Introduction Process Scheduling	15-07-2017		2	1	
17	Scheduling Criteria, Scheduling Algorithms	18-07-2017		2	1	
18	Scheduling Algorithms (Continued...)	20-07-2017		2	1,9	
19	Scheduling Algorithms (Continued...)	21-07-2017		2	1,9	
20	Multiple-Processor Scheduling	22-07-2017		2	1,9	
21	**Tutorial – III**	25-07-2017		2	1,9	
22	**Tutorial – IV**	27-07-2017		2	1,9	
23	MID – I EXAMS	08-08-2017				
24		10-08-2017				
25		11-08-2017				
26		12-08-2017				
UNIT –III: Synchronization and Deadlocks						
27	The Critical-Section Problem, Peterson's Solution	17-08-2017		2	1	1,3,5,7
28	Synchronization Hardware, Semaphores	18-08-2017		2	1,9	
29	Classic Problems of Synchronization	19-08-2017		2	1,9	
30	Monitors, Synchronization Examples	22-08-2017		2	1,9	
31	Atomic Transactions, System Model	24-08-2017		2	1,9	
32	Deadlock Characterization, Methods for Handling Deadlocks	25-08-2017		2	1,9	
33	Deadlock Prevention	26-08-2017		2	1,9	

34	Deadlock Avoidance	29-08-2017		2	1,9	
35	Deadlock Detection, Recovery from deadlock	31-08-2017		2	1,9	
36	**Tutorial – V**	01-09-2017				
37	**Tutorial – VI**	02-09-2017				
UNIT-IV Memory Management Strategies, Virtual Memory Management						
38	Swapping	05-09-2017		2	1,9	1,3,5,7
39	Contiguous Memory Allocation	07-09-2017		2	1,9	
40	Paging, Structure of the Page Table	08-09-2017		2	1,9	
41	Segmentation	09-09-2017		2	1,9	
42	Demand Paging	12-09-2017		2	1,9	
43	Page Replacement	14-09-2017		2	1,9	
44	Allocation of Frames	15-09-2017		2	1,9	
45	Thrashing, Memory-Mapped Files	16-09-2017		2	1,9	
46	Allocating Kernel Memory	19-09-2017		2	1,9	
47	**Tutorial – VII**	21-09-2017				
48	**Tutorial – VIII**	22-09-2017				
UNIT-V Implementing File System:						
49	The Concept of a File, Access Methods	23-09-2017		2	1	1,3,5,7
50	Directory Structure, File-System Mounting	26-09-2017		2	1	
51	File Sharing, Protection	28-09-2017		2	1	
52	File-System Structure	29-09-2017		2	1	
53	File-System Implementation	30-09-2017		2	1	
54	Directory Implementation	03-10-2017		2	1	
55	Allocation Methods	05-10-2017		2	1	
56	Free-Space Management	06-10-2017		2	1	
57	Efficiency and Performance, Recovery	07-10-2017		2	1	
58	**Tutorial – IX**	10-10-2017				
59	**Tutorial – X**	12-10-2017				
60	MID-II EXAMS	17-10-2017				

61		19-10-2017			
62		20-10-2017			
63		21-10-2017			

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.

Assessment Summary:

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

Mapping Course Outcomes with Programme Outcomes:

Course Code	Unit	Course Outcomes					Programme Outcomes												PSO's		
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
S284	I	×																			
	II		×																		
	III			×																	
	IV				×																
	V					×															

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