SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Information Technology	LP: IT18403 Rev. No: 00
B.E/B.Tech/M.E/M.Tech : B.Tech Regulation: 2018 Sub. Code / Sub. Name : IT18403- OPERATING SYSTEM CONCEPTS Unit : I	Date: 12.12.2019

Unit Syllabus:

UNIT I OPERATING SYSTEM CONCEPTS 9

Processes - Address Spaces - Files - Input/Output - Protection - The Shell -SYSTEM CALLS -System Calls for Process Management -System Calls for File Management - System Calls for Directory Management -The Windows Win32 API - OPERATING SYSTEM STRUCTURE - Monolithic Systems -Layered Systems -Microkernels -Client-Server Model - Virtual Machines .

Objective: To understand the basic concepts and functions of operating systems.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Introduction to Operating System	T1-ch1;pg(1-38)	BB/LCD
2	Processes - Address Spaces - Files	T1-ch1;pg(38-44)	BB/LCD
3	Input/Output - Protection and Security	T1-ch1;pg(45-50)	BB/LCD
4	The Shell -SYSTEM CALLS -System Calls for Process Management	T1-ch1;pg(50-56)	BB/LCD
5	System Calls for File Management - System Calls for Directory Management	T1-ch1;pg(56-60)	BB/LCD
6	The Windows Win32 API	T1-ch1;pg(60-62)	BB/LCD
7	OPERATING SYSTEM STRUCTURE - Monolithic Systems -Layered Systems -Microkernels	T1-ch1;pg(62-68)	BB/LCD
8	Client-Server Model	T1-ch1;pg(68)	BB/LCD
9	Virtual Machines	T1-ch1;pg(69-73)	BB/LCD
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes

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Unit : II

Unit Syllabus:

UNIT II PROCESSES AND THREADS **9**

PROCESSES -The Process Model -Process Creation -Process Termination -Process Hierarchies -Process States -THREADS -Thread Usage - The Classical Thread Model - POSIX Threads - INTERPROCESS COMMUNICATION - Race Conditions - Critical Regions - Mutual Exclusion with Busy Waiting - Semaphores - Mutexes - Message Passing CPU Scheduling – Scheduling criteria, Scheduling algorithms,- CLASSICAL IPC PROBLEMS - The Dining Philosophers Problem - The Readers and Writers Problem - Deadlock – Prevention, Detection, Avoidance

Objective: To understand Processes and Threads, analyze Scheduling algorithms and to understand the concept of Deadlocks.

Session No *	Topics to be covered	Ref	Teaching Aids
10	PROCESSES -The Process Model -Process Creation - Process Termination	T1-ch2;pg(85-91)	BB/LCD
11	Process Hierarchies -Process States	T1-ch2;pg(9T1-97)	BB/LCD
12	THREADS -Thread Usage - The Classical Thread Model - POSIX Threads	T1-ch2;pg(97-119)	BB/LCD
13	INTERPROCESS COMMUNICATION - Race Conditions - Critical Regions - Mutual Exclusion	T1-ch2;pg(119-130) R1-Ch7;pg(211-215)	BB/LCD
14	Semaphores - Mutexes - Message Passing	T1-ch2;pg(130-149)	BB/LCD
15	CPU Scheduling – Scheduling criteria, Scheduling algorithms **Problems related to CPU Scheduling**	T1-ch2;pg(149-167) R1-ch6;pg(162-175)	BB/LCD
16	CLASSICAL IPC PROBLEMS - The Dining Philosophers Problem, The Readers and Writers	T1-ch2;pg(167-172) R1-Ch7;pg(206-211)	BB/LCD
17	Deadlock-Introduction, Detection and Recovery	T1-ch6;pg(435-448)	BB/LCD
18	Deadlock – Prevention and Avoidance	T1-ch6;pg(448-457)	BB/LCD
Content beyond syllabus covered (if any): Problems related to CPU Scheduling			

* Session duration: 50 mins

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Unit : III

Unit Syllabus :

UNIT III Memory Management **9**

ADDRESS SPACES - VIRTUAL MEMORY - Paging - Page Tables - PAGE REPLACEMENT ALGORITHMS - The First-In, First-Out (FIFO) Page Replacement Algorithm - The Least Recently Used (LRU) Page Replacement Algorithm - The Optimal Page Replacement Algorithm ISSUES FOR PAGING SYSTEMS - Local versus Global Allocation Policies - Page Size - Shared Pages -Page Fault Handling - SEGMENTATION -Implementation of Pure Segmentation - Segmentation with Paging: MULTICS .

Objective: To analyze various memory management schemes.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Introduction to Memory Management-Address Spaces	T1-ch3;pg(182-190)	BB/LCD
20	Virtual Memory - Paging - Page Tables	T1-ch3;pg(194-208) R1-ch10;pg(317-328)	BB/LCD
21	Page Re Placement Algorithms - The First-In, First-Out (Fifo)	T1-ch3;pg(209-213) R1-ch10;pg(330-336)	BB/LCD
22	The Least Recently Used (LRU) Page Replacement Algorithm	T1-ch3;pg(213-222) R1-ch10;pg(338-341)	BB/LCD
23	The Optimal Page Replacement Algorithm **Problems on Page replacement algorithms**	T1-ch3;pg(209-210) R1-ch10;pg(337-338)	BB/LCD
24	Issues For Paging Systems - Local Versus Global Allocation Policies - Page Size	T1-ch3;pg(222-228)	BB/LCD
25	Shared Page -Page Fault Handling	T1-ch3;pg(228-240)	BB/LCD
26	Segmentation -Implementation Of Pure Segmentation	T1-ch3;pg(240-243)	BB/LCD
27	Segmentation - Segmentation With Paging: MULTICS	T1-ch3;pg(243-247)	BB/LCD
Content beyond syllabus covered (if any): **Problems on Page replacement algorithms**			

* Session duration: 50 mins

Sub. Code / Sub. Name: IT18403- OPERATING SYSTEM CONCEPTS

Unit : IV

Unit Syllabus:

UNIT IV I/O SYSTEMS **9**

Mass Storage Structure- Overview, Disk Scheduling and Management; File System Storage- File Concepts, Directory and Disk Structure, Sharing and Protection; File System Implementation- File System Structure, Directory Structure, Allocation Methods, Free Space Management, I/O Systems.

Objective: To understand I/O management and File systems.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Mass Storage Structure- Overview	R1-ch14;pg(491-498)	BB/LCD
29	Mass Storage Structure- Overview	R1-ch14;pg(498-516)	BB/LCD
30	Disk Scheduling and Management **Problems related to Disk scheduling**	T1-ch5;pg(369-388) R1-ch14;pg(492-498)	BB/LCD
31	File System Storage-File Concepts, Directory and Disk Structure	T1-ch4;pg(263-267)	BB/LCD
32	File System Storage- Sharing and Protection	T1-ch4;pg(267-276)	BB/LCD
33	File System Implementation- File System Structure	T1-ch4;pg(288-299)	BB/LCD
34	File System Implementation- Directory Structure	T1-ch4;pg(276-281)	BB/LCD
35	Allocation Methods, Free Space Management	T1-ch4;pg(281-287)	BB/LCD
36	I/O Systems	T1-ch5;pg(337-347)	BB/LCD
Content beyond syllabus covered (if any): **Problems related to Disk scheduling**			

* Session duration: 50 mins

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Unit : V

Unit Syllabus :

UNIT V CASE STUDY 9

Unix, Linux, windows 8 – Process Management, memory management , Input –Output management , File System.

Objective: To be familiar with the basics of Linux system and Mobile OS like iOS and Android.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Unix- Process Management, memory management	R2-ch18;pg(582-590)	BB/LCD
38	Unix- Input –Output management	R2-ch18;pg(576-581)	BB/LCD
39	Unix- File System	R2-ch18;pg(582-587)	BB/LCD
40	Linux- Process Management, memory management	T1-ch10;pg(733-764)	BB/LCD
41	Linux- Input –Output management	T1-ch10;pg(767-774)	BB/LCD
42	Linux- File System	T1-ch10;pg(775-792)	BB/LCD
43	windows 8- Process Management, memory management	T1-ch11;pg(908-932)	BB/LCD
44	windows 8- Input –Output management	T1-ch11;pg(943-951)	BB/LCD
45	windows 8- File System	T1-ch11;pg(952-963)	BB/LCD
Content beyond syllabus covered (if any):			

- Session duration: 50 mins

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TEXT BOOKS:

1. Andrew S. Tanenbaum, —Modern Operating Systems‖, Fourth Edition, Pearson Education, 2015.

REFERENCES:

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, —Operating System Concepts, 9th Edition, John Wiley and Sons Inc., 2012.
2. Harvey M. Deitel, —Operating Systems‖, Third Edition, Pearson Education, 2004.
3. Daniel P Bovet and Marco Cesati, —Understanding the Linux kernel, 3rd edition, O'Reilly, 2005.
4. Neil Smyth, —iPhone iOS 4 Development Essentials – Xcode, Fourth Edition, Payload media, 2011.
5. Achyut S.Godbole, Atul Kahate, —Operating Systems, McGraw Hill Education, 2016.

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Designation	Associate Professor/IT Assistant Professor/IT	HOD/IT
Date	12/12/2019	12/12/2019
Remarks *:		
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD.