SRI VENKATESWARA COLLEGE OF ENGINEERING

Department of Information Technology	LP: IT22401
	Rev. No: 00
B.E/B.Tech/M.E/M.Tech : B.Tech Regulation: 2022	Date: 23.01.2024
Sub. Code / Sub. Name : IT22401- OPERATING SYSTEM CONCEPTS Unit : I	

Unit Syllabus:

UNIT I   OPERATING SYSTEMS OVERVIEW   9

Computer System - Elements and organization; Operating System- Overview - Objectives and Functions – Evolution- Structures –Services - User Operating System Interface - System Calls – System Programs - Design and Implementation - Structuring methods.

Objective: To understand the basic concepts and functions of operating systems.
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Session No *	Topics to be covered	Ref	Teaching Aids
1	Computer System - Elements and organization	T1 - Ch 1; Pg(7-14) T2 - Ch 1.3;Pg(20-26)	BB/LCD
2	Operating System- Overview	T1 - Ch 1; Pg(4 - 21) T2 - Ch 1: Pg(1-7)	BB/LCD
3	Operating System- Overview	T1 - Ch 1; Pg(4 - 21) T2 - Ch 1: Pg(1-7)	BB/LCD
4	Objectives and Functions	T1- Ch 1;Pg(21 - 34) R3-Ch 2:Pg(48-52)	BB/LCD
5	Evolution	T2 - ch 1.2; Pg(7-19) R3-Ch 2:Pg(52-62)	BB/LCD
6	Structures –Services - User Operating System Interface	T1 - Ch 2: Pg(55-62) T1 - Ch 2: Pg(74) T2 - Ch 1.7:Pg(63-74)	BB/LCD
7	**System Calls** – System Programs	T1 - Ch 2: Pg(62-74) T2 - Ch 1.6:Pg(50-63)	BB/LCD
8	**Design and Implementation**	T1 - Ch 2: Pg(79-81)	BB/LCD
9	Structuring methods	T1 - Ch 2: Pg(81-91)	BB/LCD
Content beyond syllabus covered (if any):			

* Session duration: 50 minutes

Sub. Code / Sub. Name: **IT22401- OPERATING SYSTEM CONCEPTS**

Unit : II

Unit Syllabus:

UNIT II   PROCESS MANAGEMENT   9

Processes - Concept - Scheduling - Operations; Inter-process Communication; CPU Scheduling - Criteria & Algorithms; Threads - Multithread Models – Threading issues; Process Synchronization - The critical-section problem - Synchronization hardware – Semaphores – Mutex - Classical problems of synchronization - Monitors; Deadlock - Methods for handling deadlocks, Prevention, Avoidance, Detection & Recovery

Objective: To analyze Scheduling algorithms

Session No *	Topics to be covered	Ref	Teaching Aids
10	Processes - Concept , Scheduling, Operations	T1 - Pg. 106-122 T2 - Ch 2.1:Pg(85-97) T2 - Ch 2: Pg(153-171)	BB/LCD
11	Inter-process Communication	T1 - Pg. 123-144 T2-Ch 2.4:Pg(119-153)	BB/LCD
12	CPU Scheduling - Criteria & Algorithms	T1 - Pg. 200-216	Virtual Lab
13	Threads - Multithread Models	T1 - Pg 160-167 T2 - Ch 2:Pg(97-116)	BB/LCD
14	Threading issues	T1 - Pg 188-193	BB/LCD
15	Process Synchronization - The critical-section problem - Synchronization hardware	T1 - Pg 257-261	BB/LCD
16	**Semaphores**, Mutex, Monitors;	T1 - Pg 270-282 T2-Ch 2:Pg(129-145)	BB/LCD Virtual Lab
17	Classical problems of synchronization	T1 - Pg 289-294	BB/LCD
18	Deadlock-Methods for handling deadlocks, Prevention, Avoidance, Detection & Recovery	T1 - Pg276-282 T2 - Ch 6: Pg(437-464)	BB/LCD Virtual Lab
Content beyond syllabus covered (if any): Problems related to CPU Scheduling, Round Robin Scheduling			

* Session duration: 50 mins

Sub. Code / Sub. Name: **IT22401- OPERATING SYSTEM CONCEPTS**

Unit : III

Unit Syllabus :

UNIT III   MEMORY MANAGEMENT   9

Main Memory - Swapping - Contiguous Memory Allocation –Paging - Structure of the Page Table - Segmentation, Segmentation with paging; Virtual Memory - Demand Paging – Copy on Write - Page Replacement - Allocation of Frames –Thrashing.

Objective: To understand the concept of Deadlocks.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Main Memory - Swapping ,	T1-Ch 9:Pg(349-356) T1-Ch 9:Pg(376-378) T2-Ch 3:Pg(179-183) T2-Ch 3:Pg(185-188)	BB/LCD
20	Contiguous Memory Allocation	T1-Ch 9:Pg(356-360)	BB/LCD
21	Paging ,Structure of the Page Table ,	T1-Ch 9:Pg(360-376) T2-Ch 3:Pg(193-207)	BB/LCD
22	Segmentation, Segmentation with paging	T1-Ch 9:Pg(379-382) T2-Ch 3.7:Pg(240-248)	BB/LCD
23	Virtual Memory	T1-Ch 10:Pg(389-392) T2-Ch 3:Pg(192-193) R3-Ch :Pg(340-389)	BB/LCD
24	Demand Paging	T1-Ch 10:Pg(392-399	BB/LCD
25	Copy on Write, Page Replacement	T1-Ch 10:Pg(392-399), T1-Ch 10:Pg(399-413) T2-Ch 3:Pg(207-221)	BB/LCD
26	Allocation of Frames	T1-Ch 10:Pg(413-419)	BB/LCD
27	Thrashing	T1-Ch 10:Pg(419-425)	BB/LCD

Content beyond syllabus covered (if any):

Problems on Page replacement algorithms and Memory management

* Session duration: 50 mins

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Sub. Code / Sub. Name: **IT22401- OPERATING SYSTEM CONCEPTS**

Unit : IV

Unit Syllabus:

UNIT IV   STORAGE MANAGEMENT   9

Mass Storage system – Disk Structure - Disk Scheduling and Management; File-System Interface - File concept - Access methods - Directory Structure & organization - File system - mounting, Sharing , Protection, Implementation & Structure - Directory implementation - Allocation Methods - Free Space Management; I/O Systems –Hardware, Application interface, Kernel subsystem.

Objective: To analyze various memory management and storage management schemes.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Mass Storage system – Disk Structure	T1-Ch 10:Pg(449-457)	BB/LCD
29	Disk Scheduling and Management	T1-Ch 10:Pg(457-461)	BB/LCD Participative Learning
30	File-System Interface - File concept , Access methods	T1-Ch 13:Pg(529-541) T2-Ch 4;Pg(259-270)	BB/LCD
31	Directory Structure & organization	T1-Ch 13:Pg(541-550) T2-Ch 4:pg(272-278)	BB/LCD
32	File system - mounting, Sharing , Protection	T1-Ch 13:Pg(597-603) T1-Ch 13:Pg(550-555)	BB/LCD
33	File system -Implementation & Structure	T1-Ch 13:Pg(563-568) T2-Ch 4.3:Pg(278-	BB/LCD
34	Directory implementation - Allocation Methods	T1-Ch 13:Pg(568-578)	BB/LCD
35	Free Space Management, I/O Systems – Hardware	T1-Ch 13:Pg(578-582) T1-Ch 12:Pg(489-500)	BB/LCD
36	I/O Systems – Application interface, Kernel subsystem.	T1-Ch 12:Pg(500-508) T1-Ch 12:Pg(508-516)	BB/LCD
Content beyond syllabus covered (if any): **Problems related to Disk scheduling**			

* Session duration: 50 mins

Sub. Code / Sub. Name: **IT22401- OPERATING SYSTEM CONCEPTS**

Unit : V

Unit Syllabus :

UNIT V   CASE STUDY   9

Linux, Windows, iOS and Android: History- Design principles – Kernel modules – Process management – Scheduling – Memory management – File systems – Input and output – Inter Process Communication – Network structure – Security

Objective: To be familiar with the basics of Linux system, Windows and Mobile OS.

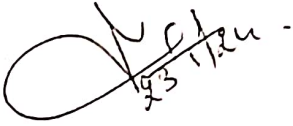| Session No *	Topics to be covered	Ref	Teaching Aids
37	Linux, Windows, iOS and Android: History	T1-Ch 20:Pg(775-780)	BB/LCD
38	Design principles	T1-Ch 20:Pg(780-783)	BB/LCD
39	Kernel modules	T1-Ch 20:Pg(783-786)	BB/LCD
40	Process management	T1-Ch 20:Pg(786-790)	BB/LCD
41	Scheduling	T1-Ch 20:Pg(790-794)	BB/LCD
42	Memory management	T1-Ch 20 :Pg(794-803)	BB/LCD
43	File systems – Input and output	T1-Ch 20 Pg(803-810 , 810-812)	BB/LCD
44	Inter Process Communication	T1-Ch 20:Pg(812-813)	BB/LCD
45	Network structure, Security	T1-Ch 20:Pg(813-815) T1-Ch 20:Pg(815-818)	BB/LCD
Content beyond syllabus covered (if any):Case study on comparison of different types of Operating System			

● Session duration: 50 mins

TEXT BOOKS:

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", 10 Edition, John Wiley and Sons Inc.

2. Andrew S Tanenbaum, "Modern Operating Systems", Pearson, 5th Edition.
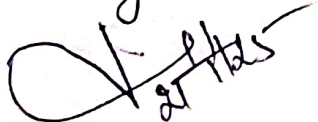
REFERENCES:

1. Charles Crowley, "Operating Systems: A Design-Oriented Approach", Tata McGraw Hill Education".

2. D M Dhamdhere, "Operating Systems: A Concept-based Approach", Tata McGraw-Hill Education. Eighth Edition.

3. William Stallings, "Operating Systems: Internals and Design Principles", Prentice Hall. Seventh Edition.

4. Reto Meier, John Wiley and sons, "Professional Android 4 Application Development".

	Prepared by	Approved by
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Date	23/01/2024	23/01/2024
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.

It is proposed to follow the same lesson plan for the academic year

2024 - 2025

R. Sol 21/5/25

HoD / INT