

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**LESSON PLAN-OPERATING SYSTEMS**

|  |  |  |
| --- | --- | --- |
| **Faculty Name: K. Ramasubramanian**  | **Year / Sem: II/II** | **Academic Year: 2017-18** |

**w.e.f. 14-12-2017**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S.NO** | **TOPICS TO BE COVERED** | **REFERENCE BOOK** | **NO. OF LECTURES REQUIRED** | **DELIVERY METHOD** | **DATE** |
|  | **UNIT-I** |  |  |  |  |
| 1 | Operating system objectives, functions | T1 | 1 | Chalk & Talk | 14.12.2017 |
| 2 | Computer System Architecture | T1 | 1 | Chalk & Talk | 15.12.2017 |
| 3 | OS Structure | T1 | 1 | Chalk & Talk | 16.12.2017 |
| 4 |  OS Operations, Evolution of OS-Simple batch Systems | T1 | 1 | Chalk & Talk |  19.12.2017 |
| 5 | Personnel Computer, Parallel Distributed Systems | T1 | 1 | Chalk & Talk | 19.12.2017 |
| 6 | Real Time Systems, Special Purpose Systems | T1 | 1 | Chalk & Talk | 20.12.2017 |
| 7 | OS Services | T1 | 1 | Chalk & Talk |  21.12.2017 |
| 8 | User OS Interface | T1 | 1 | Chalk & Talk |  22.12.2017 |
| 9 | Operating Systems System calls | T1 | 1 | Chalk & Talk | 23.12.2017 |
| 10 | Types of System calls | T1 | 1 | Chalk & Talk | 27.12.2017 |
| 11 | System Programs | T1 | 1 | Chalk & Talk | 28.12.2017 |
| 12 | OS Design & Implementation | T1 | 1 | Chalk & Talk |  29.12.2017 |
| 13 | OS Structure | T1 | 2 | Chalk & Talk | 02.01.2018 03.01.2018 |
| 14 | Virtualization | T1 | 1 | Chalk & Talk | 04.01.2018 |
| 15 | VM Ware | T1 | 1 | Chalk & Talk | 05.01.2018 |
|  | **UNIT-II** |  |  |  |  |
| 1 | Process concepts | T1 | 1 | Chalk & Talk | 06.01.2018  |
| 2 |  Process States , Process control Block | T1 | 1 | Chalk & Talk | 08.01.2018 |
| 3 | Threads | T1 | 1 | Chalk & Talk | 09.01.2018 |
| 4 | scheduling | T1 | 1 | Chalk & Talk | 10.01.2018 |
| 5 | Process Scheduling | T1 | 1 | Chalk & Talk | 11.01.2018 |
| 6 | Scheduling Queues | T1 | 1 | Chalk & Talk | 19.01.2018 |
| 7 | Context switch, Preemptive scheduling, Dispatcher | T1 | 1 | Chalk & Talk | 20.01.2018 |
| 8 | Scheduling Criteria, Scheduling Algorithms | T1 | 1 | Chalk & Talk | 22.01.2018 |
| 9 | Multi Processor Scheduling, Real Time Scheduling, Thread scheduling | T1 | 1 | Chalk & Talk | 23.01.2018 |
| 10 | Case Studies: Linux, Windows | T1 | 1 | Chalk & Talk | 24.01.2018 |
| 11 | Process synchronization, The Critical-Section Problem | T1 |  2 | Chalk & Talk | 25.01.201827.01.2018 |
| 12 | Peterson’s Solution, synchronization Hardware, Semaphores | T1 | 1 | Chalk & Talk | 29.01.2018 |
| 13 | Classic Problems Of Synchronization, Case Studies : Linux, Window | T1 | 2 | Chalk & Talk | 30.01.201831.01.2018 |
|  | **UNIT-III** |  |  |  |  |
| 1 | Logical& Physical address space | T1 | 1 | Chalk & Talk | 01.02.2018 |
| 2 | Swapping, Contiguous Allocation | T1 | 1 | Chalk & Talk | 02.02.2018 |
| 3 | Paging | T1 | 1 | Chalk & Talk | 03.02.2018 |
| 4 | Page tables | T1 | 1 | Chalk & Talk | 05.02.2018 |
| 5 | Structure of the page Table | T1 | 2 | Chalk & Talk | 06.02.201812.02.2018 |
| 6 | Segmentation | T1 | 1 | Chalk & Talk | 13.02.2018 |
| 7 | Segmentation With Paging | T1 | 1 | Chalk & Talk | 15.02.2018 |
| 8 | Virtual memory | T2 | 1 | Chalk & Talk | 19.02.2018 |
| 9 | Demand paging Page | T2 | 1 | Chalk & Talk | 20.02.2018 |
| 10 | Performance Of Demand Paging | T2 | 2 | Chalk & Talk | 21.02.201823.02.2018 |
| 11 | Page Replacement | T2 | 2 | Chalk & Talk | 24.02.201826.02.2018 |
| 12 | Page Replacement Algorithms | T2 | 1 | Chalk & Talk | 27.02.2018 |
| 13 | Allocation Of Frames, Trashing | T2 | 1 | Chalk & Talk | 28.02.2018 |
|  | **UNIT-IV** |  |  |  |  |
| 1 | Concept of a file, Access Methods | T2 |  | Chalk & Talk | 01.03.2018 |
| 2 | Directory Structure | T2 | 1 | Chalk & Talk | 02.03.2018 |
| 3 | File System Mounting ,File Sharing, Protection | T2 | 1 | Chalk & Talk | 03.03.2018 |
| 4 | File System Implementation | T2 | 1 | Chalk & Talk | 05.03.2018 |
| 5 | File System Structure | T2 | 1 | Chalk & Talk | 06.03.2018 |
| 6 | File Allocation methods | T2 | 1 | Chalk & Talk | 07.03.2018 |
| 7 | Free Space Management | T2 | 1 | Chalk & Talk | 08.03.2018 |
| 8 | Directory Implementation | T2 | 1 | Chalk & Talk | 09.03.2018 |
| 9 | Efficiency & Performance | T2 | 1 | Chalk & Talk | 12.03.2018 |
| 10 | Overview of mass storage structure | T2 | 1 | Chalk & Talk | 13.03.2018 |
| 11 | Disk structure, Attachment, scheduling | T2 | 1 | Chalk & Talk | 14.03.2018 |
| 12 | Disk Management | T2 | 1 | Chalk & Talk | 15.03.2018 |
| 13 | Swap Space Management | T2 | 1 | Chalk & Talk | 19.03.2018 |
|  | **UNIT-V** |  |  |  |  |
| 1 | Dead Lock System Model | T2 | 1 | Chalk & Talk | 20.03.2018 |
| 2 | Dead lock Characterization | T2 | 1 | Chalk & Talk | 21.03.2018 |
| 3 | Methods For Handling dead locks | T2 | 1 | Chalk & Talk | 22.03.2018 |
| 4 | Deadlock Prevention, Avoidance | T2 | 1 | Chalk & Talk | 23.03.2018 |
| 5 | Dead lock Detection, Recovery from deadlock | T2 | 1 | Chalk & Talk | 24.03.2018 |
| 6 | System protection | T2 | 1 | Chalk & Talk | 26.03.2018 |
| 7 | Goals of Protection Principles, Domain of protection | T2 | 1 | Chalk & Talk | 27.03.2018 |
| 8 | Access matrix, Implementation | T2 | 1 | Chalk & Talk | 28.03.2018 |
| 9 | Access Control | T2 | 1 | Chalk & Talk | 29.03.2018 |
| 10 | Revocation of access rights | T2 | 1 | Chalk & Talk | 30.03.2018 |
| 11 | Capability based systems | T2 | 1 | Chalk & Talk | 31.03.2018 |
| 12 | Language based protection | T2 | 1 | Chalk & Talk | 02.04.2018 |
| 13 | Language-Based Protection | T2 | 1 | Chalk & Talk | 03.04.2018 |

**Important Questions in exam point of view**

**Unit -1**

1. Define OS, Explain Various Functions of OS

2. Explain Different Types of OS

3. What Is System Call? Discuss Various Types of System Calls

4. Explain OS Structure

5. Write Short Notes on Virtual Machines

**Unit-2**

1. Define Process .Explain About Process States With Diagram
2. What Is Scheduling. Explain About Types Of Schedulers
3. Explain About Various CPU Scheduling Algorithms
4. Write Short Notes on A) Multilevel Scheduling B) Multiprocessor Scheduling

C) Time Scheduling

 5) Explain About Process Synchronization And Critical Section Problem

 6) Solutions for Critical Section Problem

 A) Petersons Solution B) Semaphore C) Monitors

 7) Discuss Classical Synchronization Problems

 A) Readers Writers Problem B) Producer Consumer Problem

 C) Dining Philosophers Problem

**Unit -3**

1. Differences Between Logical& Physical Address Space
2. Explain About Contiguous Memory Allocation And Memory Allocation Algorithms
3. Explain About Paging And Page Table Structures
4. Explain About Segmentation
5. Define Fragmentation And Discuss Differences Between Internal And External Fragmentation
6. Discuss About Virtual Memory
7. Explain About Demand Paging
8. Explain About Various Page Replacement Algorithms
9. Define Thrashing Explain Different Thrashing Control Methods
10. Discuss Different Frame Allocation Methods

**Unit-4**

1. Define File ,Explain File Access Methods
2. Write Short Notes File System Mounting ,File Sharing, Protection file
3. Explain About File Allocation Methods
4. Discuss About Free Space Management
5. Explain About Directory Structure And Directory Implementation
6. Explain About Disk Scheduling Algorithms
7. Explain About Swap Space Management

**Unit-5**

1. What Is A Dead Lock
2. Explain Characteristics Of Deadlock
3. Explain About A) Deadlock Prevention

B) Deadlock Detection

C) Dead Lock Avoidance

D) Deadlock Recovery

 4) Explain Bankers Algorithm

 5) Explain How Protection Is Implemented For Access Matrix

**TEXT BOOKS:**

T1: operating systems and concepts by Galvin,Silberscatch,8Th edition

T2: operating systems and structures by William Stallings

**WEB RESOURCES:**

W1: <http://www.tutorialspoint.com/operating_system/>

W2:<http://williamstallings.com/OperatingSystems/>

W3:<http://www.computerhope.com/os.htm>

W4:<https://www.cs.uic.edu/~jbell/CourseNotes/OperatingSystems/5_Synchronization.html>