**d. Syllabus**

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| **Unit-1** | **INTRODUCTION** | **Contact Hours:15** |
| **Introduction to the Operating System** | Introduction to Operating Systems, Operating System Structure, Main Functions and characteristics of Operating Systems, Types of Operating Systems, System calls, Types of system calls, System programs. | |
| **Process Management** | Process Concept, Process Control Block, Process Scheduling, Threads, CPU Scheduling : Preemptive/ Non Preemptive Scheduling, Scheduling Criteria, Scheduling Algorithms, inter-process communication, remote procedure calls, Process Synchronization | |
| **Deadlocks** | Deadlock characterization and conditions for deadlock, deadlock prevention, Deadlock avoidance-safe state, resource allocation graph algorithm, Banker’s algorithms-Safety algorithm, Deadlock detection, Recovery from deadlock. | |
| **Unit-2** | **MEMORY AND DEVICE MANAGEMENT** | **Contact Hours:15** |
| **Memory Management** | Address binding, logical versus physical address space, dynamic loading, Swapping, contiguous memory allocation, Fragmentation, Paging, Segmentation, Segmentation with Paging, Virtual Memory Concept, Demand Paging, Page Replacement, Page Replacement Algorithms | |
| **Device Management** | Disk Structure, Disk formatting, Disk Scheduling Algorithms, RAID structure-RAID levels, problems with RAID. | |
| **File Management** | File Concepts, Access Methods, Directory Structure, Allocation Methods, Free Space Management. | |
| **Unit-3** | **SECURITY AND TYPES OF OS** | **Contact Hours:15** |
| **System Protection and Security** | Goals, principles and domain of protection, Access matrix, implementation of access matrix, the security problem, program threats, system and network threats. | |
| **Distributed and Network Operating Systems** | Overview: Topology, connection strategy, network operating system types: Peer to Peer & Client server, Distributed message passing. | |

## Text Books:

1. Galvin, Peter B., Silberchatz, A., “Operating System Concepts”, Addison Wesley, 8th Edition.
2. Flynn, “Operating Systems”, Cengage Learning.
3. Dhamdhere, D.M., "Operating System: A Concept Based Approach", Tata Mc-Graw-Hill.

## Reference Books:

1. Madnick , Stuart E., Donovan, John J. “ *Operating System*”, McGrawHill.
2. Stalling, William, “*Operating Systems*”, Pearson Education, Fifth Edition.

**e. Assessment Pattern - Internal and External**

The performance of students is evaluated as follows:

|  |  |  |
| --- | --- | --- |
|  | **Theory** | |
| **Components** | **Continuous Internal Assessment (CAE)** | **Semester End Examination (SEE)** |
| **Marks** | 40 | 60 |
| **Total Marks** | 100 | |

**f. Internal Evaluation Component**

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| S. No. | Type of Assessment | Weightage of actual conduct | Frequency of Task | Final Weightage in Internal  Assessment | Remarks |
| 1 | Assignment | 10 marks of each assignment | One Per Unit | 10 marks | As applicable to  course types  depicted above. |
| 2 | Exam | 12 marks for  each test | One per Unit | 4 marks |
| 3 | Quiz/Test | 4 marks of each  Quiz | 2 per Unit | 4 marks |
| 4 | Homework | NA | One per lecture  topic (of 2  questions) | Non-Graded:  Engagement Task |
| 5 | Case study | NA | NA | NA |
| 6 | Discussion | NA | One per  Chapter | Non Graded:  Engagement Task |
| 7 | Presentation | NA | NA | Non Graded:  Engagement Task |

**g. CO-PO Mapping**

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| **Course Outcome** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| CO1 | 3 | 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| CO2 | 2 | 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| CO3 | 3 |  |  | 3 |  |  |  |  |  |  |  |  | 2 |  |
| CO4 |  | 8 |  |  |  |  |  |  |  |  |  |  |  |  |
| CO5 |  |  | 3 |  |  |  |  |  |  |  |  |  |  | 3 |

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| **SN** | **Course Code**  **21CSP-314** | **Advance Programming Lab-1** | **L** | **T** | **P** | **S** | **C** | **CH** | **Course Type\*** |
| 3 |  | 0 | 0 | 2 | 0 | 1 | 2 | EE |
|  | |  | | | | Course Code(s)  **21CSP-314** | | | |
| **PRE-REQUISITE** | | 21CSP-259 | | | |  | | | |
| **CO-REQUISITE** | | 21CST-313 ,21CST-315,21CST-316,21CST-319,21CSP-321 | | | |  | | | |
| **ANTI-REQUISITE** | | 21CSP-356 | | | |  | | | |