**Detailed Syllabus**

Lab-wise Breakup

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| **Subject Code** | 15B17CI472 | **Semester Even**  **(specify Odd/Even)** | **Semester** V **Session** 2022-2023 Month: July-Dec 2022 |
| **Subject Name** | Operating System and System Programming Lab NBA Code: C275 | | |
| **Credits** | 0-0-1 | **Contact Hours** | 2 |

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| **Faculty (Names)** | **Coordinator(s)** | Dr. Vikash (Sec-62) & Dr. Neeraj Jain (Sec 128) |
| **Teacher(s) (Alphabetically)** | Prof Charu, Dr. Anubhuti Roda, Dr. Gaurav Kr. Nigam, Dr. Neeraj Jain |

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| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
| **C275.1** | Understand Various Unix Commands. | Understand Level  (Level 2) |
| **C275.2** | Develop programs to create different types of processes using pthread library under Linux environment. | Apply Level (Level 3) |
| **C275.3** | Develop programs to implement resource management task like CPU scheduling algorithms, deadlock handling. | Apply Level (Level 3) |
| **C275.4** | Develop programs to implement and test various synchronization techniques like semaphores, binary semaphore and monitors via different classical test suites. | Apply Level (Level 3) |
| **C275.5** | Design and analyze various disk-scheduling algorithms, memory management schemes, file management systems. | Analyze Level (Level 4) |

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| **Module No.** | **Topic** | **No. of Labs** | **COs** |
| **1.** | Unix Commands | 1 | **C275.1** |
| **2.** | Process creation/ Inter process communication (IPC) | 1 | **C275.2** |
| **3.** | Processes creation using pthread library under Linux environment. | 2 | **C275.2** |
| **4.** | Synchronization techniques like semaphores, binary semaphore and monitors via different classical test suites. | 2 | **C275.4** |
| **5.** | Resource management task like CPU scheduling algorithms, deadlock handling. | 1 | **C275.3** |
| **6.** | Disk-scheduling algorithms, memory management schemes, file management systems. | 1 | **C275.5** |
| **Evaluation Criteria**  **Components Maximum Marks**  **Lab Test-1** **20**  **Lab Test-2 20**  **Day-to-Day 60**(Mini Project-10, Lab Assessment-40, Attendance-10)  **Total 100** | | | |

**Project Based Learning:** Project based learning: Each student works on different case study in Lab Assignments. They utilize the concepts taught in lab and develop project in a group of 3-4.The course emphasized on the skill development for employability in software industry by engaging students on soft development methodologies of operating systems. Various activities are carried out to enhance the student’s software development skills. Some of them are study of various scheduling methods, memory management techniques and file management techniques.

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| **Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. ( Text books, Reference Books, Journals, Reports, Websites etc.) | |
| **Text book(s)** | |
| **1.** | CharlesCrowley “Operating System A Design Approach”TMH. |
| **2.** | Andrew S. Tanenbaum “Operating Systems Design and Implementation”, Third Edition,Prentice Hall Publications2006 |
| **3.** | A.S. Tanenbaum, “Modern Operating Systems”, 2nd edition, Prentice Hall India. |
| **4.** | A.Silberschatz, P.Galvin, G. Gagne, “Operating systems concepts” Willey international company (Ninth edition) |
| **Reference Book(s)** | |
| **5.** | Gary Nutt, “Operating Systems – A modern perspective”, Pearson Education |
| **6.** | David Solomon and Mark Russinovich , “Inside Microsoft Windows 2000”, Third Edition, Micorosoft Press |
| **7.** | Milan Milenkovic, “Operating Systems: Concepts and Design”, McGraw-Hill computer science series |
| **8.** | ACM/IEEE transactions on operating systems concepts. |
| **9.** | [www.vmware.com](http://www.vmware.com) |