**Department of Computer Science and Engineering & IT**

**AY: 2023-24 (Odd Semester)**

**Course Opening Report**

Programme Name: B.Tech (IT)

Semester: Vth

Course Name & Code: Operating Systems and Systems Programming Lab (15B11CI373)

Name of Course Coordinator(s): Dr. Vivek Kumar Singh (J62), Dr. Anubhuti (J128)

**1. Course Outcomes:**

At the completion of the course, students will be able to,

| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
| --- | --- | --- |
| **C275-1.1** | Understand Various Unix Commands. | Understand Level  (Level 2) |
| **C275-1.2** | Develop programs to create different types of processes using pthread library under Linux environment. | Apply Level (Level 3) |
| **C275-1.3** | Develop programs to implement resource management task like CPU scheduling algorithms, deadlock handling. | Apply Level (Level 3) |
| **C275-1.4** | Develop programs to implement and test various synchronization techniques like semaphores, binary semaphore and monitors via different classical test suites. | Apply Level (Level 3) |
| **C275-1.5** | Design and analyze various disk-scheduling algorithms, memory management schemes, file management systems. | Analyze Level (Level 4) |

**2. CO-PO and CO-PSO Mapping:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **PO1** | **PO2** | **PO3** | | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| **C275-1.1** | **1** | **2** | **1** | | **1** | **1** |  |  |  |  |  |  |  | **2** | **2** |
|  | Slightly related to the application knowledge of engineering problems | Moderately related to principles of problem analysis. | Slightly Mapped as understanding of fundamentals of the system components. | | Slightly Mapped as analysis of fundamentals of the system components. | Slightly Mapped as using tools and commands for modeling problems. |  |  |  |  |  |  |  | Moderately Mapped as understanding of fundamentals of research problems | Moderately Mapped as understanding of basics of system structures to develop real world projects and solutions |
| **C275-1.2** | **3** | **2** | **3** | | **2** | **2** |  |  |  |  | **2** | **1** | **1** | **3** | **3** |
|  | Strongly Mapped as applying various approaches for multiprocessing in different real world applications | Moderately Mapped in identifying and analyzing differentprocesses for different problems | Strongly Mapped designing and developing solutions using pthread library under linux environment | | Moderately Mapped to analyzing and interpreting real world problems and synthesizing solutions using multiprocessing . | Moderately Mapped to using linux environment and simulating multiple processes representing different application. |  |  |  |  | Moderately Mapped as students will communicate interpretability in course project | Slightly Mapped as students will be able to manage their course project | Slightly Mapped as interpretation of applicability of multiprocessing will help in adapting to technological solutions | Strongly Mapped as identifying suitable algorithms to develop real world applications using multiprocessing approaches | Strongly Mapped as interpretation of applicability of multiprocessing models help in programming competitions. |
| **C275-1.3** | **3** | **3** | **3** | | **2** | **2** |  |  |  |  | **2** | **1** | **1** | **3** | **3** |
|  | Strongly Mapped as implementing various approaches for resource management tasks. | Strongly Mapped in identifying and analyzing resource management issues and requirements. | Strongly Mapped designing and developing solutions to implement CPU scheduling and deadlock handling. | | Moderately Mapped to investigate and address complex issues related to resource management . | Moderately Mapped to utilize software tools and techniques for developing and testing resource management programs. |  |  |  |  | Moderately Mapped as students will communicate interpretability in course project | Slightly Mapped as manages resources efficiently during the development of resource management programs | Slightly Mapped as interpretation of applicability of knowledge and skills in the field of resource management. | Strongly Mapped as identifying programs for resource management to develop CPU scheduling and deadlock handling algorithms | Slightly Mapped as interpretation of applicability of Topic modeling techniques in NLP applications to help in programming competitions. |
| **C275-1.4** | **3** | **3** | **3** | | **2** | **2** |  |  |  |  | **2** | **1** | **1** | **3** | **3** |
|  | Strongly Mapped as developing programs to demonstrate a deep understanding of concurrency and synchronization concepts. | Strongly Mapped in analyzing synchronization problems in concurrent systems and apply appropriate techniques to address them effectively. | | Strongly Mapped in designing and developing software solutions that implement synchronization techniques, to ensure correct and efficient concurrent operation. | Moderately Mapped to investigate and resolve complex synchronization issues in concurrent systems. | Moderately Mapped to modeling and classifying text using supervised and unsupervised techniques for NLP applications |  |  |  |  | Moderately mapped in Communicating the design, implementation, and testing results of synchronization programs clearly and effectively. | Slightly Mapped in Managing resources efficiently during the development and testing of synchronization program. | Slightly Mapped as updating knowledge and skills in the field of concurrency, synchronization, and testing techniques. | Strongly Mapped as developing various synchronization techniques, using appropriate programming languages and tools. | Strongly Mapped as Demonstrating problem-solving skills by analyzing and addressing synchronization challenges in concurrent systems using classical test suites. |
| **C275-1.5** | **3** | **3** | **3** | | **2** | **2** |  |  |  |  | **2** | **1** | **1** | **3** | **3** |
|  | Strongly Mapped as Understanding and applying various disk-scheduling algorithms, memory management schemes, and file management systems, demonstrating a strong foundation in CS concepts. | Strongly Mapped in Analyzing and evaluating the performance of different algorithms, schemes, and management systems to make informed decisions and optimizations. | Strongly Mapped in Applying critical thinking skills to identify the strengths and weaknesses of different algorithms and schemes, enabling the selection of the most suitable solutions for specific scenarios. | | Moderately Mapped to Co-designing these components involving creative thinking and innovation to develop efficient and effective solutions. | Moderately Mapped to Effectively communicate the results of the analysis and design to both technical and non-technical stakeholders, making complex concepts understandable. |  |  |  |  | Moderately Mapped as students will communicate interpretability in course project | Slightly mapped to applying skills learned in the analysis and design of these components to contribute to entrepreneurial endeavors or manage technology projects effectively. | Slightly mapped as interpretation of potential societal benefits and concerns associated with scheduling algorithms, management schemes, and systems, and work towards addressing them. | Strongly Mapped as Applying core knowledge of computer science and engineering to design and analyze scheduling algorithms, management schemes, and systems effectively. | Strongly Mapped as interpretation of problem-solving skills by analyzing and optimizing the performance of various system components. |
| **NBA Code: C275-1** | 3 | 3 | 3 | | 2 | 2 |  |  |  |  | 2 | 1 | 1 | 3 | 3 |

**3. Identified gaps in Syllabus/ Course Description (If Any):**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topics to be introduced** | **Strengthens CO** | **Strengthens PO, PSO** | **Method of Identification** |
|  |  |  |  |
|  |  |  |  |

**4. Modifications in Syllabus/ Course Description (If Any):**

|  |  |  |
| --- | --- | --- |
| **Details of Modification (Addition/ Removal)** | **Justification** | **Strengthens POs/PSOs** |
| **Tizen OS is introduced** | **The knowledge of recent OS is necessary for Students.** | **PO11, PO12, PSO1, PSO2** |
|  |  |  |

**5. Actions for Improving CO Attainments:**

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| --- | --- | --- | --- |
| **COs** | **Attainments in 2022-23** | **Action to be taken in 2022-23 to improve CO attainment** | **Strengthens POs/PSOs** |
|  |  |  |  |
|  |  |  |  |

**6. Innovative Teaching and Learning Method to be used:**

* Project based learning

**7. Strategies for**

* **Weak Learners:**

|  |  |
| --- | --- |
| Schedule doubt sessions at end of each lab.  Include some basic question in assignments to clear the fundamentals | Assignment Sheet |

* **Bright Students:**

|  |  |
| --- | --- |
| Include few difficult questions to improve or add on to their ability | Assignment Sheet |

**8.** **Innovative Evaluation Strategy to be used (If any):**

* Evaluation through project

**Signature: Signature:**

**Module Coordinator: Dr. Parmeet Kaur Course Coordinator: Dr. Vivek Kumar Singh (J62)**

**Dr. K. Rajlakshmi Dr. Anubhuti (J128)**