**Department of Computer Science and Engineering & Information Technology**

**AY: 2023-24, (Even Semester)**

**Course Closing Report**

**Programme Name: B.Tech (CSE)**

**Semester: 6**

**Course Name & Code: Operating Systems and Systems Programming (15B11CI412)**

**NBA Code: C311**

**Name of Course Coordinator(s): Dr. Vikash, Mr. Ashish Kumar**

**1. Course Outcomes:**

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

|  |  |  |
| --- | --- | --- |
| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
| C311.1 | Explain the fundamental concepts along with the various components of operating systems and system programming. | Remember Level (C1) |
| C311.2 | Apply various OS scheduling techniques and algorithms for processes and threads | Apply Level (C3) |
| C311.3 | Elaborate the various resource management techniques of operating systems and their performance. | Evaluate Level (C5) |
| C311.4 | Omit the concept of IPC and describe various process synchronization techniques in OS. | Understand Level (C2) |

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

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| **C311.1** | **1** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** |
| **C311.2** | **2** | **0** | **1** | **0** | **1** | **0** | **0** | **0** | **2** | **1** | **0** | **2** | **2** | **2** |
| **C311.3** | **2** | **0** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **2** | **2** | **2** |
| **C311.4** | **3** | **3** | **3** | **3** | **3** | **0** | **0** | **0** | **3** | **3** | **3** | **3** | **3** | **3** |
| **Avg** | **2** | **3** | **2** | **3** | **2** | **1** | **0** | **0** | **3** | **2** | **3** | **2** | **2** | **2** |

**3. CO Attainments in 2023-24:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course** | **C311.1** | **C311.2** | **C311.3** | **C311.4** |
| **C311** | 1.2 | 1.2 | 1.4 | 1.4 |

**4. PO-PSO Attainments in 2023-24:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** |
| **C311** | 1.3 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 0 | 0 | 1.3 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 |

**5. Summary of Result Analysis:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Grade** | **Grade A+** | **Grade A** | **Grade B+** | **Grade B** | **Grade C+** | **Grade C** | **Grade D** | **Grade F** |
| **% age of Students** | 5.6 | 40.8 | 65.6 | 50.8 | 37.6 | 22 | 6.4 | 2.8 |

**6. Innovative Teaching and Learning Method used (if any):**

* To increase interaction and easy dissemination of resources, a google classroom has been created.
* Creates students What’s Up group to increase the student’s interaction.
* References using animations and videos are used for a better understanding of basic topics.
* Scenario-based questions introduced in tutorials in order to achieve the required OBE Level.
* Gave weightage to important topics like process management, inter-process communication, etc. by increasing allotted lectures.
* Motivate faculty to teach important concepts related to campus placement through animation and AR material.
* Updated and modified tutorial assignments to cater to the need for new technology.
* More Questions/numerical with different scenarios were discussed in lecture and tutorial classes for a deeper understanding of process management concepts and threads in OS
* Introduce the concept of Active learning activities like think pair share kind of activity during the lectures.

**7. Innovative Evaluation Strategy used (If any):**

* Project demonstration by students’ group and evaluation by faculty.
* Interactive Oral viva to assess the project
* Innovative technique introduced among faculties to prepare an interactive presentation.
* Indirect questions with multiple concepts were used to test the learning aptitude in lecture as well as tutorial class.
* Evaluation questions were targeted to judge the individual outcome set for each topic.

**8. Actions Taken for Improvement in CO Attainments:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COs** | **Attainments in 2020-21** | **Attainments in 2021-22** | **Attainments in 2022-23** | **Target Attainment of CO for 2023-24** | **Attainments in 2023-24** | **Action(s) taken in 2022-23 to improve CO attainment** | **Proof Document(s) attached in Course File** | **Strengthens POs/PSOs** | | | | |
| **PO1** | **PO2** | **PO3** | **PSO1** | **PSO1** |
| **C311.1** |  |  |  | 1.8 | 1.2 |  |  |  |  |  |  |  |
| **C311.2** |  |  |  | 1.8 | 1.2 |  |  |  |  |  |  |  |
| **C311.3** |  |  |  | 1.8 | 1.4 |  |  |  |  |  |  |  |
| **C311.4** |  |  |  | 1.8 | 1.4 |  |  |  |  |  |  |  |

**NOTE:**

1. If COs were not revised this semester, Target Attainment of a CO for current AY = Average of Attainments in previous 3 AY's
2. If the CO attainments are not available (due to new course/ revision of COs) for previous three consecutive years, then the target is 1.8 for this year.

**9. Actions Taken for Improvement in PO-PSO Attainments:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PO-PSOs** | **Target Attainments** | **Attainments in 2022-23** | **Action(s) taken in 2023-24 to improve the attainment** | **Proof Document(s) attached in Course File** |
| PO1 | 1.8 | No data |  |  |
| PO2 | 1.8 | No data |  |  |
| PO3 | 1.8 | No data |  |  |
| PO4 | 1.8 | No data |  |  |
| PO5 | 1.8 | No data |  |  |
| PO6 | 1.8 | No data |  |  |
| PO7 | 1.8 | No data |  |  |
| PO8 | 1.8 | No data |  |  |
| PO9 | 1.8 | No data |  |  |
| PO10 | 1.8 | No data |  |  |
| PO11 | 1.8 | No data |  |  |
| PO12 | 1.8 | No data |  |  |
| PSO1 | 1.8 | No data |  |  |
| PSO2 | 1.8 | No data |  |  |

**10. Suggestions for Improvement:**

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **Suggestion** | **Relevance to CO** | **Relevance to PO/PSO** |
| 1 | Discuss more practice questions with students based on CPU scheduling algorithms. | Strengthens the attainment of CO2 | Strengthens the attainment of PO1,PO2, PO3, PO4, PO5,PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2 |
| 2 | Discuss more practice questions with students based on CPU scheduling algorithms. | Strengthens the attainment of CO2 | Strengthens the attainment of PO1,PO2, PO3, PO4, PO5,PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2 |

**11. Action taken for weak students:**

|  |  |
| --- | --- |
| **Action taken for weak students** | **Proof Document(s) attached in Course File** |
| Extra classes took after the T1 exam and T2 exam to target the COs in students not performed well. Motivate to Include the good student in project groups along with weak students | Notice given to the students for remedial class has been attached in course file |

**12. Action taken for bright students:**

|  |  |
| --- | --- |
| **Action taken for bright students** | **Proof Document(s) attached in Course File** |
| Students are associated to help weak learner. | - |

**Signature: Signature:**

**Module Coordinator: Course Coordinator:**

**Dr. Arti Jain and Dr. Vartika Dr. Vikash, Mr. Ashish Kumar**