|  |  |
| --- | --- |
| **Course Code** | CSU4300 |
| **Level** | 4 |
| **Course Title** | Operating Systems |
| **Credit value** | 3 credits |
| **Core/Optional** | Core |
| **Prerequisites** | (CSU3200+CSU3301+CSU3302) (EL/CR) |
| **Hourly breakdown** | **Theory** | **Practical****hours** | **Independent Learning** | **Assessments** | **Total hrs.** |
| 25 Sessions X 2 = **50 hrs.** | 5 DS x 3 hrs. = **15 hrs.** |  **-** | * Sessions (25 x 3)

 = **75 hrs.*** Online = **08 hrs.**

Total = **83 hrs.** | Continuous Assessments (CA) : **02 hrs.** | **150 hrs.** |
| **Course Aim/s.** | To provide Theoretical knowledge on the internal design and functionality of Operating systems |
| **PLOs addressed by course**  | **PLO1: Knowledge:** Explain the fundamental, principles and broader knowledge pertaining to the chosen science disciplines offered for the degree.**PLO5: Creativity and Problem Solving:** Identify and analyze problems using quantitative and/or qualitative approaches using scientific methodology to provide valid conclusions. **PLO8**: **Vision for Life:** Develop the capacity to project for future through identifying self-directed goals and continuously targeting towards them for self-improvement by undertaking further studies.  |
| **Course Learning Outcomes (CLO)** | At the completion of course, student will be able to:CLO1:Explain Overview of System software evolved to make an operating system, (PLO1 & 8)CLO2: Explain process management and scheduling operations (PLO1, 5 & 8)CLO3: Explain operations of threads and thread management. (PLO1, 5 & 8)CLO4: Explain Deadlocks and their mitigation (PLO1, 5 & 8)CLO5: Explain the memory management tasks and paging operations (PLO1 & 8)CLO6: Explore I/O Buffering, Disk Scheduling algorithms (PLO1, 5 & 8) |
| **Content** **(Main topics, sub topics)**  | Introduction,Objectives and History of Operating Systems,Operating system Components and Functions, Process Concepts and Process States, Introduction to Process Scheduling,Process Scheduling Algorithms, Concurrent Process Synchronization, Inter Process Communication, Semaphores & Monitors, Threads and Thread models, Deadlocks, Deadlock Detection and Recovery, Memory Management, Memory Partitioning, Free memory Management, Memory protection and Overlay programs, Paging, Page Replacement Mechanisms, Frame Allocation and Page Faults, Segmentation, Files & Directories, File Allocation and Free Space Management, I/O Devices, I/O Buffering and Disk Scheduling,Disk types and configurations. |
| **Teaching Learning methods (TL)** | Self-learning/independent learning of self - study (IL)* Learning the course contents in course materials in print and web-based materials (SS)
* Additional reading materials/ recommended reading (RE)

Contact sessions* Day schools (discussion sessions) (Non-compulsory)
 |
| **Assessment strategy** | Overall Continuous Assessment Mark (OCAM): 40% | Final Assessment: 60 % |
| Details: Continuous Assessment (CA) I : **01 hr.**  Continuous Assessment (CA) II :**01 hr.** OCAM computation: OCAM= 60% of best CA I/CA II + 40% of other CA I /CA II  | Final Evaluation Theory: **02 hrs.** |
| **Recommended** **Readings:** | 1. Silberschatz A., Gavine P. B., and Gane G, *Operating Systems Concepts*,7th Edition, John Wiley and Sons. 2005.
2. Joshi, R.C., Tapaswi, S. *Operating Systems*, Dream Publishers, 2005
 |