AC –
Item No. –

# As Per NEP 2020

# Tolani College of Commerce (Autonomous)


**Title of the Course: <u>Operating Systems</u>**

**Programme: B.Sc(Information Technology) Semester 2**

**Syllabus for 2 credit Course**

**From the academic year- 2024-2025**

| Sr. No. | Heading | Particulars |
|---|---|---|
| 1 | **Description of the course :** | Operating systems (OS) provide the crucial interface between a computer's hardware and the applications that run on it. It allows us to write programs without bothering much about the hardware. It also ensures that the computer's resources such as its CPU, hard disk, and memory, are appropriately utilized. |
| 2 | **Vertical :** | Skill Enhancement Course |
| 3 | **Type :** | Theory and Practical |
| 4 | **Credit**: | 2 credits (1 Credit = Theory and 1 Credit = Project Work) |
| 5 | **Hours Allotted :** | 30 Hours |
| 6 | **Marks Allotted**: | 50 Marks<br>Continuous Evaluation: 20<br>Semester-End: 30 |
| 7 | **Course Objectives**:<br>**1.** To learn different process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.<br>**2.** To know virtual memory concepts. | |
| 8 | **Course Outcomes**:<br>**1.** Learners will gain deep understanding of the fundamental concepts of operating system, including memory management, file systems and I/O systems.<br>**2.** Learners will be able to analyze how multi programming is handled. | |

| | |
|---|---|
| **9** | **Module 1: Introduction to operating systems, Processes and Threads, Memory Management (15 Hours)** |
| | • What is an operating system? History of operating system, computer hardware, different operating systems, operating system concepts, system calls, operating system structure.<br>• Processes, threads, interprocess communication, scheduling, IPC Problems.<br>• No memory abstraction, memory abstraction: address spaces, virtual memory, page replacement algorithms, implementation issues, segmentation. |
| | **Module 2: Virtualization and Cloud, File Systems and Case Study on Linux and Android. (15 Hours)** |
| | • History, requirements for virtualization, type 1 and 2 hypervisors, techniques for efficient virtualization, hypervisor microkernels, memory virtualization, Virtual appliances, Clouds.<br>• Files, directories, file system implementation, file-system management and optimization, MS-DOS file system<br>• History of Unix and Linux, Linux Overview, Processes in Linux, Memory management in Linux, I/O in Linux, Linux file system, security in Linux. Android |

| | | |
|---|---|---|
| **10** | **Reference Books:**<br>• **Author:** Christopher Negus, **Title** : Linux Bible, **Publisher:** Willy 10th Edition, **Year:** 2015<br>• https://e-next.in/bsc-it/sem1/operating-systems/ | |
| **11** | **Internal Continuous Assessment: 20%** | **Semester End Examination : 30%** |
| **12** | **Continuous Evaluation through:** | Practical Assessment |
| **13** | **Scheme of Evaluation Pattern**<br>**Table 1A: Scheme of Continuous Evaluation (CE/Practical)**<br>**Scheme of Evaluation Pattern** | |

| Sub-components | Maximum Marks | Conditions for passing |
|---|---|---|
| 1) Practical assessment | 15 | A learner must be present for each of the sub-components. |
| 2) Journal and Viva | 5 | |
| Total | 20 | |

**Table 1B: Scheme of Semester End Examination (SEE) Evaluation**

**Question Paper Pattern for Semester End Examination (SEE)**

**Maximum Marks: 30** **Duration: I Hrs.**

Note: All questions are compulsory. Each question has an internal choice.

| Question Number | | Nature of Questions | Maximum Marks |
|---|---|---|---|
| 1) | **Attempt any 3** | | |
| | a) | | 15 |
| | b) | | |
| | c) | | |
| | d) | | |
| | e) | | |
| 2) | **Attempt any 3** | | |
| | a) | | 15 |
| | b) | | |
| | c) | | |
| | d) | | |
| | e) | | |