C. U. SHAH UNIVERSITY, WADHWAN CITY.

Faculty of: **Computer Science**
Course: **Bachelor of Computer Applications**
Semester**: III**
Subject Code**: 4CS03AOP1 (Elective – II)**
Subject Name: **Operating System**

Sr. No	Branch Code	Subject Code	Subject Name	Teaching hours/ Week			Credit hours	Credit Points	Evaluation Scheme/ Semester								
									Theory				Practical				Total
									Internal Assessment		End Semester Exams		Internal Assessment		End Semester Exams		
				Th	Tu	Pr			Marks	Duration	Marks	Duration	Marks	Duration	Marks	Duration	
4	2	4CS03AOP1	Operating System	4	--	--	4	4	15(SE) 15(CE)	1Hr.	70	2½ Hrs.	--	--	--	--	100

AIM:

The aim of this subject is that student can use different Operating System such as windows/Unix/Linux etc. The students would be able to handle operating system features and familiar with the environment of OS.

COURSE CONTENTS

Unit I Introduction **06 Hrs.**

- Introduction to OS, Evolution of OS, OS Services,
- Types of OS, Different Views of OS.
- Operating System structure, System Programs, System calls.

Unit II Process Management **12 Hrs.**

- Process Concept, Process scheduling, Inter Process Communication.
- Thread in OS, Multithreading models, threading issues.
- CPU Scheduling, Scheduling algorithms, Process synchronization.
- Critical section problem, Semaphores, classic Problems in synchronization.
- Deadlock, Deadlock prevention, deadlock avoidance, deadlock detection.
- Recovery from deadlock.

Unit III Memory Management **12 Hrs.**

- Main memory, swapping, paging, contiguous memory allocation
- Structure of page table, Segmentation, Virtual memory, Demand paging.
- Page replacement algorithm (FIFO, LRU, Optimal page replacement), Thrashing.

Unit IV File Mangement **12 Hrs.**

- Introduction to File, Access method, Directory Structure, File system structure.
- File/Directory Implementation, Allocation methods (contiguous, linked, indexed),
- Free-space management, Recovery, Overview of Mass storage,
- Disk structure, Disk scheduling, Disk management, RAID structure.

Unit V Security **6 Hrs.**

- Security environment, Design principles of security,
- User authentication, Protection mechanism: Protection domain, Access control list.

REFERENCE BOOKS:

- Operating System ConceptsBy **Abraham Silberschatz, Peter Baer Galvin, Greg Gagne**, John Wiley &Sons, 8th edition, 2010.
- Modern Operating Systems By**Andrew S. Tanenbaum**, Pearson Education, 4th edition, 2014.
- Operating System – Internals & Design Principles -By **William Stallings,** Pearson Prentice hall, 5th Edition, 2009.
- Operating Systems **By D.M.Dhamdhare**, Tata McGraw Hill, 1st edition, 2009.
- Unix System Concepts & Applications By **Sumitabha Das**, Tata McGraw Hill, 4th edition, 2008.
- Unix Shell Programming By **YashwantKanitkar,** BPB Publications, 2002.

NPTEL COURSE (https://nptel.ac.in/):

- Operating system fundamentals, IIT Kharagpur, Prof. Shantnu Chattopadhyay
- https://nptel.ac.in/courses/106105214