1.Course Outline

Course Title	Operating Systems		
Course Code	CA769		
Department	Computer Applications	**No. of Credits**	3
Programme	M.Sc (Computer Science)	**Learning Hours**	3 Per Week
Pre-requisites Course	Computer Fundamentals	**Faculty Name**	Dr. R. Gobi
E-mail	gobir@nitt.edu	**Telephone No.**	0431-2504653
Course Type	Core Course	**Office**	Lyceum 109
Course Materials	https://app.box.com/s/033idbflbdj7tchtjkcoo8023o09xvtk		

2. Course Overview

This course will introduce the core concepts of operating systems, such as processes and threads, scheduling, synchronization, memory management, file systems, input and output device management and security.

3. Course Objectives

To introduce basic concepts and features of OS with case study on different operating systems with example.

4. Course Outcomes (CO)

Students will be able to:

1. Use system calls to interact with OS

2. Synchronize multiple processes and handle issues in synchronization

3. Implement memory management techniques

4. Implement algorithms in secondary storage and file management techniques

5. Design the functionalities of OS

5. Course Outcome (CO)	Aligned Programme Outcome (PO)											
	PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12
Use system calls to interact with OS	B	B	M	S	S	B	M	M	M	B	M	M
Synchronize multiple processes and handle issues in synchronization	B	B	M	S	S	B	M	M	M	B	M	M
Implement memory management techniques	B	B	M	S	S	B	M	M	M	B	M	M
Implement algorithms in secondary storage and file management techniques	B	B	M	S	S	B	M	M	M	B	M	M
Design the functionalities of OS	B	B	M	S	S	B	M	M	M	B	M	M

6. Course Teaching and Learning Activities		
Week	**Mode of Delivery**	**Topics**
1.	Chalk and Talk, PPT	Batch Systems, Concepts of multi programming
		Time-sharing, parallel, distributed and real - time systems.
		OS components and services. System calls and system programs.
2.	Chalk and Talk, PPT	Process concept, process scheduling
		Cooperating processes, threads and intercrosses communication.
		CPU scheduling criteria, scheduling algorithms
3.	Chalk and Talk, PPT	The critical section problem, synchronization hardware, semaphores
		Classical problems of synchronization, critical regions and monitors
		Dead locks - system model, characterization
4.	Chalk and Talk, PPT	Deadlock prevention, Deadlock avoidance

6. Course Teaching and Learning Activities

Week	Mode of Delivery	Topics
		Recovery from Deadlock
		Memory management - logical and physical address space
5.	Chalk and Talk, PPT	Swapping, contiguous allocation
		Paging and segmentation
		Segmentation with paging
6.	Chalk and Talk, PPT	Virtual Memory - Demanding paging and its performance
		Page replacement algorithms
		Allocation of frames and Thrashing
7.	Chalk and Talk, PPT	File systems, Secondary Storage Structure
		Protection and Security-File concept, access methods
		Directory structure, protection and consistency semantics.
8.	Chalk and Talk, PPT	File system structure, allocation methods.
		Free space management. Directory implementation
		Disk structure, disk scheduling methods.
9.	Chalk and Talk, PPT	Disk management, Swap-space management. Disk reliability.
		Protection - Goals of protection, domain of protection
		Access matrix and its implementation.
10.	Chalk and Talk, PPT	Access matrix implementation & Revocation of access
		Linux history, Design principles; Kernel modules;
		Summary of various real-time operating systems

- All the relevant material will be available in the course material website.

8. Course Assessment Methods

Sl. No.	Mode of Assessment	Week/Date	Duration	Weightage (%)
1.	Cycle Test – 1	4th week	60 Mins	20
2.	Cycle Test – 2	8th week	60 Mins	20
3.	Assignment test/Seminar	9th week	15 Mins	10
4.	End Semester Exam	-	180 Mins	50
			Total	100

9. Essential Readings (Textbooks, Reference books, Websites, Journals, etc.)

1. Silberschatz, Galvin, Gagne, "Operating System Concepts", 7 edition, Addison-Wesley, 2003.
2. Dhamdhere D. M., "Operating Systems – A Concept Based Approach", 2 nd edition, Tata McGraw Hill, 2006.
3. Tanenbaum A. S., "Modern Operating Systems", 3rdedition, Pearson Education, 2008

10. Course Exit Survey

1. The students through the class rep may give their feedback at any time to the course HOD which will be duly addressed.
2. The students may also give their feedback during Class Committee meeting.
3. 'Course Outcome Survey' form will be distributed on the last working day to all the students and the feedback on various rubrics will be analyzed.
4. The COs will be computed after arriving at the final marks.

11. Course Policy (including plagiarism, academic honesty, attendance, etc.)

1. Plagiarism

    The students are expected to not do malpractice in cycle tests/examinations. If found to copy from bits/other students, action will be taken.

2. Attendance

    100% is a must. However, relaxation upto 25% will be given for leave on emergency requirements (medical, death, etc.) and representing institute events.

3. Academic Honesty

    i) Possession of any electronic device, if any, found during the test or exam, the student will be debarred for 3 years from appearing for the exam and this will be printed in the Grade statement/Transcript.

    ii) Tampering of MIS records, if any, found, then the results of the student will be withheld and the student will not be allowed to appear for the Placement interviews conducted by the Office of Training & Placement, besides (i).

12. Additional Course Information

The students can get their doubts clarified at any time with their faculty member.

For Senate's Consideration

(Dr. R. Gobi)	(Dr. S. Sangeetha)	(Dr. A. Vadivel)
Course faculty	Class Committee Chairperson	Head of the Department