DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	OPERATING SYSTEMS		
Course Code	CSPC26	No. of Credits	3
Course Code of Pre-requisite subject(s)	CSPC24		
Session	Jan. - May 2018	Section	B
Name of Faculty	Dr. M.Sridevi	Department	CSE
Email	msridevi@nitt.edu	Telephone No.	0431 - 2503216
Name of Course Coordinator(s) (if, applicable)	NIL		
E-mail		Telephone No.	
Course Type	✓ Core course	☐ Elective course	

SYLLABUS

UNIT - I
Operating Systems – Definition – Types -Functions - Abstract view of OS - System Structures – System Calls - Virtual Machines –Process Concepts – Threads – Multithreading

UNIT – II
Process Scheduling - Process Coordination – Synchronization –Semaphores – Monitors Hardware Synchronization – Deadlocks –Methods for Handling Deadlocks

UNIT – III
Memory Management Strategies – Contiguous and Non - Contiguous allocation – Virtual memory Management – Demand Paging - Page Placement and Replacement Policies

UNIT – IV
File System – Basic concepts - File System design and Implementation – Case Study: Linux File Systems - Mass Storage Structure – Disk Scheduling – Disk Management – I/O Systems - sSystem Protection and Security.

UNIT - V
Distributed Systems – Distributed operating systems – Distributed file systems – Distributed Synchronization.

COURSE OBJECTIVES

- To provide knowledge about the services rendered by operating systems
- To provide a detailed discussion of the various memory management techniques
- To discuss the various file-system design and implementation issues
- To discuss how the protection domains help to achieve security in a system

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. Ability to comprehend the techniques used to implement the process manager	1,4,5
2. Ability to comprehend virtual memory abstractions in operating systems	1,4,5
3. Ability to design and develop file system interfaces, etc.	1,2,3,4,5,6

COURSE PLAN – PART II

COURSE OVERVIEW

This course mainly describes about the Operating System aspects.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
		UNIT - I	
1	1 Contact Hour	Introduction to Operating systems	Chalk and Talk
2	1 Contact Hour	Types of Operating Systems & Functions	Chalk and Talk
3	1 Contact Hour	Abstract view of OS, System Structures	Chalk and Talk
4	2 Contact Hours	System Calls	Chalk and Talk
5	1 Contact Hour	Virtual Machines	Chalk and Talk
6	1 Contact Hour	Process Concepts	Chalk and Talk
7	1 Contact Hour	Threads and Multi-threading	Chalk and Talk
8		Assignments	Demo
		UNIT - II	
9	2 Contact Hours	Process Scheduling	Chalk and Talk
10	1 Contact Hour	Process Co-ordination	Chalk and Talk
11	1 Contact Hour	Synchronization	Chalk and Talk

12	2 Contact Hours	Classic problems of Synchronization	Chalk and Talk
13	2 Contact Hours	Semaphores	Chalk and Talk
14	1 Contact Hour	Monitors Hardware Synchronization	Chalk and Talk
15	2 Contact Hours	Deadlocks and Methods for Handling	Chalk and Talk
16		Assignments	Demo
UNIT - III			
17	1 Contact Hour	Memory Management Strategies	Chalk and Talk
18	1 Contact Hour	Contiguous allocation	Chalk and Talk
19	1 Contact Hour	Non-Contiguous allocation	Chalk and Talk
20	2 Contact Hours	Virtual memory Management	Chalk and Talk
21	1 Contact Hour	Demand Paging	Chalk and Talk
22	1 Contact Hour	Page Replacement Policies	Chalk and Talk
23		Assignments	Demo
UNIT – IV			
24	1 Contact Hour	File System – Basic concepts	PPT
25	2 Contact Hours	File System design & Implementation	PPT
26	2 Contact Hours	Case Study: Linux File Systems	PPT
27	1 Contact Hour	Mass Storage Structure	PPT
28	1 Contact Hour	Disk Scheduling	Chalk and Talk
29	1 Contact Hour	Disk Management	PPT
30	1 Contact Hour	I/O Systems	PPT
31	2 Contact Hours	System Protection and Security	PPT
32		Assignments	Demo
UNIT – V			
33	1 Contact Hour	Distributed Systems	PPT
34	2 Contact Hours	Distributed operating systems	PPT
35	1 Contact Hour	Distributed file systems	PPT

| 36 | 2 Contact Hours | Distributed Synchronization | PPT |
| 37 | | Assignments | Demo |

Text Books:
1. Silberschatz, Galvin, Gagne, "Operating System Concepts", John Wiley and Sons, 9th edition, 2013.

References:
1. William Stallings, "Operating Systems –Internals and Design Principles", 8/E, Pearson Publications, 2014.
2. Andrew S. Tanenbaum, "Modern Operating Systems", 4/E, Pearson Publications, 2014.

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test 1	After completion of two units	45 minutes	15
2	Cycle Test 2 / Quiz	After completion of four units	45 minutes	15
3	Programming Assignment	Every Unit	-	10
4	Problem Solving Assignment / Seminar	Every Unit	-	10
CPA	Compensation Assessment	After completion of Cycle Test 2	45 minutes	15
5	Final Assessment	As Per Academic Schedule	3 hours	50

COURSE EXIT SURVEY

- Feedbacks are collected before final examination through MIS or any other standard format followed by the institute
- Students, through their Class Representatives, may give their feedback at any time to the course faculty which will be duly addressed.
- The students may also give their feedback during Class Committee Meeting.

COURSE POLICY

MODE OF CORRESPONDENCE:
- Email / Phone

ATTENDANCE:
- Minimum 75% is mandatory to write the end semester examination. Students having attendance 65% to 74% are eligible for the end semester exam only after attending the extra classes and submitting assignments. Students have to redo the course, if they have less than 65% of attendance.
- Medical Certificate / On Duty Certificate should be submitted immediately after rejoining.

COMPENSATION ASSESSMENT:

- One compensation assessment will be given after completion of Cycle Test 1 and 2 for the students those who are absent for any assessment due to genuine reason.
- The prior permission and required document must be submitted for absence.

ACADEMIC HONESTY & PLAGIARISM:

- Avoid usage of electronic devices at classes, test and exam.
- The students are expected to come out with their original solution for the problems given in the assignment. If found to copy from internet/other students, marks will be reduced.

ADDITIONAL INFORMATION

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

FOR APPROVAL

Course Faculty	CC-Chairperson	HOD / CSE