



# NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

## DEPARTMENT OF COMPUTER APPLICATIONS

COURSE PLAN – PART I			
Name of the programme and specialization	B.Tech Minor		
Course Title	Operating System		
Course Code	CAMI11	No. of Credits	3
Course Code of Pre-requisite subject(s)	Digital Logic Design, Computer Architecture		
Session	July 2023	Section (if, applicable)	All (2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup> Year)
Name of Faculty	Dr.B.Balaji	Department	Computer Applications
Official Email	balaji@nitt.edu	Telephone No.	
Name of PAC Chairperson	NA		
Official E-mail		Telephone No.	
Course Type (please tick appropriately)	Minor course		
<b>Syllabus (approved in BoS)</b>			
<p>Operating System concepts- OS Structure –Services-System calls – Process management- Process Concept-Operations on process. Process scheduling- Scheduling algorithms.</p> <p>Inter-process communication- Process synchronization- critical-section problem– Semaphores-critical regions. Threads- Multithreading models.</p> <p>Memory management-Buddy system-Paging-segmentation-Virtual Memory –Demand paging- Page replacement algorithms – Allocation of frames – Thrashing-Working set model</p> <p>Files and Directories - Files System structure- Implementation –File allocation methods-Free space management.</p> <p>I/O systems – I/O interface –Kernel I/O subsystem. Disk scheduling algorithms- Disk management-Swap space management</p> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Silberschatz, Galvin and Gagne, “Operating System Concepts”, 9th Edition, John Wiley &amp; Sons Inc., 2013.</li> <li>2. Andrew S. Tanenbaum, “Modern Operating Systems”, 3rd Edition, Prentice-Hall of India, 2007</li> <li>3. SibsankarHaldar, Alex A.Aravind, “Operating systems”, Pearson Education, 2009.</li> </ol>			



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<b>COURSE OBJECTIVES</b>	
The student will be able to understand operating systems and analyze the process scheduling algorithms and resource sharing among the processes.	
<b>MAPPING OF COs with POs</b>	
Course Outcomes	Programme Outcomes (PO) (Enter Numbers only)
Students will be able to:	<b>PO I, II, III, IV, V</b>
1. Use system calls to interact with OS	<b>PO I, II, III, IV, V</b>
2. Synchronize multiple processes and handle issues in synchronization	<b>PO I, II, III, IV, V</b>
3. Implement memory management techniques	<b>PO III, IV, V</b>
4. Implement algorithms in secondary storage and file management techniques	<b>PO I, II, III, IV, V</b>

<b>COURSE PLAN – PART II</b>			
<b>COURSE OVERVIEW</b>			
This course focuses on how the operating system effectively manages the system resources. The objective of this course is to provide classical internal algorithms and structures of operating systems, including CPU scheduling, memory management and file management concepts.			
<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>			
S.No.	Week/Contact Hours	Lab Exercises	
1	Week 1 (3 Classes)	introduction to operating system & system calls	PPT, Chalk, and Talk
2	Week 2 (3 Classes)	process management	PPT, Chalk, and Talk
3	Week 3 (3 Classes)	CPU Scheduling algorithms	PPT, Chalk, and Talk
4	Week 4 (3 Classes)	Inter-process Communications	PPT, Chalk, and Talk
5	Week 5 (3 Classes)	Process Synchronization & Semaphore	PPT, Chalk, and Talk
6	Week 6 (3 Classes)	Threads	PPT, Chalk, and Talk
7	Week 7 (3 Classes)	Memory management & paging segmentation	PPT, Chalk, and Talk
8	Week 8 (3 Classes)	page replacement algorithms	PPT, Chalk, and Talk



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9	Week 9 (3 Classes)	Allocation of frames & working set model	PPT, Chalk, and Talk
10	Week 10 (3 Classes)	Files and Directories	PPT, Chalk, and Talk
11	Week 11 (3 Classes)	File allocation methods & free space management	PPT, Chalk, and Talk
12	Week 12 (3 Classes)	I/O Systems & interface	PPT, Chalk, and Talk
13	Week 13 (3 Classes)	Disk scheduling algorithms	PPT, Chalk, and Talk
14	Week 14 (1 Class)	Disk management-Swap space management	PPT, Chalk, and Talk

### COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test 1	As Per Academic Schedule	60 Minutes	20
2	Cycle Test 2	As Per Academic Schedule	60 Minutes	20
3	Assignment/Quiz/Surprise Test	8 <sup>th</sup> week	-	10
CPA	Compensation Assessment	As Per Academic Schedule	60 Minutes	20
4	Final Assessment	As Per Academic Schedule	180 Minutes	50

### COURSE EXIT SURVEY

- The students through the class representative may give their feedback at any time to the course coordinator which will be duly addressed.
- The students may give their feedback during class committee meetings.

### COURSE POLICY

### MODE OF CORRESPONDENCE

By Email: [balaji@nitt.edu](mailto:balaji@nitt.edu)



**COMPENSATION ASSESSMENT POLICY**

Compensation assessment will be conducted for absentees in cycle test I or cycle test II only after the submission of medical or On-Duty certificates signed by competent authority.

**ATTENDANCE POLICY** (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.
- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

**ACADEMIC DISHONESTY & PLAGIARISM**

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

**ADDITIONAL INFORMATION, IF ANY**

**FOR APPROVAL**

  
Course Faculty

CC- Chairperson

  
HOD



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### Guidelines

- The number of assessments for any theory course shall range from 4 to 6.
- Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.
- One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.
- The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) lower	(Class) whichever is	40%

- Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.
- Absolute grading policy shall be incorporated if the number of students per course is less than 10.
- Necessary care shall be taken to ensure that the course plan is reasonable and is objective.