

Course code	Course Name	L-T-P -Credits	Year of Introduction
EE461	Modern Operating Systems	3-0-0-3	2016
Prerequisite : Nil			
Course Objectives <ul style="list-style-type: none"> To impart the knowledge on the need and requirement of an interface between Man and Machine. To teach the features of operating systems and the fundamental theory associated with process, memory and file management components of operating systems. 			
Syllabus : Operating System Structure, Operating system services, Process management, Memory management, File management, Storage structure, security issues.			
Expected outcome. The students will be able to <ol style="list-style-type: none"> describe the general architecture of computers describe, contrast and compare differing structures for operating systems understand and analyse theory and implementation of: processes, resource control (concurrency etc.), physical and virtual memory, scheduling, I/O and files 			
Text Book: William Stallings, Operating Systems: Internals and Design Principles, 6 th Ed., Pearson Education			
References: <ol style="list-style-type: none"> Nutt G.J., Operating Systems, 3 rd Ed., Pearson Education. Silberschatz, Galvin, & Gagne, Operating System Concepts, 8 th Ed., Wiley Tanenbaum A.S., Modern Operating Systems, 3 rd Ed., Prentice Hall 			
Course Plan			
Module	Contents	Hours	Sem. Exam Marks
I	Introduction-Definition- Operating System Structure- Operating System Operations, Process Management- Memory Management- Storage Management- Protection and Security- Distributed Systems-	7	15%
II	Computing Environments- Open Source Operating Systems- Operating-System Services- User Operating-System Interface- System Calls- Types of System Calls- System Programs	7	15%
FIRST INTERNAL EXAMINATION			
III	Process Management- Process Concept- Operations on Processes- Threads Overview- Multithreading Models- Thread Libraries- Threading Issues - CPU Scheduling- Basic Concepts- Scheduling Criteria- Scheduling Algorithms- Thread Scheduling- Multiple-Processor Scheduling- Process Synchronisation-	6	15%
IV	Memory Management-Swapping- Contiguous Memory Allocation- Paging Segmentation- Virtual Memory- Demand Paging	6	15%

SECOND INTERNAL EXAMINATION			
V	- File Management- File-System Interface- File Concept- Access Methods - Directory and Disk Structure - File-System Mounting - File Sharing- Protection- File-System Implementation- File-System Structure- File-System Implementation- Directory Implementation- Allocation Methods Free-Space Management - Efficiency and Performance	8	20%
VI	Mass Storage Structure- Disk Scheduling- Disk Management- RAID Structure - Stable Storage Implementation- Protection and Security- Protection- Goals of Protection- Principles of Protection- Domain of Protection- Access Matrix Implementation of Access Matrix- Access Control- Revocation of Access Rights Security- The Security Problem -Program Threats- System and Network Threats	8	20%
END SEMESTER EXAM			

QUESTION PAPER PATTERN:

Maximum Marks: 100

Exam Duration: 3Hours.

Part A: 8 compulsory questions.

One question from each module of Modules I - IV; and two each from Module V & VI.

Student has to answer all questions. (8 x 5)=40

Part B: 3 questions uniformly covering Modules I & II. Student has to answer any 2 from the 3 questions: (2 x 10) =20. Each question can have maximum of 4 sub questions (a,b,c,d), if needed.

Part C: 3 questions uniformly covering Modules III & IV. Student has to answer any 2 from the 3 questions: (2 x 10) =20. Each question can have maximum of 4 sub questions (a,b,c,d), if needed.

Part D: 3 questions uniformly covering Modules V & VI. Student has to answer any 2 from the 3 questions: (2 x 10) =20. Each question can have maximum of 4 sub questions (a,b,c,d), if needed.