

No	Information of Operating Systems, IT-41033	
1	Unit name:	Operating System Concepts
2	Code:	IT- 41033, Operating Systems
3	Classification:	Engineering subject
4	Credit value:	3
5	Semester/ Year Offered:	1/IV
6	Pre-requisite:	IT-2014, Operating Systems
7	Mode of delivery:	Lecture, Tutorial, Practical
8	Assessment system and breakdown of marks:	
	Practical	10 %
	Tutorial	20 %
	Mid-term/ final Examination	70 %
9	Academic staff teaching unit:	Department of Information Technology Engineering
10	<p>Course outcome of unit:</p> <p>In this course, students will be able</p> <ul style="list-style-type: none"> ✓ To describe the basic organization of computer systems ✓ To discuss the various ways of structuring an operating system and user interfaces (GUI, API and CLI) ✓ To describe the various features of processes, including scheduling, creation, termination, and communication ✓ To discuss the APIs for the Pthreads, Win32 and Java thread libraries ✓ To apply various CPU-scheduling algorithms and the concept of an atomic transaction and mechanisms 	
11	<p>Synopsis of unit:</p> <p>Operating systems are an essential part of any computer system. Similarly, a course on operating systems is an essential part of any computer-science education. This field is undergoing rapid change, as computers are now prevalent in virtually every application, from games for children through the most sophisticated planning tools for</p>	

	governments and multinational firms. The fundamental concepts remain fairly clear and base this book.
12	<p>Topic:</p> <ol style="list-style-type: none"> 1 Introduction <ol style="list-style-type: none"> 1.1 What Operating Systems Do 1.2 Computer-System Organization 1.3 Computer-System Architecture 1.4 Operating-System Structure 1.5 Operating-System Operations 1.6 Process Management 1.7 Memory Management 1.8 Storage Management 1.9 Protection and Security 1.10 Distributed Systems 1.11 Special-Purpose Systems 1.12 Computing Environments 1.13 Open-Source Operating Systems 2 Operating System Structures <ol style="list-style-type: none"> 2.1 Operating-System Services 2.2 User Operating-System Interface 2.3 System Calls 2.4 Types of System Calls 2.5 System Programs 2.6 Operating-System Design and Implementation 2.7 Operating-System Structure 2.8 Virtual Machines 2.9 Operating-System Debugging 2.10 Operating-System Generation 2.11 System Boot 3 Processes <ol style="list-style-type: none"> 3.1 Process Concept 3.2 Process Scheduling 3.3 Operations on Processes

	<ul style="list-style-type: none"> 3.4 Interprocess Communication 3.5 Examples of IPC Systems 3.6 Communication in Client-Server Systems <p>4 Threads</p> <ul style="list-style-type: none"> 4.1 Overview 4.2 Multithreading Models 4.3 Thread Libraries 4.4 Threading Issues 4.5 Operating-System Examples <p>5 CPU Scheduling</p> <ul style="list-style-type: none"> 5.1 Basic Concepts 5.2 Scheduling Criteria 5.3 Scheduling Algorithms 5.4 Thread Scheduling 5.5 Multiple-Processor Scheduling 5.6 Operating System Examples 5.7 Algorithm Evaluation <p>6 Process Synchronization</p> <ul style="list-style-type: none"> 6.1 Background 6.2 The Critical-Section Problem 6.3 Peterson's Solution 6.4 Synchronization Hardware 6.5 Semaphores 6.6 Classic Problems of Synchronization 6.7 Monitors 6.8 Synchronization Examples 6.9 Atomic Transactions
13	<p>Main references:</p> <p>Operating System Concepts (8th Edition), Silberschatz, Galvin, Gagne, MA 2008 ISBN: 978-0-470-12872-5 Printed in the United States of America</p>

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Additional references:

Abraham Silberschatz, New Haven, CT, 2008

Peter Baer Galvin, Burlington, MA 2008

Greg Gagne, Salt Lake City, UT, 2008

An understanding of computer architecture and Java/C programming skills.

W. Stewart, After notes on Numerical Analysis, SIAM, Philadelphia 1996.

<http://www.personal.kent.edu/~rmuhamma/OpSystems/os.html>

<http://cseweb.ucsd.edu/classes/fa00/cse120/>

Operating System Concepts (6th Edition)