

R.T. M. Nagpur University, Nagpur
FOUR YEAR B.E. COURSE

B.E. SCHEME OF EXAMINATION wef: 2021-22

Scheme of Teaching & Examination of Bachelor of Engineering III Semester B.E. (Computer Science and Engineering)

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Sr. No.	Course Code	Category	Course Name	Hours/ Week			Credit s	Maximum Marks				
				L	T	P		Theory		Practical		Total
								Internal	University	Internal	University	
1	BECSE301T	Basic Sciences courses	Applied Mathematics – III	3	1	-	4.00	30	70	-	-	100
2	BECSE302T	Professional core courses	Object Oriented Programming with Java	3	1	-	4.00	30	70	-	-	100
3	BECSE303T	Professional core courses	Operating System	3	-	-	3.00	30	70	-	-	100
4	BECSE304T	Professional core courses	Computer Architecture & Digital System	3	1	-	4.00	30	70	-	-	100
5	BECSE305T	Professional core courses	Ethics in IT	3	-	-	3.00	30	70			100
6	BECSE306T	Humanities Social and Management Courses	Universal Human Values	2	-	-	2.00	15	35	-	-	50
7	BECSE307T	Mandatory Course	Environment Science (Audit)	2	-	-	0.00	-	-	-	-	-
8	BECSE302P	Professional core courses	Object Oriented Programming with Java Lab	-	-	2	1.00	-	-	25	25	50
9	BECSE303P	Professional core courses	Operating System Lab	-	-	2	1.00	-	-	25	25	50
10	BECSE308P	Professional core courses	Computer Workshop-I Lab	-	-	2	1.00	-	-	25	25	50
Total				19	3	6	23.00	165	385	75	75	700

S. V. Sonekar
Dr. S. V. Sonekar
chairman.

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FOUR YEAR BACHELOR OF ENGINEERING (B.E.) DEGREE COURSE
SEMESTER: THIRD (C.B.C.S.)
BRANCH: COMPUTER SCIENCE & ENGINEERING

Subject : Operating System

Subject Code : BECSE303T

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
3 Hrs (Theory)	3	30	70	100

Aim: To understand operating system concepts used in designing operating system.

Prerequisite(s): Basic knowledge of microprocessors, data structures and any programming language.

Course Objectives:

1	To make the computer system convenient to use in an efficient manner.
2	To provide users a convenient interface to use the computer system.
3	Course Description Covers the classical internal algorithms and structures of operating systems, including CPU scheduling, memory management, device management and deadlock
4	To keep track of who is using which resource, to provide efficient and fair sharing of resources among users and programs.

Course Outcomes:

At the end of this course Student are able to:

CO1	Explain the basic concepts of Operating System.
CO2	Understand the process management policies and scheduling algorithms.
CO3	Design the various memory management techniques.
CO4	Analyze process synchronization techniques.
CO5	Understand file system concepts.
CO6	Evaluate deadlock detection & prevention mechanism.



Unit I:**[09 Hrs]**

Introduction: Evolution of OS, Types of OS, Basic h/w support necessary for modern operating systems, services provided by OS, system programs and system calls, OS structure: Layered, Monolithic, Microkernel, Disk space management and space allocation strategies, disk arm scheduling algorithms.

Unit II:**[06 Hrs]**

Process Scheduling: Process concept, Process control Block, Types of scheduler, context switch, threads, multithreading model, goals of scheduling and different scheduling algorithms, examples from WINDOWS 2000 & LINUX.

Unit III:**[06 Hrs]**

Memory Management: Contiguous allocation, Relocation, Paging, Segmentation, Segmentation with paging, demand paging, page faults and instruction restart, page replacement algorithms, working sets, Locality, Thrashing, Garbage Collection.

Unit IV:**[06 Hrs]**

Process Cooperation and Synchronization: Concurrency conditions, Critical section problem, software and hardware solution, semaphores, conditional critical regions and monitors, classical inter process communication problems.

Unit V:**[09 Hrs]**

File Systems: File concept, Access methods, directory structures, Recovery, Log-structured File System. **Deadlocks & Protection:** Deadlock characteristics, Prevention, Avoidance, Detection and recovery, Goals of Protection, access matrix, implementation, Security problem.

Text books:

1. Operating System Concepts (8th Edition) by Silberschatz, Peter B. Galvin and Greg Gagne, WileyIndian Edition (2010).
2. Modern Operating Systems (Third Edition) by Andrew S Tanenbaum, Prentice Hall India (2008).
3. Operating Systems – A.Godbole: TMH Publications
4. Operating Systems by D.M. Dhamdhere, Tata McGraw Hill 2nd edition.

Reference books:

1. Operating Systems (5th Ed) – Internals and Design Principles by William Stallings, Prentice Hall India, 2000
2. Operating System: Concepts and Design by Milan Milenkovic, McGraw Hill Higher Education
3. Operating Systems, 3rd Edition by Gary Nutt, Pearson Education
4. Operating System, 3rd Edition by P.Balakrishna Prasad, SciTech Publications

