

COURSE TITLE: OPERATING SYSTEMS**COURSE OBJECTIVES:**

- To learn the fundamentals of Operating Systems.
- To learn the mechanisms of operating system to handle processes and threads and their communication
- To learn the mechanisms involved in memory management in contemporary operating systems

LEARNING OUTCOMES:

The students will be able to:

- Analyse the structure of OS and basic architectural components involved in operating system design
- Conceptualize the components involved in designing a contemporary operating system

Code	Course	Teaching Period / Week		Credit			Duration of Theory Exam (in Hrs.)
		L	Pr./Tu	Int.	Ext.	Total	
MCS108	Operating Systems	4	-	2	2	4	2

Module No.	Objective	Content	Evaluation
1	To introduce to basic concepts of operating systems	Introduction to Operating System Introduction to Linux kernel, Types of kernel (monolithic, micro, exo), Operating system booting process GRUB-I, GRUB-II. Processes, Interprocess Communication, Scheduling.	Written Unit Test – I (Marks 25)
2	To elaborate memory management in operating system	Memory management and virtual memory in Linux Basic memory management, swapping, virtual memory, Page replacement algorithms, Design issues for paging systems, segmentation. Case Study: Linux memory management.	
3	To elaborate the concept of Input and Output operations	Input/ Output in Linux Principles of I/O Hardware, Principles of I/O Software, Deadlocks, RAM Disks, Disks, Terminals. File Systems: Files, Directories, File System Implementation, Security, Protection mechanisms in different Linux versions	Written Class Test will be conducted. (Marks 10)
4	To elaborate android operating system	Android Operating System The Android Software Stack, The Linux Kernel – its functions, essential hardware drivers. Libraries - Surface Manager, Media framework, SQLite, WebKit, OpenGL. Android Runtime - Dalvik Virtual Machine, Core Java Libraries. Application Framework - Activity Manager,	Assignment s will be given for the above topics. (Marks 15)

		Content Providers, Telephony Manager, Location Manager, Resource Manager. Android Application – Activities and Activity Lifecycle, applications such as SMS client app, Dialer, Web browser, Contact manager	
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EVALUATION:

Evaluation	Details	Marks
(* please give details of assessment in terms of Unit test/ Project/ quiz /or other assignments and marks allotted for it)		
Internal	<ul style="list-style-type: none"> • Unit test • Class Test • Assignments 	50 Marks
External	Final Examination	50 Marks
Total marks		100 Marks

TEXT BOOKS:

- 1) Pramod Chandra, P. Bhatt, (2014), An Introduction to Operating Systems: Concepts and Practice (GNU/Linux), 4th edition
- 2) Avi Silberschatz, Peter Baer Galvin, Greg Gagne, (2009), *Operating System Concepts with Java* Eight Edition, John Wiley & Sons, Inc., <http://codex.cs.yale.edu/avi/os-book/OS8/os8j>
- 3) Evi Nemeth, Garth Snyder, Tren Hein, Ben Whaley, (2011), *UNIX and Linux System Administration Handbook*, Fourth Edition, Pearson Education, Inc.
- 4) Reto Meier, (2012), *PROFESSIONAL Android™ 4 Application Development*, John Wiley & Sons, Inc.

REFERENCE BOOKS:

- 1) Andrew S. Tanenbaum, Albert S. Woodhull, (2006), *Operating Systems: Design and Implementation*, Third Edition, Prentice Hall, 2006.
- 2) Fedora Documentation, <http://docs.fedoraproject.org/en-US/index.html>
- 3) Official Ubuntu Documentation, <https://help.ubuntu.com/>
- 4) Android Developers, <http://developer.android.com/index.html>