

Branch Name:	Information Technology
Program Code:	ET105
Course Title:	Operating System and Virtualization Practical
Course Code:	2ET1050401P
Pre-requisite Course:	Working experience of any one structured programming language.

Course Objective:

1. This course enables to understand value of Operating System, its role to manage resources of Computer and Peripherals.
2. Student will gain knowledge of different aspect of OS like Process Management, Memory Management, File Management and I/O Management in detail with prominence given to Linux type of Open-Source Operating System
3. To introduce Virtualization, operating systems fundamental concepts and its technologies.
4. To provide the skills and knowledge necessary to implement, provisioning and administer server and desktop virtualization

Credit	Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	—	—	—	—	10	25	10	25	50

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Sr. No	Practical Exercise	Contact Hours
1.	Study of Basic / Advance commands and filters of Linux/UNIX	2
2.	Write a Shell Script to Display Student Personal Information.	1
3.	Write a shell script to generate mark sheet of a student. Take 3 subjects, calculate and display total marks, percentage and Class obtained by the student.	2
4.	Write a shell script to find factorial of given number.	1
5.	Write a shell script which will accept a number b and display first n prime numbers as output.	1
6.	Write a shell script which will generate first n Fibonacci numbers like: 1, 1, 2, 3, 5, 8....	1
7.	Write a shell script to check entered string is palindrome or not.	1
8.	Write a shell script to read n numbers as command arguments and sort them in descending order.	1
9.	Study about the Virtual Machine and Virtualization.	1
10.	Study about Hypervisors: VMW are, ESXi, Microsoft Hyper-V and Xen Server.	2
11.	Installation of guest Operating System using Virtualization tools.(e.g VMW are, Microsoft Hyper-V)	2
12.	Desktop Virtualization using Crome Remote desktop.	2

List of References:

1. Operating System Concepts (8th Edition) by Silberschatz, Peter B. Galvin and Greg Gagne, Wiley Indian Edition (2010).
2. Modern Operating Systems (Third Edition) by Andrew S Tanenbaum, Prentice Hall India (2008).
3. Operating Systems (5th Ed) – Internals and Design Principles by William Stallings, Prentice Hall India, 2000
4. Matthew Portnoy, “Virtualization Essentials”, John Wiley Sons Inc; 2nd Edition Edition, 2016.
5. Smith, Nair, “Virtual Machines: Versatile Platforms for Systems and Processes”, 1st Edition, Morgan Kaufmann Publishers, 2005.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the overall view of the computer system, operating system layers and kernel architectures.	1. Remember 2. Understanding
CLO2	Identify various scheduling algorithm and deadlock prevention and avoidance algorithm	2. Understanding 3. Applying
CLO3	Compare and contrast various memory management schemes and file system functionalities	2. Understanding 3. Applying
CLO4	Discuss the performance of the various page replacement algorithms and interpret the file system implementation, sharing and protection mechanisms.	2. Understanding 3. Applying
CLO5	Demonstrate administrative tasks on Linux servers and to be familiar with the basics of Mobile OS.	3. Applying
CLO6	Classify the light-weight virtual machines with dockers and containers and also develop programs related to the simulations of operating systems and virtualization concepts.	2. Understanding 3. Applying

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	L	L						H	L	M		M	M		
CLO2	M	L	L						H	L	M		M	M		
CLO3	M	L	L						H	L	M		M	M		
CLO4	M	L	L						H	L	M		M	M		
CLO5	H	M	M						H	L	M		M	M		
CLO6	H	M	M						H	L	M		M	H		

H: High, M: Medium, L: Low