Ramgarhia Polytechnic College, Phagwara

Computer Science and Engineering Department

Head of Department:	Er. Poonam Rana
Name of the Faulty:	Er. Pankaj Soni
Discipline:	Computer Science and Engineering Department
Semester:	3th
Subject:	Operating System
Lesson Plan Duration:	16 Weeks

RATIONALE

The course provides the students with an understanding of human computer interface existing in computer system and the basic concepts of operating system and its working. The students will also get hands-on experience and good working knowledge to work in windows and Linux environments. The aim is to gain proficiency in using various operating systems after undergoing this course. While imparting instructions, the teachers are expected to lay more emphasis on concepts and principles of operating systems, its features and practical utility.

Learning Outcomes

After undergoing the subject, the students will be able to:

CO1: Identify memory management technique.

CO2: Differentiate scheduler algorithm.

CO3: Setup of Linux labs.

CO4: Use Linux for running various programming languages

CO5: Set up open source labs.

CO6: Describe and identify various file system.

CO7: Assist in handling other open sources

PO ⇨ / CO ⇩	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	✓						
CO2		✓					
CO3			✓				
CO4		✓					
CO5				✓			
CO6			✓				
CO7				✓			
CO8			✓				
CO9				✓			

Syllabus

Units	Details	Hours
1.	Overview of Operating Systems 1.1 Definition of Operating Systems 1.2 Types of Operating Systems 1.3 Importance of Operating Systems 1.4 Memory organization 1.5 Linking, loading and executing control program	(04 hrs)
2.	Functions of Operating System 2.1 Process Management Functions (Principles and Brief Concept); Job Scheduler 2.2 Process Scheduler 2.3 Process synchronization 2.4 Memory Management Function (Principles and Brief Concept); Introduction Single Process System Fixed Partition Memory 2.5 System Loading, Segmentation, Swapping Simple Paging System 2.6 Virtual Memory. I/O Management Functions (Principles and Brief Concept) 2.7 Dedicated Devices, Shared Devices I/o Devices, Storage Devices Buffering, Spooling 2.8 File Management; Principles and Brief Concept types of File System; Simple file system, Basic file system, Logical file system, Physical file system 2.9 Dead Lock; Condition for Dead lock, Dead Lock Preventions, Dead Lock Avoidance	(24 hrs)
3.	Linux Operating System 3.1 Introduction -history of Linux and Unix, Linux Overview Structure of Linux, Linux releases, open linux 3.2 system requirements, file structures 3.3 processor scheduling and memory management in Unix 3.4 Linux Commands and Filters: 3.5 Shell: concepts of command options, input, output redirecting and network file, process and communication commands like: mkdir, cd, ls, who, whoami, cat, more, tail, head, mv, chmod, grep, wc, sort, kill, write, wall, mail, news	(20 hrs)

Reference Books:

1 Operating Systems by Achyut S Godbole and Atul Kahate: Tata McGraw Hill Education Pvt Ltd , New Delhi

2 System Programming by John J Donovan, Tata McGraw Hill Education Pvt Ltd , New Delhi

3 Linux – The Complete Reference by Ruichard Peterson, Tata McGraw Hill, New Delhi

4 Operating Systems by Stallings Tata McGraw Hill.

5 Operating Systems- A Concept Based Approach by Dham Dhare, Tata McGraw Hill Education Pvt Ltd , New Delhi

6 System Programming by Dham Dhare, Tata McGraw Hill Education Pvt Ltd , New Delhi

7 Operating System Concepts by Ekta Walia, Khanna Publishers, New Delhi.

8 Unleashed Linux by Tech Media Publishers, New Delhi

9 Linux – Install and Configuration Black Book by Die Annlebalnc and Issac Yates, IDG Books India Private Ltd., New Delhi.

Delivery/Instructional Methodologies

Sr.No.	Description
1.	Chalk and Talk
2.	PowerPoint Presentation

Assessment Methodologies

Sr. No.	Description	Type
1.	Student Assignment	Direct
2.	Test	Direct
3.	Board Examination	Direct
4.	Student Feedback	Direct

Gaps in the syllabus - to meet industry/profession requirements

S.NO.	DESCRIPTION	PROPOSED ACTIONS	PO MAPPING
	N/A	N/A	N/A

Topics beyond syllabus/advanced topics

Units	Details	Hours
N/A	N/A	N/A

Web Source References

Sr. No.	URL
1.	https://nptel.ac.in/

Lesson Plan

Week	Theory		Practical	
	Lecture Day		Practical Day	
1st	1	Definition of Operating Systems, Types of Operating Systems	1	Directory commands
	2	Importance of Operating Systems		
	3	Memory organization		
2nd	4	Linking, loading and executing control program	2	File commands
	5	Process Management Functions (Principles and Brief Concept)		
	6	Job Scheduler		
3rd	7	Process Scheduler	3	Process management
	8	Process synchronization		
	9	Memory Management Function (Principles and Brief Concept)		
4th	10	Introduction Single Process System Fixed Partition Memory	4	Using file permission commands
	11	System Loading, Segmentation		
	12	Swapping Simple Paging System		
5th	13	Virtual Memory	5	Mail commands
	14	I/O Management Functions (Principles and Brief Concept)		
	15	Dedicated Devices		
6th	16	Shared Devices I/o Devices	6	Editing file system rights in a Linux environment.

	17	File Management, Principles and Brief Concept types of File System		
	18	Simple file system, Basic file system		
7th	19	Revison	7	1sd House Test
	20	1sd House Test		
	21	PTM		
8th	22	Logical file system, Physical file system	8	Interfacing with the network (Ethernet)
	23	Dead Lock; Condition for Dead lock		
	24	Dead Lock Preventions, Dead Lock Avoidance		
9th	25	Introduction-history of Linux and Unix	9	Preparing of network cables including hubs, connectors etc
	26	Revison		
	27	Revison		
10th	28	Linux Overview	10	Establishment of LAN network for homogeneous systems
	29	Structure of Linux, Linux releases		
	30	Revison		
11th	31	open linux	11	Establishment of LAN network for heterogeneous systems
	32	system requirements		
	33	File stuructures		
12th	34	Revison	12	2nd House Test
	35	2nd House Test		
	36	PTM		
13th	37	processor scheduling and memory management in Unix	13	Use of protocols and gateways in establishing LAN
	38	Linux Commands and Filters		
	39	Shell: concepts of command options		

14th	40	input, output redirecting and network file	14	Writing small programs such as file security, file transfer, remote testing
	41	process and communication commands		
	42	process and communication commands		
15th	43	process and communication commands	15	Trouble shooting of networks Writing login scripts
	44	process and communication commands		
	45	process and communication commands		
16th	46	Revison	16	3rd House Test
	47	3rd House Test		
	48	PTM		

NBA has defined the following seven POs for an Engineering diploma graduate:

i) **Basic and Discipline specific knowledge**: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.

ii) **Problem analysis:** Identify and analyze well-defined engineering problems using codified standard methods.

iii**)** **Design/ development of solutions**: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.

iv) **Engineering Tools, Experimentation and Testing**: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

v) **Engineering practices for society, sustainability and environment**: Apply appropriate technology in context of society, sustainability, environment and ethical practices.

vi) **Project Management**: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.

vii) **Life-long learning**: Ability to analyze individual needs and engage in updating in the context of technological changes.

Program Specific Outcomes (PSOs)

PSOs are a statement that describes what students are expected to know and be able to do in a specialized area of discipline upon graduation from a program. Program may specify 2-4 program specific outcomes, if required.

These are the statements, which are specific to the particular 11 program. They are beyond POs. Program Curriculum and other activities during the program must help in the achievement of PSOs along with POs.