SANATAN DHARMA COLLEGE, AMBALA CANTT
College with Potential for Excellence, UGC,New Delhi
NAAC Accredited Grade "A+" with CGPA 3.51 in 3rd cycle
ISO 9001:2015 & ISO 14001:2015 Certified

Department of Computer Science
Lesson Plan (Session 2022-2023)

Class: BVOC   **Sem: I**   **Course Code: BVSD-13**   **Nomenclature: Operating System-I**

Duration: 16 Weeks   **Dates: 5 Sep,2022- 25 Dec, 2022**

BVSD-13 Operating Systems - I

Maximum marks: 100   External: 80
Time: 3 hours   Internal: 20

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to the compulsory question there will be four units i.e. Unit-I to Unit-IV. Examiner will set two questions from each Unit of the syllabus.
Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

Unit I
Introductory Concepts: Operating System Functions and Characteristics, Historical Evolution of Operating Systems, Real Time Systems, Distributed Systems, Methodologies for Implementation of O/S Service System Calls, System Programs.

Unit II
Process Management: Introduction, Definition of Process, Process States, Process States Transition, Process Control Block, Operations on Processes, Suspend and Resume, Interrupt Processing.
CPU Scheduling: Scheduling Criteria, Levels of Scheduling, Scheduling Algorithms, Multiple Processor Scheduling.

Unit III
Storage Management: Memory Management of Single-user and Multiuser Operating System, Partitioning, Swapping, Paging and Segmentation, Virtual Memory, Page Replacement Algorithms, Thrashing.

Unit IV
Device Management: I/O Hardware, Application I/O Interface, Kernel I/O Subsystem, Transforming I/O to Hardware Operation, Streams.
Disk Scheduling, Disk Structure, Disk Managements. Swap-Space Management.

TEXT BOOKS:

- Deitel Harvey M., An Introduction to Operating Systems, Addison Wesley, 1990
- Silbershatz Abraham, Galvin Peter B., Operating System Concepts, John Wiley & Sons, 2014

REFERENCE BOOKS:

- Dhamdhere D.M., System Programming & Operating Systems, Tata Mc-Graw Hill, 1999
- Tanenbaum Andrew S., Modern Operating System, Pearson Education, 2014

Course Outcomes

After the completion of this course, prospective Computer professionals will have the ability to

CourseTitle	Operating Systems-I
CO No.	Course Outcomes
CO- 1	Describe the main responsibilities of a contemporary operating system (OS) and to explain thehistory leading to their current form
CO- 2	List the most fundamental subsystems of an OS and the functions that each subsystem isresponsible of.
CO- 3	Recognize and give examples of conflicting goals and compromises necessary inimplementing an OS and configuring its run-time parameters
CO- 4	Describe under which circumstances the processor is executing code either in kernel modeor in user mode, and how these modes differ from each other
CO- 5	Describe translation of a virtual memory address into a physical address, given a page table (of a given simple "toy" computer with very tiny address space); understand and explain how a shared memory area can be implemented using VM addresses in different processes
CO- 6	Understand the idea of direct memory access (DMA)with its advantages and implications
CO- 7	Describe how multitasking is possible to implement in a uniprocessor system, and howapplication programming differs between a multicore system and a uniprocessor one

S.No	Instructional Technique	Assessment Methods (AM)
1	Chalk & Talk	**Assignments**
2	ICT tools	**Quiz**
3	Group discussions	**Group Discussions**
4	Industrial visit	**Oral Tests**
5	Case studies	**Sessional**
6	Small Projects	**Presentations**
7	Workshop	**Seminar**
8	Spoken Tutorials	**University Exams**
9	Flipped Class	
10.	**E-Resources**	

Detailed Lesson Plan

Week	Date	Topic to be Covered	Instructional Technique	Assessment Method
1	5- Sep-22	Introduction to Operating System	**2-(PPT/Projector)**	**----**
	6-Sep-22	Operating System Function and Characteristics	**2(PPT/Projector)**	**1**
	7- Sep-22	Historical Evolution of Operating System	**1**	**1**
2	12-Sep-22	Real Time Systems	**1**	**1,2,3,4**
	13-Sep-22	Distributed Systems	**2-(PPT/Projector)**	**1,2,3,4**
	14-Sep-22	Methodologies for Implementation of OS Services	**2-(PPT/Projector)**	**1,2,3,4**
3	19-Sep-22	System Calls	**2-(PPT/Projector)**	**1,2,3,4**
	20-Sep-22	System Programs	**1**	**1,2,3,4**
	21-Sep-22	Revision	**2-(PPT/Projector)**	**1,2,3,4**
4	26-Sept-22	**Holiday**	**--**	**---**
	27-Sept-22	**Assignment 1**	**2-(PPT/Projector)**	**1,2,3,4**
	28-Sept-22	Introduction to Process Management	**2-(PPT/Projector)**	**1,2,3,4**
5	3-Oct-22	Process Definition, Process States	**9**	**1,2,3,4**
	4-Oct-22	Process States Transition	**2-(PPT/Projector)**	**1,2,3,4**
	5-Oct-22	**Sessional**	**2-(PPT/Projector)**	**1,2,3,4**
6	10-Oct-22	Process Control Block	**---**	**6**
	11-Oct-22	Operations on Processes	**9**	**1,2,3,4,6**
	12-Oct-22	Suspend and Resume	**8,10,2**	**1,2,3,4,**
7	17-Oct-22	Interrupt Processing	**8,10,2**	**1,2,3,4,**
	18-Oct-22	CPU Scheduling Criteria	**6**	**1,2,3,4**
	19-Oct-22	Levels of Scheduling	**6**	**1,2,3,4**
	22-Oct-22 to 26-Oct-22	**Diwali Vaccation**	**--**	**--**
8	31-Oct-22	Scheduling Algorithms	**2-(PPT/Projector)**	**1,2,3,4**
	1-Nov-22	Holiday		
	2-Nov-22	Scheduling Algorithms	**2-(PPT/Projector)**	**1,2,3,4**
9	7-Nov-22	Scheduling Algorithms	**2-(PPT/Projector)**	**1,2,3,4**
	8-Nov-22	Holiday		
	9-Nov-22	Multiple Process Scheduling	**2-(PPT/Projector)**	**1,2,3,4**
10	14-Nov-22	Storage Management: Memory Management of Single-user and Multiuser OS	**2-(PPT/Projector)**	**1,2,3,4**
	15-Nov-22	Partitioning	**6**	**1,2,3,4**
	16-Nov-22	Swapping	**6**	**1,2,3,4**
11	21-Nov-22	Paging and Segmentation	**--**	**5**
	22-Nov-22	Virtual Memory	**2-(PPT/Projector)**	**1,2,3,4**

	23-Nov-22	Page Replacement Algorithms	2-(PPT/Projector)	1,2,3,4
12	28-Nov-22	**Functions: Definition, prototype, calling**	6	1,2,3,4
	29-Nov-22	**passing parameters,**	2-(PPT/Projector)	1,2,3,4
	30-Nov-22	**passing parameters,**	6	1,2,3,4
13	5-Dec-22	Application I/O interface, Kernel I/O subsystem	2-(PPT/Projector)	1,2,3,4
	6-Dec-22	Transforming I/O Hardware Operation	9,10	1,2,3,4
	7-Dec-22	Streams	9,10	1,2,3,4
14	12-Dec-22	Disk Scheduling, Disk Structure	2-(PPT/Projector)	1,2,3,4
	13-Dec-22	Swap Space Mangement	2-(PPT/Projector)	1,2,3,4
	14-Dec-22	Revision	6	1,2,3,4
15	19-Dec-22	Discussion over Previous Year papers	6	1,2,3,4
	20-Dec-22	Discussion over Previous Year papers	2-(PPT/Projector)	1,2,3,4
	21-Dec-22	Revision	6	1,2,3,4
16	22-Dec-22	**Revision**	--	--
	23-Dec-22	**Problem Solving Session**	--	--

	Teacher Incharge	**Head of the Department**
Name	Tanvi Dua	Dr. Girdhar Gopal
Sign with Date		