Branch: B.Sc.(IT)	Semester-I
Subject Code: 1103	Lecture: 04 Credit: 04
Course Opted	Core Course-2 (Theory)
Subject Title	Introduction to IT & Operating Systems

Learning outcomes:

a) To understand basic organization of computer and different computer peripherals and interfaces,

b) To define different number systems their interconversion and binary arithmetic.

c) To understand the basics of Networking

d) To understand the main components of an operating system and their functions.

e) To describe the various CPU scheduling algorithms and remove deadlocks.

f) To understand the concepts and implementation Memory management policies and virtual memory.

g) To use disk management and disk scheduling algorithms for better utilization of external memory.

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT –I	1	**Number Systems:** Binary, Octal Decimal Hexadecimal and Their interconversion, Computer Arithmetic. **Computer Software:** System and Application Software. **Type of Computers:** Digital, Analog, Hybrid Computers	3	6
	2	Definition : Data, Information; Characteristics and Interpretation, Data & its logical & physical concepts Definition of Computer, Features, Block Diagram of Computer System, Computer Generations, **Primary Memory Devices:** RAM, ROM, PROM, EPROM, CACHE Memory, Registers.	3	6
UNIT – II	3	**Secondary Storage Devices:** : Sequential and Direct Access Devices, Magnetic and Optical Storage, Flash Drive/USB Pendrive **Printers:** Impact and Non-Impact Printers. **Computer Languages:** Machine, Assembly, High Level	2	4
	4	**Networks: Type of Networks (LAN, MAN, WAN, etc), Network configuration:** topologies, Layered approach for network Models, TCP/IP and the OSI Reference Model And Working, Comparison of TCP/IP and OSI reference model, WWW, HTTP, e-Mail, GIAS, Search engine, Domain name etc.	6	12

UNIT – III	5	**Operating System:** Purpose of Operating Systems, OS Structure, Services of Operating System. **Types of Operating System (Explain concepts):** Single processor systems, Multiprogrammed, Batch, Time sharing-Interactive, Multitasking, Multiprocessor systems, Parallel systems, Distributed systems, Special purpose systems, Real Time systems, Multimedia systems Handheld Systems	8	16
	6	**Processes:** Concept, process states, Scheduling, Operations on Processes, Cooperating Process, Process Synchronization. **Threads:** Concept, Multithreading models, Threading issues	10	20
UNIT –IV	7	**CPU Scheduling:** Concept, Scheduling Criteria, Scheduling Algorithms (FCFS, SJF, RR, Priority). **Memory Management:** Concept, Swapping, Contiguous Memory Allocation, Paging, Segmentation. Virtual Memory: Basics of Virtual Memory – Hardware and control structures – Locality of reference, Page fault, Working Set, Dirty page/Dirty bit – Demand paging (Concepts only) – Page Replacement policies : Least Recently used (LRU) Optimal (OPT) , Second Chance (SC), First in First Out (FIFO), , Not recently used (NRU).	12	24
	8	**Deadlock:** Concept, System Model, Characterization, Handling Deadlock, Detection, Prevention, Avoidance.	6	12
TOTAL			50	100

Text Books
1. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, Sixth Edition, 2018
2. Silberschatz, Galvin, Gagne "Operating System Principles" John Wiley & Sons, 7th Edition, 2006

REFERENCES:
1. Dr. Madhulika Jain, "Information Technology Concept", BPB Publication 2nd Edition. , 2018
2. Andrew Tanenbaum, Modern Operating Systems, Prentice Hall. , 2nd Edition, 2001.
3. William Stallings, Operating Systems, Prentice Hall, 6th Edition 2009
4. Harvey M. Deitel, An introduction to operating systems. Addison-Wesley, 2nd Edition 1990
5. Andrew Tanenbaum & Albert Woodhull, Operating Systems: Design and Implementation. Prentice-Hall, 3rd Edition 2006
6. Douglas Comer, Operating System Design - The XINU, 2nd Edition