

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

DIPLOMA PROGRAMME IN INFORMATION TECHNOLOGY

Semester – III

COURSE OF STUDY AND SCHEME OF EXAMINATION

S. No	Board of Study	Subject Code	Subject	Periods/Week (In Hours)			Scheme of Examination					Credit L+ (T+P)/2	
				L	T	P	Theory			Practical			Total Marks
							ESE	CT	TA	ESE	TA		
1.	Computer Science Engg.	233311(22)	Computer Architecture	3	1	-	100	20	20	-	-	140	4
2.	Electronics & Telcomm Engg	233312(28)	Electronic Devices & Circuits	5	2	-	100	20	20	-	-	140	6
3.	Computer Science Engg	222312(22)	Object-Oriented programming in C++	3	1	-	100	20	20	-	-	140	4
4	Computer Science Engg	233314(22)	Computer Network Essentials	3	2	-	100	20	20	-	-	140	4
5	Computer Science Engg	222315(22)	Operating System	4	1	-	100	20	20	-	-	140	5
6	Electronics & Telcomm Engg	233321(28)	Electronic Devices & Circuits Lab	-	-	4	-	-	-	70	30	100	2
7	Computer Science Engg	222323(22)	Object-Oriented programming in C++, Lab	-	-	4	-	-	-	70	30	100	2
8	Computer Science Engg	233323(22)	Computer Network Essentials Lab	-	-	3	-	-	-	70	30	100	2
TOTAL				18	7	11	500	100	100	210	90	1000	29

L : Lecture hours : T : Tutorial hours, P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment ;

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY BHILAI

- A) SEMESTER : III
 B) COURSE : COMPUTER ARCHITECTURE
 C) CODE : 233311(22)
 D) BRANCH/DISCIPLINE : INFORMATION TECHNOLOGY
 E) RATIONALE :

The students after studying this subject will be able to understand the architecture and maintenance of computer system. They will understand hardware developmental, processor and control design of computer systems. This will develop the basic insight in student about the change in the hardware technology, technology design and thereby develop better knowledge for the maintenance and repairing of the computer system. They will also be able to learn how to plan for establishing a computer set-up for any given requirement.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+ (T+P)/2
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
233311(22)	3	1	-	100	20	20	-	-	140	4

L : Lecture hours ; T : Tutorial hours; P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1.	Computer Architecture.	12	20
2.	Instruction Cycle, Instruction Codes	10	15
3.	Programming	12	20
4.	Central Processing Unit (CPU)	10	15
5.	Input/Output Organization	08	15
6.	Memory Organization	12	15
Total		64	100

H) DETAILED CONTENT

CHAPTER - 1 COMPUTER ARCHITECTURE

?? Introduction to 8085 /8086 Architectural Block-Diagram

?? Register Transfer and Micro-operations, bus and Memory Transfer, three state bus buffers memory transfer. Arithmetic, logic, shift, Binary adder, subtractor, incrementor, decrementor, Arithmetic circuits. Various logic micro-operations.& hardware implementation. Shift micro-operation-Hardware Implementation. ALU- circuits

CHAPTER - 2 INSTRUCTION CYCLE, INSTRUCTION CODES

?? Fetch, decode, Register & memory reference instructions AND to AC, ADD to AC, LDA, STA, BUN, BSA, ISZ. Input output instruction & interrupts.

CHAPTER - 3 PROGRAMMING

?? M/C language, Assembly language, Assembler first pass, program loops, programming Arithmetic & logic operations. Subroutines, I/P Programming.

CHAPTER – 4 CENTRAL PROCESSING UNIT

?? Register organization, stack organization, instruction format, addressing modes, data transfer instructions and manipulation instruction, program control instruction, RISC and CISC.

CHAPTER – 5 INPUT/OUTPUT ORGANIZATION

?? I/O Interface, Isolated v/s memory mapped I/O DMA- DMA Controller and DMA Transfer, I/O Processor.

CHAPTER – 6 MEMORY ORGANIZATION

?? Main memory-RAM, ROM, Memory address map, Auxiliary memory-magnetic disc, tapes etc., Cache memory-Associative mapping, direct & set associative mapping. Virtual memory-Address Space, memory space, Address mapping using pages, page table, page replacement. Memory management hardware-Segment and page mapping, memory protection.

I) SUGGESTED IMPLEMENTATION STRATEGIES

According to the theory and practical schedules the subject teacher will complete the session. The student themselves would be able to plan and submit a proposal for establishing a computer setup for industry

J) SUGGESTED LEARNING RESOURCES**a) Reference Books**

S. No.	Title	Author, Publisher & Address, Edition,Year of Publication,
1.	Computer Architecture and Organization	J.P.Hayes,Tata McGraw Hills Publishing Co.l Ltd., New Delhi
2.	IBM PC and Clones	B.Govindrajulu,Tata McGraw Hill Publications New Delhi
3.	Inside IBM PC	Peter Norton,Prentice Hall of India Pvt.Ltd , New Delhi IV th - Edition1999
4.	Structured computer Organization	Andrews TanenbaumPrentice Hall of India Pvt.Ltd, New Delhi III rd- Edition 1997
5.	Electronic fault diagnosis	G.C.Loveday,Longman Scientifi & Technical , IIIrd
6.	Upgrading and repairing PCs	Scott Mueller, QUE Publication

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

- A) SEMESTER : III
 B) SUBJECT TITLE : ELECTRONICS DEVICES & CIRCUITS
 C) CODE : 233312(28)
 D) BRANCH/DISCIPLINE : INFORMATION TECHNOLOGY
 E) RATIONALE

This subject will enable the students to comprehend the facts, concepts, working principles of basic electronic devices and circuit and their applications in electronic systems. The knowledge acquired by student will help them to design, test, troubleshoot and repair electronic circuits and devices.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+ (T+P)/2
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
233312(28)	5	2	-	100	20	20	-	-	140	6
233321(28)	-	-	4	-	-	-	70	30	100	2

L : Lecture hours ; T : Tutorial hours; P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1	Introduction to electronics	26	25
2	Rectifiers and filters	20	15
3	Transistor biasing	14	15
4	Transistor amplifiers	20	25
5	Field effect transistors	20	15
6	Integrated circuits	12	5
	TOTAL	112	100

H) DETAILED CONTENT

CHAPTER - 1 INTRODUCTION TO ELECTRONICS

?? **Electronics**

?? Definition of Electronics, application of electronics.

?? **Classification Of Electronics Components**

?? Active and Passive components.

?? **Resistors** - Fixed resistors, carbon composition resistors, wire wound resistors, film type resistor, ceramic resistors, fusible resistors, non-linear resistors thermistor. Variable resistors, potentiometers- linear and nonlinear, colour coding, power rating of resistors.

?? **Capacitors** -Charging and discharging capacitors, mica, ceramic, paper, electrolytic capacitors, capacitor color coding.

?? **Inductors** -Types of inductors, filter chokes.

?? **Diodes** – Intrinsic and Extrinsic semi-conductors,pn junction, forward and reverse bias,v-I characteristics ,LED and Zener diodes.

?? **Transistors** – Operating Principle of PNP and NPN transistor,Transistor configurations-CC,CB,CE and its characteristics.

CHAPTER – 2 TRANSISTOR BIASING

Transistor Biasing- Introduction, operating point, need of transistor bias,

Types of transistor biasing - Fixed bias, emitter feedback bias, collector feedback bias, voltage divider bias, stabilization of operating point, need for stabilization, thermal runaway, stability factor.

CHAPTER – 3 RECTIFIERS AND FILTERS

Semiconductor diode applications.

Rectifier Circuits:

Half wave, full wave, center tap, bridge and their comparison, Ripple factor, PIV, merits and demerits of rectifier circuits.

Filters: Necessity of filters, types of filters, shunt capacitor filters, series Inductor, LC filter, ? filter and their comparison.

CHAPTER – 4 TRANSISTOR AMPLIFIERS

Amplifiers -

Introduction, classification of amplifiers, single stage C.E. amplifier

Multistage transistor amplifier - RC coupled, transformer coupled and direct coupled amplifier, frequency response of multistage amplifiers.

Power Amplifiers - Difference between voltage and power amplifier, classification of power amplifiers.

CHAPTER – 5 FIELD EFFECT TRANSISTORS

Introduction, construction, symbol, working principle, types of JFET, characteristics of JFET, Comparison, merits and demerits of JFET with BJT

FET parameters - Dynamic drain resistance, transconductance, pinch-off voltage, amplification factor.

MOSFET - Metal Oxide Semiconductor FET Construction, symbol and working principle of MOSFET.

CHAPTER – 6 INTEGRATED CIRCUITS

Introduction to Integrated Circuits and types of ICs.

I) SUGGESTED IMPENTATION STRATEGIES

Subject teacher is expected to follow the teaching scheme for theory and practical. In laboratory, practical are to be conducted by mounting components on breadboards.

J) LEARNING RESOURCES SUGGESTED TO BE USED REFERENCE BOOKS

S. No.	Title	Author, Publisher & Address, Edition, Year of Publication,
1.	Electronic Devices and circuit theory	Robert Boylestad and Louis Nashelsky, Prentice Hall of India Ltd. New Delhi- 110001, FIFTH, 1996
2.	Basic Electronics and Linear Circuits	Bhargava Kulshrestha and Gupta, Tata McGraw Hill Publishing company Ltd. New Delhi, SIXTH, Latest
3.	Electronic principles	Malvino, Tata McGraw Hill Publishing company Ltd. New Delhi, EIGHTH
4.	Basic Electronics	Bernard Grob, Tata McGraw Hill Publishing company Ltd. New Delhi, SEVENTH, 2000

LIST OF PRACTICALS/DEMONSTRATIONS

- ?? Study of components :Resistors: Types, power rating, tolerance rating, colour codes, standard values of resistors. Capacitors: Types, voltage ratings, standard values.
- ?? Plot VI characteristics of PN Junction diode.
- ?? Plot VI characteristics of zener diode
- ?? Zener diode as a voltage regulator. Observe and draw half wave rectifier input and output waveforms.
- ?? Observe and draw full wave rectifier input and output waveforms
- ?? Center tapped b) Bridge type.
- ?? Observe and draw rectifier with capacitor filter input and output waveforms.
- ?? To plot input/output characteristics of transistor in CB configuration.
- ?? To plot input/output characteristics of transistor in CE configuration.
- ?? Study transistor biasing.
- ?? Study of single stage CE amplifier.
- ?? Plot frequency response curve and calculate bandwidth of RC coupled amplifier. Plot JFFT characteristics.

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

- A) SEMESTER : III
 B) COURSE : OBJECT ORIENTED PROGRAMMING IN C++
 C) CODE : 222312(22)
 D) BRANCH/DISCIPLINE : INFORMATION TECHNOLOGY
 E) RATIONALE :

This subject intends to teach the students the basic concepts of object-oriented programming (OOP) and C++. Large programs are probably the most complicated entities ever created by humans because of this complexity, programs are prone to error and software errors can be expensive and even life-threatening. Object-oriented programming offers a new and powerful way to cope with this complexity. Its goal is clearer, more reliable, more easily maintained programs. This subject will act as backbone to all other subjects that are based on Object Oriented concept.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+ (T+P)/2
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
222312(22)	3	1	-	100	20	20	-	-	140	4
222323(22)	-	-	4	-	-	-	70	30	100	2

L : Lecture hours ; T : Tutorial hours; P : Practical hours
 ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1	Introduction to object oriented programming	6	8
2	Objects and classes	6	14
3	Constructors and destructors/Operator Overloading	8	14
4	Inheritance	12	14
5	Polymorphism	8	12
6	Pointers in C++	8	14
7	I/O system basics and file processing	8	14
8	Graphics in C++	8	10
Total:		64	100

H) DETAILED CONTENT

CHAPTER - 1 INTRODUCTION TO OBJECT ORIENTED PROGRAMMING

- ?? Introduction
 - Its need and requirements
 - Data Type in C++
 - Procedure-oriented programming versus Object-Oriented programming concept
 - Basic concepts of OOPs.
 - Object oriented languages.
 - Concept and structure of C++ programming

?? Introduction to structures & Union of C

CHAPTER-2 OBJECTS AND CLASSES

- ?? Classes
 - Specifying a class and types of class
 - Defining and nesting member functions
 - Arrays within a class
- ?? Objects
 - Creating objects
 - Memory allocation for objects
 - Static data and member function
 - Array of objects
 - Objects as function arguments

CHAPTER– 3 CONSTRUCTORS AND DESTRUCTUROS

- ?? Constructors
 - Parameterized
 - Multiple
 - Constructor with detail argument
 - Dynamic
- ?? Destructor
- ?? Operator overloading and type conversion
 - Inline functions overloading
 - Overloading unary and binary operators
 - Rules for overloading operators

CHAPTER– 4 INHERITANCE

- ?? Introduction
- ?? Derived classes
- ?? Member declaration: protected
- ?? Types of inheritance
 - Single,
 - Multilevel,
 - Multiple,
 - Hierarchical,
 - Hybrid inheritance
- ?? Virtual base classes
- ?? Abstract classes
- ?? Constructors in derived classes
- ?? Member classes

CHAPTER – 5 POLYMORPHISM

- ?? Introduction

- Polymorphism in programming languages
- Types of polymorphism
- Polymorphic variables
- ?? Overloading and overriding
- ?? Virtual functions
- ?? Friend Function
- ?? Static and dynamic binding

CHAPTER – 6 POINTERS IN C++

- ?? Concept of Pointers
 - Pointer declaration
 - Pointer operator
 - Address operator,
 - Pointer expressions
 - Pointer Arithmetic.
- ?? Pointers and Functions
 - Call by value
 - Call by reference
 - Pointer to functions
 - Passing function to another function
- ?? Pointers in Arrays
- ?? Searching, Insertion and Deletion.
- ?? Pointers To String
 - Searching, Insertion and Deletion
 - Finding length and comparison
- ?? Pointers and objects
 - Pointers to objects
 - This pointer
- ?? Pointers to derived classes
- ?? Introduction to Structures and Unions

CHAPTER – 7 I/O SYSTEM BASICS AND FILE PROCESSING

- ?? I/O system Basics
 - The stream classes
 - Templates classes
 - Character based classes
 - Using manipulator to format I/O
- ?? File Handling
 - File system Basics
 - Opening and closing a file
 - Reading and writing a character from a file using fputs, fgets, rewind(), ferror, erasing file

CHAPTER – 8 GRAPHICS IN C++

- ?? Text mode graphics functions
 - Window function, cputs(), clrscr()
- ?? Graphics mode graphics functions:
 - initgraph, circle, closegraph
- ?? Shapes
 - set colours, set lines styles, set fill style, flood fill
- ?? Colours
 - Lines and Rectangle: Line(), Rectangle()

I) SUGGESTED IMPLEMENTATION STRATEGIES

To implement Object oriented programming it is assumed that the student is familiar with C programming and its syntax. While implementing this one should give the programming assignment based on the topics just after the completion of theoretical part of the concerned topic. More assignments based on the topics, may be given as per availability of time. For effective teaching/learning it is expected that list of questions based on the topics should be given. It is also expected that the programming assignment should cover the real time problems. The programming assignment should help a student in developing the object oriented programming logic.

Concepts such as inheritance, overloading, polymorphism, abstract classes of OOPs helps in reusability and enhancement. So it is expected that using OOPs principles one should reuse available utility classes of C++.

J) SUGGESTED LEARNING RESOURCES

a) Reference Books

S. No.	Title	Author, Publisher & Address, Edition,Year of Publication,
1.	C++ The Complete Reference	Tata McGraw-Hill Publishing Company Ltd. New Delhi Ist Edition 2000 Schilt
2.	Object Oriented Programming with C++.	Balagurusamy Tata McGraw-Hill Publishing Company Ltd. New Delhi, Ist Edition 2000
3.	Object Oriented Programming in Turbo C++	Lafore Robert Galgotia Publication , Ist.- Edition 2000
4.	Let Us C++	Yashwant Kanetkar BPB Publication
5.	Programming with C++	D. Ravichandran Tata McGraw-Hill Publishing Company Ltd. New Delhi, Ist - Edition 2000
6.	Programming with C++ made simple	Dr. M.Kumar, Tata McGraw-Hill Publishing Company Ltd. New Delhi, Ist edition 2002
7	Programming with C++	John R.Hubbard TMH

Course: Object-Oriented programming in C++, Lab

Code : 222323(22)
Hours: 64

II) K) LIST OF PRACTICALS

- ?? Any two simple C++ programs
- ?? Any two C++ programs based on object and classes
- ?? At least one C++ program based on each
 - Constructors and destructors
 - Overloading unary operator

- Overloading binary operator
- ?? C++ program based on each
 - Inheritance
 - Multiple Inheritance
- ??One C++ program based on
 - Polymorphism
 - Overloading
 - Overriding
- ?? Some C++ program should be conducted on each of the following
 - 2 array sorting
 - String manipulation
 - Pointer to objects
 - Use of this pointer
 - Pointers to derived class
- ?? At least two program based on file handling
- ?? At least four C++ programs based on Graphics functions

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

A)	SEMESTER	:	III
B)	SUBJECT TITLE	:	COMPUTER NETWORK ESSENTIALS
C)	CODE	:	233314 (22)
D)	BRANCH/DISCIPLINE	:	INFORMATION TECHNOLOGY
E)	RATIONALE	:	

Today is the age of information Technology. The day-to-day business transactions in banks, railway reservations, industrial sale, purchase, industrial automation / process and educational environments are all dependent on computers that are connected on networks. This subject will enable the students to learn the basic concepts of digital communication, computer network and its applications, topologies, communication media and devices, protocols used for communication.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+ (T+P)/2
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
233314(22)	3	2	-	100	20	20	-	-	140	4
233323(22)	-	-	3	-	-	-	70	30	100	2

L : Lecture hours ; T : Tutorial hours; P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher’s Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1	Networking Basics	14	15
2	Digital Communication	16	18
3	Communication Media And Devices	14	16
4	Network Topology And Network Reference Models	10	16
5	Protocols	16	20
6	Network Hardware	10	15
	TOTAL	80	100

H) DETAILED CONTENT

CHAPTER-1 NETWORKING BASICS

?? Introduction to computer networks

?? Network services

- ?? Basic Connectivity, File Service, File Transfer Service, application and security service, Sharing of multimedia elements
- ?? Models of Network Computing:
- ?? Centralized, Distributed, Collaborative Computing
- ?? Application of computer networks.
- ?? Network Architecture.
- ?? Feature and applications of :
- ?? Peer to Peer Networks
- ?? Client Server Networks
- ?? Internets and Intranets
- ?? LAN, MAN, WAN

CHAPTER-2 DIGITAL COMMUNICATION

- ?? Basic concepts, uses of channel,
- ?? communication channels characteristics,
- ?? Band Width, Attenuation, Bit rate and Baud rate,
- ?? modulators and de-modulators
- ?? synchronous & asynchronous modulators
- ?? Serial and Parallel transmission,
- ?? Analog and digital communicators
- ?? Simplex, Half Duplex & Full Duplex Communications

CHAPTER-3 COMMUNICATION MEDIA AND DEVICES

- ?? Transmission Media and channels
- ?? Magnetic media
- ?? Twisted pair
- ?? Co-axial cable
- ?? Optical Fiber.
- ?? Line of site Transmission
- ?? Communication satellites

- CHAPTER-4** ?? Bus Topology, Ring Topology, Star Topology, Mesh Topology, Tree Topology, Hybrid
- ?? OSI reference model
 - ?? Physical layer
 - ?? Data Link layer
 - ?? Network layer
 - ?? Transport layer
 - ?? Session layer

- ?? Presentation layer
- ?? Application layer

CHAPTER-5 PROTOCOLS

- ?? TCP / IP Protocols.
- ?? NETBEUI Protocol
- ?? IPX/SPX Protocol
- ?? IP addressing scheme
- ?? Sub netting
- ?? Media Access Method
- ?? CSMA Protocol

?? Persistent and Non Persistent CSMA.

?? CSMA/ CD

CHAPTER-6 NETWORK HARDWARE

?? Connector (RJ-11, RJ- 45) Repeaters, Hubs, Switches, Routers, Bridges, Gateways.

?? NIC , Types of NIC, Installation and configuration

?? Testing of NIC with PING

I) SUGGESTED IMPENTATION STRATEGIES

The subject teachers are expected to demonstrate the application of network to the students. They should also demonstrate the network setup with the type of network architecture, topology and communication media, connectors and network devices used. The teacher should allow the students to work on the network environment.

J) LEARNING RESOURCES SUGGESTED TO BE USED

a) Reference Books

S.No.	Title	Edition & Year of Publications Author, Publisher & Address
1	MCSE Network Essentials	Becky Kirsininkas Tata McGraw Hills Publication, N.Delhi, 1998.
2	Using Novell Netware	Bill Lawrence, Loyel S. Short, Latest Edn.
3	Novell Netware-Tips-Tricks-Techniques	Rakesh Narang, BPB Publication, Latest Edn
4.	Introduction to data communications and networking	Forouzan, behrouz Tata M/c graw hill, N. Delhi, Latest Edn

COURSE : COMPUTER NETWORK ESSENTIALS, Lab

CODE: 233323(22)

Hours: 48

K) LIST OF PRACTICALS

- Demonstrate and explain type of architecture used.
- Demonstrate the topology used with the computer network
- Demonstrate the transmission media and network connectivity devices used to establish computer network.
- Demonstrate the particular protocol used for the network adapter installed in the computer system.
- Demonstrate the installation of Network O.S.

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

- A) **SEMESTER** : **III**
 B) **COURSE** : **OPERATING SYSTEM**
 C) **CODE** : 222315(22)
 D) **BRANCH/DISCIPLINE** : **INFORMATION TECHNOLOGY**
 E) **RATIONALE** :

The subject on 'Operating System' intends to teach the students various services of an operating system, organized in various layers to perform different functions. It will enable the student to understand the Computer system structures, Operating system structures, Processes and CPU scheduling , memory management, file system , Mass storage structure etc. of the operating system. These basic concepts will help the students to properly understand the design of single user and multi-user operating systems.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit L+ (T+P)/2
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
222315(22)	4	1	-	100	20	20	-	-	140	5

L : Lecture hours ; T : Tutorial hours; P : Practical hours

ESE – End of Semester Exam.; CT – Class Test; TA- Teacher's Assessment

G) DISTRIBUTION OF MARKS AND HOURS

Chapter No.	Chapter Name	Hours	Marks
1.	Introduction	6	10
2.	Computer – System Structures	6	08
3.	Operating System Structures	6	10
4.	Processes And Multithreading	8	10
5.	CPU Scheduling	10	14
6.	Memory management	10	10
7.	File-system Interface & Implementation	8	11
8.	I/O Systems & Mass-Storage Structure	10	12
9.	Virtual Memory	10	08
10.	Dead Locks	06	07
Total		80	100

H) DETAILED CONTENT

CHAPTER - 1 INTRODUCTION

- ?? Operating System
- ?? Mainframe Systems
- ?? Desktop Systems
- ?? Multiprocessor Systems
- ?? Distributed Systems
- ?? Clustered Systems
- ?? Real-Time Systems
- ?? Handheld Systems
- ?? Feature Migration
- ?? Computing Environments

CHAPTER – 2 COMPUTER- SYSTEM STRUCTURES

- ?? Computer-System Operation
- ?? I/O Structure
- ?? Storage Structure
- ?? Storage Hierarchy
- ?? Hardware Protection
- ?? Network Structure

CHAPTER – 3 OPERATING SYSTEM STRUCTURES

- ?? System Components
- ?? Operating-System Services
- ?? System Calls
- ?? System Programs
- ?? System Structure
- ?? Virtual Machines
- ?? System Design and Implementation
- ?? System Generation

CHAPTER - 4 PROCESSES AND MULTITHREADING

- ?? Process Concept
- ?? Process Scheduling
- ?? Operations on Processes
- ?? Cooperating Processes
- ?? Inter process Communication
- ?? Communication in Client –Server Systems
- ?? Multithreading Models

CHAPTER – 5 III) CPU SCHEDULING

- ?? Basic Concepts
- ?? Scheduling Criteria
- ?? Scheduling Algorithms
- ?? Multiple-Processor Scheduling
- ?? Real-Time Scheduling
- ?? Algorithm Evaluation
- ?? Process Scheduling Models

CHAPTER – 6 MEMORY MANAGEMENT

- ?? Swapping
- ?? Contiguous & Non-Contiguous Memory Allocation
- ?? Paging
- ?? Segmentation
- ?? Segmentation with Paging

CHAPTER – 7 **IV) FILE-SYSTEM INTERFACE & IMPLEMENTATION**

- ?? File-system interface
 - File Concept
 - Access Methods
 - Directory Structure
 - File-System Mounting
 - File Sharing
 - Protection
- ?? **File system implementation**
 - File-System Structure
 - File-System Implementation
 - Directory Implementation
 - Allocation Methods
 - Free-Space Management
 - Efficiency and Performance
 - Recovery

CHAPTER – 8 **I/O SYSTEMS & MASS STORAGE STRUCTURE**

- ?? **I/O systems**
 - I/O Hardware
 - Application I/O Interface
 - Kernel I/O Subsystem
 - Transforming I/O to Hardware Operations
 - STREAMS
 - Performance

?? **Mass storage structure**

- Disk Structure
- Disk Scheduling
- Disk Management
- Swap-Space Management

CHAPTER – 9 **VIRTUAL MEMORY – Definition**

- ?? Demand paging
- ?? Page Replacement Algorithm
- ?? Thrashing

CHAPTER – 10 **DEAD LOCKS**

- ?? Basic Concepts
- ?? Deadlock Detection, Prevention
- ?? Handling algorithm, excluding Banker's Algorithm

V) SUGGESTED IMPLEMENTATION STRATEGIES

The subject operating systems starts with the origin of operating systems and their subsequent developments. This paper provides the overall design approach of operating system. Concept of

operating system design should be followed by the case studies and demonstration of relevant OS by the tutor.

K) SUGGESTED LEARNING RESOURCES

a) Reference Books

S. No.	Title	Author, Publisher & Address, Edition,Year of Publication,
1.	Operating System Concepts	Abraham Silberschatz, Bell Laboratories Peter Galvin, Corporate Technologies, Inc. Fifth Edition
2.	Operating Systems	Achyut S. Godbole, Tata McGraw Hill Publication, New Delhi
3.	Operating system	William Stallings, PHI
