

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

DIPLOMA PROGRAMME IN COMPUTER SCIENCE AND ENGINEERING

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	233314 (22)	Computer Network Essentials	3	2	-	100	20	20	-	-	140	4
2.	Computer Science Engg.	222312 (22)	Object-Oriented Programming in C++	3	1	-	100	20	20	-	-	140	4
3.	Computer Science Engg	222313 (22)	Database Management System-I	3	1	-	100	20	20	-	-	140	4
4.	Electronics & Telcomm Engg	222314 (28)	Digital Techniques	3	1	-	100	20	20	-	-	140	4
5.	Computer Science Engg	222315 (22)	Operating Systems	4	1	-	100	20	20	-	-	140	5
6.	Electronics & Telcomm Engg	222321 (28)	Electronics Workshop	1	-	3	-	-	-	40	20	60	3
7.	Electronics & Telcomm Engg	222322 (28)	Digital Techniques Lab	-	-	2	-	-	-	50	20	70	1
8.	Computer Science Engg	222323 (22)	Object-Oriented Programming in C++ Lab	-	-	4	-	-	-	70	30	100	2
9.	Computer Science Engg	222324 (22)	Database Management System-I Lab	-	-	4	-	-	-	50	20	70	2
TOTAL				17	6	13	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) **SUBJECT TITLE** : **COMPUTER NETWORK ESSENTIALS**
 C) **CODE** : 233314 (22)
 D) **BRANCH/DISCIPLINE** : **Computer Science and Engineering**
 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 $L + \frac{(T+P)}{2}$
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
233314 (22)	3	2	-	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	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

LIST OF DEMONSTRATIONS

- 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** : **OBJECT ORIENTED PROGRAMMING IN C++**
 C) **CODE** : **222312 (22)**
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**

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 $L + \frac{(T+P)}{2}$
	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

Chapter No.	Chapter Name	Hours	Marks
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

CHAPTER-2 OBJECTS AND CLASSES

- ?? Introduction to structures & Union of C
- ?? 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()
 - Polygons and Inheritance, shape class, polygons

D) 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

S. No.	Title	Author, Publisher & Address, Edition, Year of 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

Practical Code : 222323 (22)
No. of Hours: 64

K) LIST OF PRACTICALS

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** : **DATABASE MANAGEMENT SYSTEM -I**
 C) **CODE (Theory)** : **222313 (22)**
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**

E) **RATIONALE** :

The aim of this subject is to get broad understanding of the basic concepts of database system in particular relational database system. The students will also develop the skills to design database system and develop application programs using FoxPro.

F) **TEACHING AND EXAMINATION SCHEME**

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit $L+(T+P)$ <u>2</u>
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
222313(22)	3	1	-	100	20	20	-	-	140	4
222324(22)	-	-	4	-	-	-	50	20	70	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	No. of Hours/Periods Theory	No. of Hours/Periods Practical	Marks
1	Introduction	06	64	7
2	Database Management System	08		15
3	FoxPro - RDBMS Features, Viewing, Editing and Modifying Commands	08		15
4	Sorting And Indexing Of Database Files	08		15
5	Functions, Macros and Printing Reports	08		15
6	Programming With Foxpro	10		12
7	Handling Multiple Data Files and User Define Functions	06		06
8	Introduction To Ms-Access	10		15
	TOTAL	64	64	100

H) DETAILED CONTENT

CHAPTER-1	INTRODUCTION
	?? Data, Information and knowledge, Increasing use of data as a corporate resource, Data processing versus data management, File oriented approach versus Database Oriented approach to data Management, Different kinds of DBMS users, Types of database languages.
CHAPTER - 2	DATABASE MANAGEMENT SYSTEM.
	?? What is a database system? What is database? Why database, data independence, Data models: Relational, Network & Hierarchical schema and subschema..
CHAPTER – 3	FOXPRO - RDBMS FEATURES, VIEWING, EDITING AND MODIFYING COMMANDS
	?? FoxPro - Versions, features, requirement of Hardware and Software
	?? FoxPro - Menu System, Working with FoxPro
	?? Creating Database File Some common operations on data- CREATE, LIST, APPEND, CLOSE, QUIT
	?? FoxPro - Data Types
	Viewing And Editing Data
	?? Data Displaying and Monitoring Commands - DISPLAY, LIST, LOCATE, EDIT, CHANGE, BROWSE, REPLACE, DELETE, RECALL, PACK (All Commands with various Options)
	Modify Structure, Memo Field And File Utilities
	?? File utilities in FoxPro - DISPLAY DIRECTORY, COPY, DELETE, RENAME.
CHAPTER-4	SORTING AND INDEXING OF DATABASE FILES
	?? Sorting & Indexing Concept
	?? Sort Commands - Single & Multiple Key
	?? Advantage & Disadvantages of Sort
	?? Indexing Vs Sorting, Single & Multiple Key
	?? Indexing, FIND, SEEK
CHAPTER – 5	FUNCTIONS, MACROS AND PRINTING REPORTS
	?? Memory Variables, Date & Time Functions And Keyboard Macros
	?? Memory Variables - Creation and Uses, Simple
	?? Saving and Restoring Memory Variables
	?? ?/?/?/? Commands
	?? Time & Date Functions and Commands, Date Arithmetic
	?? Converting Defining Function Keys
	?? Keyboard Macros - Creating and Using
	Mathematical Commands And Functions
	?? Arithmetic Operations, Mathematical Functions, Mathematical

	Commands, Statistical Functions.
	Printing Reports And Labels
	?? FoxPro Report - its creation, features & Utilities, Preview, Printing Custom Report, grouping & Subgrouping. FoxPro Label - Designing & Printing
CHAPTER – 6	PROGRAMMING WITH FOXPRO
	?? Concepts of FoxPro commands file, Modify Commands
	?? Conditioning , Branching and Looping within Program files with Do While Enddo, If - Endif, Scan-Endscan, For - Endfor, Docode-Endcode, Text - Endtext, Executing Commands from other command files, Macro Substitution
	?? Error Conditions And Program Debugging Aids
CHAPTER – 7	HANDLING MULTIPLE DATA FILES AND USER DEFINE FUNCTIONS
	Handling Multiple Data Files
	?? Concept of Multiple Database Files - Using multiple database
	?? Relationing the database - SET RELATION, UPDATE, APPEND FROM, COPY TO, JOIN, Relation Query by Example and SQL
	Custom Screens & User Define Functions & Other Tools
	?? Create Custom Screen with @, @_GET, @_EDIT, @_SAY_GET_READ, Creating Box & Lines, User Define Functions, Custom Screen Designing.
CHAPTER – 8	INTRODUCTION TO MS-ACCESS
	?? An Overview of MS-Access, Its Features, Requirement of Hardware & Software, Primary Keys, Foreign Keys & their relations
	?? Creating Tables and Database, Various features and Operations of a Form, Creating Forms, modifying & Editing the Forms
	?? Creating Referential Integrity and Generating Queries
	?? Attaching, Importing & Exporting Data / Tables from various Database and Files
	?? Preparing Macros
	?? Various Types of Reports and their features and utilities
	?? Creating Crystal Reports

I) SUGGESTED IMPLEMENTATION STRATEGIES

Concepts of DBMS will be implemented by using the popular relational DBMS package FoxPro.

J) LEARNING RESOURCES SUGGESTED TO BE USED

a) Reference Books

S. NO.	TITLE	Author, Publisher & Address, Edition, Year of Publication
1	An Introduction to Data Base System	C. J Date , Addison-wesley publication, Sixth Year of Publication
2	Introduction to Database Management System	Navin Prakash Tata Mcgraw Hill
3	Foxpro Made Simple .	R.K.Taxali, BPB Publications
4	Mastering Foxpro 2.5	BPB Publications
5	Foxpro 2.6 for Dummies	Pustak Mahal

Course: Database Management System-I, Lab

Code: 222324(22)

No. of Hours: 64

K) LIST OF PRACTICALS/ TUTORIALS:

Practical

- Assignments and Practice in the development of programs using FoxPro RDBMS Software.

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

- A) **SEMESTER** : **III**
 B) **SUBJECT TITLE** : **DIGITAL TECHNIQUES**
 C) **CODE** : **222314 (28)**
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**

E) **RATIONALE** :

This subject will help the students to learn facts, Concepts, principle and procedure of digital electronics. These techniques can be used for designing sequential and combinational circuits, which forms the basis of any electronic device.

F) **TEACHING AND EXAMINATION SCHEME**

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit $L + \frac{(T+P)}{2}$
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
222314(28)	3	1	-	100	20	20	-	-	140	4
222322(28)	-	-	2	-	-	-	50	20	70	1

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	Fundamental Concepts	6	8
2	Logic Gates	8	8
3	Boolean Algebra	8	10
4	Combinational Logic Design	12	20
5	Combinational Logic Design Using MSI And LSI Circuits	10	18
6	Logic Families	10	18
7	Sequential Logic Circuit	10	18
	TOTAL	64	100

H) DETAILED CONTENT	
CHAPTER - 1	FUNDAMENTAL CONCEPTS
	<p>?? Comparison between analog and digital signals.</p> <p>?? Different types of number system and codes used in digital computers.</p>
CHAPTER – 2	LOGIC GATES
	<p>?? Basic Logic Gates: Logic symbols and truth table of all gates: AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR.</p> <p>?? Realization of all other gates using universal gate.</p>
CHAPTER – 3	?? BOOLEAN ALGEBRA
	<p>?? Rules and laws of Boolean algebra, Demorgan's theorem.</p> <p>?? Evaluation of logic expression, algebraic reduction of Boolean</p>
CHAPTER – 4	COMBINATIONAL LOGIC DESIGN
	<p>?? Introduction to logic design</p> <p>?? Karnaugh map representation of logical functions, Simplification of logical function using K-map, (2, 3, 4 variable) Sum of products (SOP) Product of Sum (POS) .</p> <p>?? Don't care conditions.</p> <p>?? Design example: half adder, full adder, Half subtractor, full subtractor, BCD to seven-segment decoder (using k-map)</p> <p>?? Gray to binary code converter (using k-map)</p> <p>?? Universal Gate</p>
CHAPTER – 5	COMBINATIONAL LOGIC DESIGN USING MSI AND LSI CIRCUITS
	<p>?? Multiplexer (:1) demultiplexer (1:4), Decoder (3:8) encoder (8:3) using combinational logic design.</p> <p>?? BCD adder, using (7483). ALU(74181). Digital comparator (7485), Parity generator/checkers(74180).</p> <p>?? Code converters: BCD to binary(74184), Binary to BCD(74185A)</p> <p>?? Priority encoder: Decimal to BCD(74147), Octal to binary priority encoder (74148) Hexadecimal to binary priority encoder using 74148 encoders.</p> <p>Decoder/drivers for display device:BCD to decimal decoder/driver (7447, 7448)</p>
CHAPTER – 6	LOGIC FAMILIES
	<p>?? Digital integrated circuits, its introduction</p> <p>?? Introduction: RTL, DTL, IIL, ECL, MOS families</p> <p>?? Propagation delay time, speed, power consumption,</p>

	fan_in , fan_out. ?? TTL and C-MOS logic families: Introduction
	?? Analysis of open collector and tri-state logic, Input/output parameters, advantages, applications,
	?? IC-interfacing, TTL driving CMOS, CMO driving TTL
CHAPTER – 7	SEQUENTIAL LOGIC CIRCUIT
	?? Introduction : One bit memory cell
	?? Flip-Flop-S-R, Clocked RS, T,D, J-K, master slave , JK
	?? Triggering of flip-flops, analysis of clocked sequential circuits, state reduction and assignment, Flip-flop excitation table, design procedures, design of counters, design with state equation. Working Principle and Truth-Table
	?? Registers ,shift registers. Working with SISO,SIPO,PISO,PIPO shift registers .
	?? Counters : Ripple counters, synchronous and asynchronous counters, timing sequences, Ring and Johnson counter, application of counters, Counter 4 Bit Counter, BCD

D) SUGGESTED IMPLEMENTATION STRATEGIES

- ?? The subject will be taught as per the given study scheme for theory as well as practical.
- ?? The identified practical sections will be conducted along with theory section.
- ?? The subject teacher will prepare & provide learning material to students.
- ?? A CBT (Computer Based Training) may be more useful to learn these topics of digital techniques.

J) LEARNING RESOURCES SUGGESTED TO BE USED

a) Reference Books

S. No.	Title	Author, Publisher & Address, Edition,Year of Publication
1	Digital principles	Malvino & Leach, Tata McGraw-Hill Publishing Company Ltd. New Delhi, Latest, 2000
2	Modern Digital Electronics	R.P.Jain, Tata McGraw-Hill Publishing Company Ltd. New Delhi, 2nd Edition,2000
3	Digital Electronics	V.K. Puri, Tata McGraw-Hill Publishing Company Ltd. New

		Delhi, 1st Edition,2000
4	Computer Design Latest & Digital Techniques	Morris Mano, Tata MacGrawHills

Course: Digital Techniques, Lab

Code: 222322 (28)
No. of Hours: 32

K) LIST OF PRACTICALS:

Practical

- ?? Study and Verify the truth table of logic gates (74xx series).
- ?? Realization of AND, OR, NOT and Ex-OR logic gates using NAND and NOR gate
- ?? Verification of Demorgan's theorem
- ?? Implementation of full adder, subtractor using gates
- ?? Study of gray to binary code convertor using gates
- ?? Study to multiplexer and demultiplexers.
- ?? Implementation of combination logic circuit using mux and Dmux.
- ?? Study of BCD adder
- ?? Study of BCD to seven segment decoder.
- ?? Verification of truth table of flip flop using IC's
- ?? Shift registers using D flip-flop.
- ?? Presetable shift right, shift left registers.
- ?? Ripple counter using J-K flip-flop.
- ?? Decode counter 7490.
- ?? Synchronous counter using J-K flip-flops.
- ?? Up/down counter.
- ?? Mod N counter using J-K flip-flop
- ?? Study of 6116 RAM.
- ?? Study of 2732 EPROM

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY,
BHILAI**

- A) **SEMESTER** : **III**
 B) **COURSE** : **OPERATING SYSTEM**
 C) **CODE** : 222315 (22)
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**
 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 $\frac{L+(T+P)}{2}$
	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

Chapter No.	Chapter Name	Hours	Marks
8.	I/O Systems & Mass-Storage Structure	10	12
9.	Virtual Memory	10	08
10.	Dead Locks	06	07
Total		80	100

H) DETAILED COURSE 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 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 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

II) 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

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY
BHILAI**

- A) **SEMESTER** : **III**
 B) **SUBJECT TITLE** : **ELECTRONIC WORKSHOP**
 C) **CODE** : 222321 (28)
 D) **BRANCH/DISCIPLINE** : **COMPUTER SCIENCE & ENGINEERING**
 E) **RATIONALE** :

This subject envisages to develop practical skills in handling various tools, accessories, equipment used in the manufacturing and testing electronic circuits. It will also make the students familiar with the measuring techniques used in electrical/electronics systems. The student will also be able to implement, test electronics circuits on breadboard and prepare PCB.

F) TEACHING AND EXAMINATION SCHEME

Course Code	Periods/Week (In Hours) (Teaching Scheme)			Scheme of Examination						Credit $L + \frac{(T+P)}{2}$
	L	T	P	Theory			Practical		Total Marks	
				ESE	CT	TA	ESE	TA		
222321 (28)	1	-	3	-	-	-	40	20	60	3

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	Identification and use of different tools and accessories used in manufacturing of electronics circuits	4	-
2	Study of basic components	4	
3	Study and use Digital Multimeter	1	
4	Study of Function Generator	1	
5	Study of CRO	1	
6	Study of Different cables	1	

Chapter No.	Chapter Name	Hours	Marks
7	Study of Different Connectors	1	
8	Study of Different Switches	1	
9	Study of Different Display Devices	1	
10	Preparing Cables and Boards	1	
	TOTAL	16	-

H) DETAILED COURSE CONTENT

CHAPTER - 1 IDENTIFICATION AND USE OF DIFFERENT TOOLS AND ACCESSORIES USED IN MANUFACTURING OF ELECTRONIC CIRCUITS.

- ?? Different types of cutters.
- ?? Nose pliers.
- ?? Wire strippers
- ?? Screw drivers
- ?? Lead straightners
- ?? Extracters
- ?? Soldering Iron
- ?? Desoldering Pump
- ?? Crimping tool.

CHAPTER – 2 STUDY OF BASIC COMPONENTS

- ?? Colour coding of resistors and capacitors
- ?? Types of resistors, capacitors inductors
- ?? Identification of components i.e. Diodes, Transistors, FET,UJT,SCR, Transormers.
- ?? Study and use analog multi-meter to measure:
 - AC and DC voltage.
 - AC and DC current
 - Different resistor
 - Continuity testing

CHAPTER-3 STUDY AND USE DIGITAL MULTIMETER

- ?? Study and use digital multimeter to measure:
 - AC and DC voltage
 - AC and DC current
 - Different resistor
 - Continuity testing

CHAPTER – 4 STUDY OF FUNCTION GENERATOR.

- ?? Front panel controls and there uses.
- ?? Frequency changer and amplifier.

CHAPTER – 5 STUDY OF CRO.

- ?? Front panel control and their functions.
- ?? different waveforms.
- ?? Measurement of amplitude and frequencies

CHAPTER – 6 STUDY OF DIFFERENT CABLES

- ?? Co-axial cable
- ?? Twisted pair cable
- ?? Flat ribbon cable
- ?? Fibre optic cable

CHAPTER - 7 STUDY OF DIFFERENT CONNECTORS

- ?? BNC connector
- ?? Banana connector
- ?? Crocodile connector
- ?? Male and female Dtype connector
- ?? Flat cable connector
- ?? Printed circuit connector
- ?? UTP connector

CHAPTER - 8 STUDY OF DIFFERENT SWITCHES

- ?? Toggle switches-SPST, SPDT,DPST,DPDT
- ?? Thumb-wheel switches
- ?? Rotary switches
- ?? Push on/Push off switches
- ?? Keyboard switches-mechanical, capacitive, membrane
- ?? DIP switches

CHAPTER – 9 STUDY OF DIFFERENT DISPLAY DEVICES

- ?? LED display
- ?? Seven segment display
- ?? LCD display

CHAPTER –10 PREPARING CABLES AND BOARDS

- ?? Prepare computer network cable (use different type of cable and connectors stated as in chapter 6 and 7).
- ?? Study and use bread boards to implement simple electronic circuits using resistors/ capacitors/ diodes/transistors/switches/display devices.
- ?? Prepare two simple electronic circuits using general purpose PCBs.
- ?? Prepare two PCBs for simple electronic circuits

D) SUGGESTED IMPLEMENTATION STRATEGIES

The subject content is expected to be taught by the teacher from electronics department. The teacher is expected to explain functions of the front panel controls of all electronic instruments/equipments along with measuring techniques. Teacher in the electronic workshop should demonstrate and guide students for developing the skills of soldering and PCB manufacturing.

J) LEARNING RESOURCES SUGGESTED TO BE USED

a) Reference Books

S. NO.	TITLE	Author, Publisher & Address, Edition, Year of Publication
1	Electronic Component and Materials	S.M.Dhir, Tata McGraw Hills publishing company Ltd., N.Delhi,
2	Printed circuit boards design and technology	W.C.Bosshart, Tata McGraw Hills publishing company Ltd., N.Delhi
3	Electronics Project for Beginners	A.K. Maini

K) LIST OF PRACTICAL:

This subject is practical based and all the practicals as given in content should be first demonstrated by the tutor and then performed by the students.