Diploma in Information Technology (DIT)
The UG Degree consists of 7 Subjects in all. These comprise of Subjects: ITP-11 to ITP14 and ITP-27, ITP-33, ITP-34
Compulsory Subject: (ITP-30, ITP-33, ITP-34)

If any student wants to appear for semester system then follow the below mentioned subject’s module:

**Semester I:** ITP11-ITP13, ITP33
**Semester II:** ITP14, ITP30 & ITP34
Detailed Syllabus

YEAR I

ITP11---INTRODUCTION TO INFORMATION TECHNOLOGY

UNIT I Computing Fundamentals

Brief history of development of computers, Computer system, concepts, Computer system Characteristics, Capabilities and limitations, Types of computers Generations of computers, Personal Computer (PCs) – evolution of PCs, configurations of PCs- Pentium and Newer, PCs Specifications and main characteristics- Basic components of a computer system - Control unit, ALU, Input/output functions and characteristics, memory - RAM, ROM, EPROM, PROM and Other types of memory

UNIT II Input/output Devices and types of Printers

Input/output & Storage Units:- Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers& types - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers

UNIT III Software and its types, Operating System

Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Programming languages, Assemblers, Compilers and Interpreter, Introduction to operating system for PCs-DOS Windows, Linux, File Allocation Table (FAT & FAT 32), files & directory structure and its naming rules, booting process details of DOS and Windows,

UNIT IV Languages

DOS system files Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits

UNIT V Use of communication and IT

Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication; Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN - Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways- Internet-Evolution, World Wide Web Internet Services, Convergence of technologies
UNIT VI MIS
Management information system - Introduction, Characteristics, Needs, Different views of MIS, Designing, Placement of MIS, Pitfalls in Designing an MIS, Computer based MIS – Advantages & Disadvantages

UNIT VII Computer Applications in Business
Need and Scope, Computer Applications in Project Management, Computer in Personnel Administration, Information System for Accounting-Cost and Budgetary Control, Marketing and Manufacturing, Computer Applications in Materials Management, Insurance and Stock-broking, Production planning and Control, Purchasing, Banking, Credit and Collection, Warehousing

UNIT VIII Ms Word
Introduction to Ms Word, Document Window, Application Window, Formatting in Ms Word, Mail Merge

Reference Books:
1. Fundamentals of Technology Project Management by Colleen Garton and Erika McCulloch

ITP12---Programming In C

Block 1: Introducing the Fundamentals of C Programming
Introduction, Exploring Data Types- The char Data Type, The int Data Type, The float Data Type, The double Data Type, The void Data Type. Introducing Constants, Introducing Variables- Declaring Variables, Initializing Variables. Introducing const and volatile Type Qualifiers- The const Type Qualifier, The volatile Type Qualifier. Explaining Data Type Modifiers, Exploring Backslash Constants, Exploring Symbolic Constant, Exploring Delimiters, Understanding Multiple Assignments.

Block 2: Managing Input and Output

Block 3: Working with Operators and Expressions in C

**Block 4: Control Structures-I**

Introduction, Exploring the Syntax of a Control Structure, Working with Conditional Statements- Using the if Statement, Using the if-else Statement, Creating the Nested if Statements, Using the if-else Ladder, Using the switch Statement, Creating Nested switch Statements. Working with Iterative Statements- Using the while Loop, Using the do-while Loop, Using the Loop. Working with Jump Statements- Using the break Statement, Using the continue Statement, Using the go to Statement.

**Block 5: Arrays**

Introduction, Introducing Arrays, Types of Arrays- One-Dimensional Arrays, Two-Dimensional Arrays, and Limitations of Arrays.

**Block 6: Working with Functions**

Introduction, Overview of Functions- Function Definition, Function Invocation, Types of Functions- Built-in Functions, User-defined Functions, Parameter Passing Mechanisms, Passing Arrays in Function, Recursive Functions, Functions and Variables- Local and Global Variables, Static and Register Variables.

**Block 7: String Handling in C-I**

Introduction, Understanding Strings in C, Declaring and Initializing a String, Reading and Displaying the Strings- Using the scanf () and printf () Functions, Using the puts() and gets() Functions, Using the getchar() and putchar() Functions. Creating an Array of Strings.

**Block 8: String Handling in C-II**

Performing String Operations- Concatenating Strings, Calculating the Length of a String, and Comparing Strings- Using String Handling Functions- strlen(), strcmp(), strncmp(), strcat(), strncat(), strcpy(), strncpy(), strchr(), strlwr(), strupr(), strrev().

**Block 9: Structures and Unions**


**Block 10: Pointers**

Introduction, Understanding Pointers, Declaring a Pointer Variable, Using the address of (&) Operator, Initializing a Pointer Variable, Dereferencing a Pointer, Performing Operations on Pointers- Assignment, Arithmetic, Comparison, Working with Functions and Pointers- Call By Value, Call by Reference. Working with Arrays and Pointers- Pointers to One-dimensional Arrays, Pointers to String. Allocating Memory at Runtime- malloc(), calloc(), free(), realloc().

**Block 11: Working with Preprocessor Directives**

Block 12: Data File Processing in C

Introduction, Exploring Data Files, Opening and Closing Files- Reading from Files, Writing to Files, Accessing Data Files Randomly- The fseek() Function, The ftell() Function, The fread() Function, The fwrite() Function.

ITP13---RDBMS

Block 1: Understanding Database Management System


Block 2: Introducing Relational Database Management System


Block 3: Performing Basic SQL Operations


Block 4: Performing Transact-SQL Operations

Introduction. Data Types- Exact Numerics, Approximate Numerics, Date and Time, Character Strings, nicode Character Strings, Binary Strings, Other Data Types. Control Flow Statements- The BEGIN...END Statement, The GOTO Statement, The IF...ELSE Statement, The WHILE Statement. Database Operations- Creating a Database, Dropping the Database. Table Operations- Creating a Table, Altering the Table, Truncating the Table, Dropping the Table. Constraints- The PRIMARY KEY Constraint, The UNIQUE Constraint, The FOREIGN KEY Constraint, The CHECK Constraint. Joins- Performing a Cross Join, Performing an Inner Join, Performing an Outer Join, Performing a Self-Join.

Block 5: Working with Stored Procedures and User-Defined Functions

Block 6: Using Triggers


Block 7: Understanding Transaction, Locking, and Error Handling


ITP14—operating system

Block 1: Overview of Operating Systems

Computer and System Software, Objectives and History of Operating Systems, Categories of OS, Job Scheduling, Virtual Storage.

Block 2: Memory Management


Block 3: Process Management and CPU Scheduling


Block 4: Concurrency and Process Synchronization

Need for Concurrent Process Synchronization, Cooperating Processes, The Bounded Buffer Producers and Consumers Problem, Critical Section Problem, Inter- Process Communication, Semaphores, Monitors.

Block 5: Threads

Overview of Threads, User and Kernel Threads, Multithreading Models, Thread Libraries, Design Issues in Threads, Other Threading Issues

Block 6: Deadlock and Starvation


Block 7: Deadlock Handling
Deadlock Prevention, Mutual Exclusion Condition, Hold and Wait Condition, No Preemption, Circular Wait, Deadlock Avoidance, Dijkstra’s Banker’s Algorithm, Deadlock Detection and Recovery.

**Block 8: Main Memory and Virtual Memory Management**

Storage Organization, Memory allocation to programs, Partitioning of Memory, Free Space Management, Buddy System Memory Allocator, Memory Protection Hardware in Multiprogramming Systems, Overlay Structured Programs, Paging, Page Replacement Algorithms, Segmentation

**Block 9: File System Management and Implementation**


**Block 10: Allocation Methods**

File Allocation Methods, Free space management techniques, File System Recovery.

**Block 11: Distributed System**

Overview of Distributed Systems, Distributed Computing System Models, Design Issues of the DOS.

**Block 12: Topologies**


**Block 13: Security**


**Block 14: Authentication**

User Authentication, Biometrics, Program Threats, Cryptography, Denial of Service Attacks.

**Block 15: Introducing Linux**

Introducing Linux, Exploring Linux Distributions, Exploring Fedora Linux, Exploring the Features of Fedora Linux, Deploying Fedora Linux

**ITP30---Computer Organisation and Architecture**

**UNIT I: Introduction**

Computer System, Components of a Computer System, Computer Organization, Data Representation, Performance Factors

**UNIT II: Digital Logic Circuits**

Digital Computers, Logic Gates, Boolean algebra

**UNIT III: Map Simplification**
Product-of-Sums Simplification, Don’t Care Conditions.

**UNIT IV: Circuits and Flip Flops**
Combinational and Sequential Circuits, intro to Flip Flops, Types of Flip Flops

**UNIT V: Digital Components**
Integrated Circuits, Decoders, Multiplexers, Registers, Shift Registers, Binary Counters.

**UNIT VI: Data Representation**
Number System, Octal and Hex Decimal Numbers, Decimal Representation, Complements, Fixed-Point Representation, Floating-Point Representation, Other Binary Codes

**UNIT VII: Register Transfer and Micro operations**
Register Transfer Language, Bus and Memory Transfer, Arithmetic Micro operations, Logic Micro operations and Shift Micro operations

**UNIT VIII: Programming the Basic Computer**

**UNIT IX: Central Processing UNIT**
Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Program Control, and Program Interrupt.

**UNIT X: Control UNIT**
Introduction, Control Memory, Microprogramming, Computer Configuration, Design of Control UNIT, Overview of RISC/CISC

**UNIT XI: Pipeline and Vector Processing**
Parallel Processing, pipelining, Arithmetic Pipeline, Instruction Pipeline.

**UNIT XII: Memory Organization**
Memory Hierarchy, Main Memory or Primary Memory, Design of Main Memory, Auxiliary Memory, Virtual Memory, Memory Management, Associative Memory

**Reference Books:**
2. The Essentials of Computer Organization And Architecture by Linda Null and Julia Lobur
3. Essentials of Computer Organization and Architecture by Linda Null and Julia Lobur

ITP33---Practical-ITP12
ITP34---PRESENTATION/SEMINAR