Dr. Bhimrao Ambedkar University, Agra

A State University of Uttar Pradesh (Paliwal Park, Agra -282004)

www.dbrau.ac.in

A Documentary Support

for

Matric No. – 1.3.1

Institution integrates cross-cutting issues relevant to **Professional Ethics, Gender, Human Values, Environment & Sustainability and other value framework enshrined in Sustainable Development goals and National Education Policy – 2020** into the Curriculum

under the

Criteria – I

(Curriculum Design and Development)

Key Indicator - 1.3

in

Matric No. – 1.3.1

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION

1989

PROFESSIONAL ETHICS

ENVIRONMENT & SUSTAINABILITY

NATIONAL EDUCATION POLICY – 2020

HUMAN VALUES

GENDER

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Post Graduate Diploma in Computer Applications (PGDCA)	
PO-1	Make use of internet for searching and downloading information on web, sending or receive e-mails
PO-2	Prepare presentation and perform computation on Tools Like Power Point
PO-3	Handle windows and Linux operating system for general-purpose applications and networking.
PO-4	Develop general-purpose application based on C/C++ and HTML based languages.
PO-5	Perform various office activities on computer system such as installation of software, handling of printer and scanner, internet connection along with troubleshooting of system.

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PGDCA Programme Specific Outcomes (PSOs)	
PSO-1	Encourage the students to acquire real awareness to computer applications
PSO-2	To encourage students to develop the skill of formulation of real-life problems into the form of Computer based problems and find solutions using different algorithms
PSO -3	To learn the organization and Installation of Software and Hardware

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Course outcomes (CO's)-After the completion of these course students will be able to do following:

C-101 Computer Organization

CO1 : To understand the concept of Computer and its Components

CO2 : To Apply the concept of Boolean Logic and learn the operations of Gates.

CO3 : To Synthesize the various number system and their conversion.

CO4 : To evaluate the binary representations

CO5 : To Explore the Application of Computers

C-101 Computer Organization:

Unit I:

Number System: Binary, Octal, Hexadecimal and Computer Arithmetic with them. Addition and Subtraction for sign machine and 2's complement numbers. Floating-point representation and arithmetic. Computer codes binary, ASCII, EBCIDC, Redundant and error correcting codes.

Introduction to the computer as a purposeful collection of inter-linked elements CPU, Memory and I/O units.

Unit II:

Structure and function of CPU as a collection of Registers, Arithmetic Logic and Control Unit. Concept of Storage, fetch and execution of instructions via data control and address buses. Types of main and auxiliary memory. RAM, ROM, PROM, DISK and TAPE memories. Static and Dynamic RAM.

Unit III:

Logic Design of Computer, Truth Table, Boolean Algebra, AND, OR, NAND, NOR gates, Multiplexes, Flip-Flops shift registers and counters, decoders, encoders, design of combinational circuits. Speed mismatch between CPU and peripherals.

Unit IV:

Flow of information among CPU, Memory and peripherals. Handling of interrupt, Programmed and DMA transfer of data, I/O buffers, handshaking. Design of I/O channels, Virtual memory, Time Sharing, Multiprogramming systems.

Reference:

Computer System Architecture By Moriss Mano

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C-102 Programming in C & Data Structure

CO1 : To understand the concept of Computer Programming & Algorithms

CO2 : To Apply the concept of Flow Chart and Logic

CO3 : To Learn the various Programs based on looping and branching.

CO4 : To evaluate the usage of data types

CO5 : To Explore the Application of Computers Programs

Unit I:

Overview of programming: Introduction to computer based problems solving, Program design and implementation issues, Programming environment.

Unit II:

Fundamental of C Programming: Overview of C, Data Types, Operators, Expression, Control Constructs, Arrays, Basic I/O, Program Design examples, Advanced features.

Unit III:

Advanced Programming Techniques: Control Constructs, Functions and Recursion.

Unit IV:

Introduction to Pointers, Structures, Union, File Handling: File Pointers, File Accessing functions, Slandered C Header and Library Files, Command Line Argument, Creating Project Files.

Unit V:

Basic Concepts of data representation, Introduction to algorithm design and data structure, representation of arrays, single & multidimensional arrays, its storage. Stacks and Queues: Representation of stacks and queues, circular queues, application of stacks, introduction to postfix, priority queues. Link List : Singly linked list, operation on the list circular list, Double linked list, Simulation using linked lists, garbage collection.

Reference:

Programming in C by Raja Raman.
Data Structures Using C and C++ by Tenanbaum
Data Structures Using C by Schaum Series.

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C-103 PC SOFTWARE SKILLS

CO1 : To understand the concept of Software and its categories

CO2 : To Apply the concept of system and application software.

CO3 : To Synthesize the software with its applications.

CO4 : To evaluate the software applications

CO5 : To Explore and learn installation of software

Unit I:
History of computer and generations of computers, Classification, Hardware, Software, Representation of information, types of software: System and application software.

Unit II:
Windows: Windows basic, Explorer, Internet Explorer, File Management Device Management, OLE Concepts.

Unit III:
Word processor: Basics of word processing, Document Enhancement. Graphics using templates and wizards.
Spreadsheet: Worksheet basics, Formatting and Calculation. Functions and macros, working with graphs and charts, Multiple worksheets.
Presentation Tools: (MS-Power Point): Presentation of slides, Movements of Slides, etc.

Unit IV:
Internet Fundamentals: Surfing and usage of internet, Email, FTP, TELNET, WWW, etc.

Unit V:
Hypertext Mark Up Language and Dynamic Hypertext Mark Up Language, HTML/DHTML & Designing Tools.

Reference:

Microsoft Office: Reference book published by TMH

HTML: Reference book published by BPB.

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C-104 System Analysis & Design

CO1 : To understand the concept of System, CBIS, MIS and its categories

CO2 : To Apply the concept of system with its SDLC.

CO3 : To Synthesize the system Cot Benefits Analysis.

CO4 : To evaluate the System Development Cost with COCOMO

CO5 : To Explore and learn installation of New System

Unit I:
Introduction to system definition and concepts: Real Life business sub system, System Environment and Boundaries, Role and need of System Analysis, Introduction of SDLC (System Development Life Cycle).

Unit II:
System Planning: Data and fact gathering techniques, Feasibility reports, System Selection plan and proposal, Cost benefit and analysis, System design and modeling, Data flow Diagram, I/O from design, Modular and system design

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Unit III:
System Implementation and maintenance: Planning consideration, System evaluation and performance, Maintenance activities, System Audit and Security.

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Unit IV:
Introduction to MIS, Definition of MIS, and System approach to MIS, MIS organization with in a company, Conceptual design of MIS, System Objectives and System Constraints, Alternative System Design and Selection.

Unit V:
Detailed System design and Implementation: Basic System Design concept to MIS, Role of MIS development and System Analyst.

Reference:

1. System Analysis & Design By Awad.

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C-105 E-Commerce

CO1 : To understand the concept of e-Commerce and its Categories

CO2 : To Apply the concept of B2B, B2C

CO3 : To Synthesize the software to execute e-Commerce portal.

CO4 : To evaluate the software applications of e-Commerce

CO5 : To Explore and learn e Business and E-Commerce

UNIT 1
E-Commerce: An Introduction to E-commerce and Internet. Portal Site Development, Multimedia, 3D, Virtual reality (VRML).

UNIT 2

E-Commerce – Business to Business to Consumer, Setting up of an E-Business, Net for Trading, advertising And marketing. Secure Transaction on Net,

Unit 3
Various Protocol used on the Internet to secure the transaction, SET, SSL, Electronic Fund Transfer E Banking, Shopping Mall, Mail Service, Content Service,

Unit 4
Web Advertisement. Content Development & Deployment: News, Free Email, Chat Rooms, Search Engines, Viruses, Worm,

Unit 5
Authentication, Protection and Access Control,
Introduction to 'TALLY' software.

Reference:

E-Commerce by Kamlesh Bajaj and Nag Published by TMH

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C-201 Introduction to Data Base Management System

CO1 : To understand the concept of Data base verses File

CO2 : To Apply the concept DBMS

CO3 : To Synthesize the software to execute SQL queries

CO4 : To evaluate the software of DBMS like SQL, MySQL

CO5 : To Explore and learn advance Models of DBMS

Unit I:

Overview of Database Management System, File Oriented Approach Vs Data oriented approach, Database System, Structure of Database System, Data Independence, Primary and Secondary Objectives of Database System, Role of DBA.

Unit II:

Entity, Attributes, Tuples, E-R Diagrams, Relationships, Schema, Sub-Schema, View of Data and DBMS, Components and function of DBMS

Unit III:

Database Models : Hierarchical Model, Network Model, Relational Model, Operations on RDBMS, Examples of Different Models.

Unit IV:

Functional Dependence, Transitive Dependence, 1NF, 2NF, 3NF, BCNF.

Unit V:

SQL (DDL,DML) Object Oriented DBMS, Protection and Security Mechanism, Backup and Error Recovery.

Reference:

Introduction to Data Base Management System By Bipin Desai.

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Data

C-202 Communication Networks

CO1 : To understand the concept of Computer Network

CO2 : To Apply the concept ISO0-OSI Layers

CO3 : To Synthesize the various Network Protocols

CO4 : To evaluate and experience the Functioning of Network Layers

CO5 : To Explore and learn Network Models

Unit I:

Introduction to Data Communication. Line Configuration. Topologies. Transmission Modes. Digital Signals. Encoding. Multiplexing

Network Hardware : Repeaters. Bridges. Routers. Gateways. Network Software. Design Issue. Interface and Services.

Unit II:

Reference Models(OSI/ISO functions of layers). TCP/IP model. Layered Architecture. Transmission Media. Wireless Transmission.

Unit III:

Ethernet. Access Method : CSMA/CD. Addressing. Frame Format. Token Bus. Token Ring: Access Method. Token Passing. Addressing Frames Format. X . 25. Frame Relay. ATM. ISDN Services: History. Subscriber Access To ISDN. Broad Band ISDN.

Unit IV:

Routing Algorithms: Shortest Path. Flooding. Flow Based. Broadcast. Distinct Vector. Link State. General Principles of Congestion Control in Virtual Circuit in Datagram Sub Net. Chock Packets. Loads Shedding. TCP/IP. IP Addressing. Sub Nets.

Unit V:

Application Layer, Network Security. Cryptography. Secret Key Algorithm. DNS, Email. Usenet. WWW. FTP.HTTP.TELNET.

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C-203 Concepts of OOPs Using C++

CO1 : To understand the concept of OOPs

CO2 : To Apply the concept of Encapsulation, Inheritance and Polymorphism

CO3 : To Synthesize the Programs of POP into OPPs

CO4 : To evaluate the OPPS programs

CO5 : To Explore and learn Constructors, Virtual Functions

Unit I:

Overview of Object Oriented Concepts. Introduction: Need of Object Oriented Programming. Object Oriented Approach, Advantages of OOPS. Characteristics of OOPL Objects. Inheritance, Reusability. New Data Types. Polymorphism Overloading.

Unit II:

An Overview of C++ Programming: C++ objects. C++ objects as data types. constructor & Destructors. Object as arguments. Overloaded constructors. member functions outside the class. objects as argument. Returning object from functions. Structure and classes. static class data. An introduction to Array. Array as a class member data. Arrays as object, strings. Arrays of string. Strings as class members. User defined strings.

Unit III:

Operator Overloading: Overloading unary operators. Overloading binary operator. Arithmetic operator. Concertinaing strings. Multiple Overloading. Comparison Operator. Arithmetic assignment Operator. Data Conversion: Conversion between (Basic Types. Object and Basic Types. Between Object of Different Classes).

Unit IV:

Inheritance: Concept of base class and derived class. accessing the base class members. derived class constructors. overriding member functions. Virtual functions. Abstract base class. Public and Private Inheritance. Template Function and Template Class.

Pointers: Pointers and Arrays. Pointers and Strings. Pointers and Functions. Memory management ,New and Delete Operators. Pointer to objects. Pointers to Pointer. Linker-List Manipulation.

Unit V:

Files and Strings: Stream Class Hierarchy. String I/O. Character I/O. Object I/O. I/O with multiple objects. File Pointers (tellg). Disk I/O with member functions. Error Handling. I/O redirection IOS flags. Cerr and Clog Objects. Overloading of insertion and extraction operator, Command line arguments.

Reference:

C++ Programming by Robert Lafore

Programming in C++ by Bala Guruswamay

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C-204 Visual Programming

CO1 : To understand the concept of Window Programming

CO2 : To Apply the concept of Events and Methods

CO3 : To Synthesize the software to make Visual Programs

CO4 : To evaluate the software like Visual Studio

CO5 : To Explore and learn Visual Basics

Visual Basic InteraDesign Strategies: Enabling objects to interact using programming or scripting.

Visual Development Environment:

Identification of features: Use of advanced features to satisfy the requirements of an application features available will vary greatly between different development environments, but typical example might be the use of drag and drop, simple animation, linking to databases, Internet development.

Reference:

Using Visual Basic 6.0 by Resleman

Visual Basic 6.0 by Paul Sheriff

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C-205 Operating Systems

CO1 : To understand the concept of Operating System

CO2 : To Apply the concept Operating System to Users

CO3 : To Synthesize the software tools to develop Operating Systems

CO4 : To evaluate the software applications of Operating Systems

Unit I :

Introduction: Evolution of Operating System, Types of Operating Systems, Different views of Operating Systems, Command Language user's view, System Call User's view, Implementation of Operating System, RAM Disks, Clocks, Terminals.

Unit II :

Processes: The Process Model, Implicit and Explicit Tasking, Process Relationship, Process States, Process Switch, Threads, Scheduling Algorithms (First Come First Server, Round Robin, Shortest Process, Highest Response Ratio, Feedback-n, Priority), Mutual Exclusion, Inter-process Communication and Synchronization, Semaphores, Pessimistic and Optimistic Concurrency Control, Producers/Consumers Problem using semaphore(With bounded buffer and unbounded buffer) Critical Region, Monitors, Messages.

Unit III :

Memory Management: Contiguous Allocation, Non-Contiguous Allocation, Static and Dynamic Partitioned Memory Allocation, Paging and Virtual Memory, Page Replacement Algorithms (Optimal, LRU, FIFO, Clock, NRU, Be-lady's Anomaly), Simple Segmentation, Segmentation with paging, Disk Management, Disk Controller and Designer, Operating System's View of File Management, File Allocation Method, File Directories, File Sharing, File System & Security, Reliability, Viruses & Related Threats.

Unit IV :

Deadlocks: Conditions for deadlocks, Deadlock Prevention, Detection and Avoidance, Banker's Algorithm with single and multiple resources.

Unit V :

Features of DOS, Windows 3.1, Windows NT, Windows 95, Windows 98, Windows 2000, Design of UNIX.

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