MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR

POST GRADUATE DIPLOMA COURSES

IT-PGD01: POSTGRADUATE DIPLOMA IN COMPUTER APPLICATIONS (PGDCA)

Duration of the course: One year full time

Eligibility: Bachelors degree in any discipline from a recognized university with at least 50% marks at graduation level or post graduate level. SC/ST and OBC candidate requires only minimum pass marks at the graduation level for admission

Seats: 30 (Thirty)

Course structure:

Paper	Paper Name	Duration of exam. (hours)	Max. Marks		Total
			University Exam.	Internal Assessment	
Paper-I (ITD–101)	IT Tools and Networks	3	75	25	100
Paper-II (ITD–102)	Programming and Problem Solving through C Language	3	75	25	100
Paper-III (ITD-103)	Structured System Analysis and Design	3	75	25	100
Paper-IV (ITD-104)	Data Base Management System	3	75	25	100
Paper-V (ITD–105)	Web Technologies	3	75	25	100
Paper-VI (PR-I)	I.T. & Programming Language Lab	6	75	25	100
Paper-VII (PR-II)	Data Base Management Lab	6	75	25	100

Paper-VIII(PR-III)	Web Technology Lab.	6	75	25	100
Paper-IX(PROJ-I)	Based on any above technology	6	150	50	200
	TOTAL		**750**	**250**	**1000**

Teaching: 3hrs/week per paper for theory papers and 6 hrs/week per practical paper. Project work will be of one month duration after completion of the teaching of the all the theory and Practical Papers. However, project may be allotted well in advance to the students.

Examination rules:

1. External examination will be conducted in each paper at the end of the session by the university as per scheme given in the course structure.
2. A candidate will be required to answer one question from each unit with internal choice of question from each unit. Thus a candidate will be required to answer total five questions
3. Internal marks will be given through continuous evaluation of the candidate through Assignments, two internal examinations, seminar/Group discussion/Viva in each paper. In the case of project work, internal marks will be awarded on the basis of the reports from the Project supervisors regarding regularity, originality, number of hrs candidate has worked and presentation.
4. Project work will be evaluated by an external examiner . Student will be required to make a presentation of the work to the external examiner.

P. Gr. D. C. A.

5. A candidate will be required to pass separately in the internal as well as external evaluation by securing 40% of the maximum marks.
6. If a candidate pass in external examination, but fail in internal examination will be declared as failed in the paper as a whole. Similarly, if the candidate fail in the external examination, but pass in the internal evaluation will be declared fail.
7. In order to pass PGDCA examination, a candidate will be required to obtain minimum 50% marks in all the papers taken together.
8. If a candidate fail to secure 40% marks in at least two of the theory papers or two of the practical papers shall not be eligible to reappear in the failed papers. In the case of candidates eligible for reappear in failed papers, Internal marks of the candidates who have passed in internal evaluation will be carry forwarded. However, internal marks of the candidates failed in internal evaluation shall not be carry forwarded and the candidate will be awarded marks out of the maximum prescribed marks of the theory paper (i.e 100 for each theory/practical papers, 200 for project)
9. A candidate securing 50% or more but less than 60% marks will be awarded second division where as candidate secure 60% or more marks will be awarded First division.
10. Maximum of two chances other than the first appearance will be given to the failed candidates to clear their due papers as per conditions laid under para 6.
11. Students of PGDCA will be eligible to offer any one of the Add-on Diplomas or Certificate courses on part time basis during the course.

Important Note: Examination of all the Diploma courses in IT will be conducted together with common question papers as per paper codes given against each paper.

ITD- 101 : IT TOOLS AND NETWORKS

(Common for PGDCA, PGDIT and PGDBC courses)

UNIT - 1

Computer Appreciation

Characteristics of computers, Input,Output, Storage units, CPU, computer system, Binary number system, Binary to Decimal conversion, Decimal to binary conversion, binary coded decimal (BCD), ASCII Code.

Central Processing Unit

Control Unit, Arithmetic unit, instruction set, Register, Processor speed.

Memory

Main memory: Storage Evaluation criteria, Memory Organization, capacity, RAM, Read only memories. Secondary Devices:- Magnetic Disks, Floppy and Hard disks, Optical Disks CD-ROM, Mass storage devices.

Output Devices

Monitors, Printers- Dot matrix, inkjet, laser, plotters, computer output Micro-Film (COM), Multimedia projector, speech synthesizer; dumb, smart and intelligent terminal.

UNIT – 2

Multimedia

What is multimedia, text, Graphics, Animation, Audio, Images, Video; Multimedia Application in Education, Entertainment, Marketing.

UNIT – 4

Word processing concepts: Saving, closing, opening an existing document, Selecting text, Editing text, Finding and replacing text, printing documents, Creating and Printing Merged Documents, Character and Paragraph formatting, Page design and Layout.

Editing and Proofing tools : Checking and correcting spellings, Handing Graphics, Creating tables and Charts, Document Templates and Wizards.

Spreadsheet Package

Spreadsheet Concepts, Creating, Saving and Editing a workbook, inserting, Deleting work sheets, entering data in a cell/ formula coping moving data form selected cells, Handing operators in formulae, Functions: Mathematical, Logical, statistical, text, financial, date and time functions, Using Function Wizard.

Formatting a worksheet: Formatting Cells- Changing data alignment, changing date, number, character, or currency format, changing font, adding borders and colors, printing worksheet, Charts and Graphs- Creating, Previewing, Modifying charts.

Integrating word processor, spread sheets, web pages.

UNIT – 5

Presentation package

Creating, Opening and saving presentations, creating the look of your presentation, working in different views, working with slides, adding and formatting text, formatting paragraphs, checking spelling correcting typing mistakes, making noted pages and handouts, drawing and working with Objects, Adding clip and other pictures, Designing slides shows, Running and controlling a slide show, printing presentations*.

Computer Software

Relationship between hardware and software, Application software, compiler, names of some high level languages, free domain software.

Different Types of Computers:

PC, Desktop, Servers, Workstation, Parallel computing, Super computers and applications of super computing

Brief idea of CPU, Memory and Peripherals used with different type of computers, Specifications of latest PC's in the market

UNIT – 3

Operating Systems

Disk Operating System

Simple DOS Commands, Simple File Operations, Directory related commands.

Microsoft Windows

An Overview of different versions of windows, Basic windows elements, file management through windows.

Using Essential Accessories: Systems tools- Disk cleanup, Disk defragmenter, Entertainment, Games, Imaging- Fax, Notepad, Paint, WordPad.

Linux

An overview of linux, Basic linux elements: System features, Software features. File structure, File handing in linux, Installation of linux: H/W, S/W requirements, Preliminary steps before installation.

Networks

Networking Architecture: ISO-OSI, IBM, SNA architecture, their function and implementation. Concepts of circuit switching, packet switching and network switching, Introduction to serial communication standards and parallel communicaiton interfacing.Transmission media: twisted pair, coaxial cable, optical fibre. LAN topologies : STAR, BUS and RING network. LAN access techniques: ALOHA, CSMA, token ring and token bus. Standard components and Devices used to build Networks, Wireless Networks and WI-FI systems. Network Reliability and Security.

RECOMMENDED BOOKS

MAIN READING

1. P.K. Sinha and P. Sinha, "Foundations of computing". First Edition, 2002, BPB Publication
2. S. Sagman, "Microsoft Office 2000 for Windows, "Second Indian Print, 2001, Pearson Education.

SUPPLEMENTRY READING

1. Turban, Mclean and Wetherbe, "Information Technology and Management," Second Edition, 2001 John Wiley & Sons.

ITD- 102 PROGAMMING AND PROBLEM SOLVING THROUGH 'C' LANGUAGE

(Common for PGDCA, PGDIT and PGDBC courses)

UNIT -1

Introduction to Programming

The basic model of Computation, Algorithms, Flow-charts, programming languages, Compilation, Linking and Loading, Testing and Debugging, Documentation

Algorithms for problem Solving

Exchanging values of two variables, summation of a set of numbers, Decimal Base to Binary Base conversion, Reversing digits of an integer, GCD (Greatest common Division) of two numbers, test whether a number is prime, Organize numbers in ascending order, find square root of a number, factorial computation, Fibonacci sequence, Evaluate 'Sin x' as sum of a series, reverse order of elements of an array, find largest number in an array, print elements of upper triangular matrix, multiplication of two matrices, Evaluate a polynomial.

UNIT - 2

Introduction to 'C' Language

Character set, Variables and identifiers, Built-in data types, variable definition, arithmetic operators and expressions, constants and literals, simple assignment statement, Basic input/output statement, Simple 'C' programs.

Conditional Statements and Loops

Decision making within a program. Conditions. Relational operators. Logical connectives, if statement, if- else statement, Loops, do while, for loop, nested loops, infinite loops, Switch statement, Structured programming.

UNIT - 3

Arrays

One dimensional arrays: Arrays manipulation; Searching, insertion, deletion of an element from an array; finding the largest/smallest element in an array; Two dimensional arrays, Addition/Multiplication of two matrices, transpose of a sparse matrices, Transpose of square matrix; Null terminated strings as array of characters, Representation of sparse matrices.

Functions

Top-down approach of problem solving, modular programming and functions, standard library of C functions, prototype of a function: Formal parameter list, return type, function call, block structure, passing arguments to a function: call by reference, call by value, recursive functions, arrays as functions arguments .

UNIT – 4

Structures and Unions

Structure variables, initialization, structure assignment, nested structure, structures and functions, structures and arrays: arrays of structures, structures containing arrays, unions.

Pointers

Address operators, pointer type declaration, pointer assignment, pointer initialization, pointer arithmetic, function and pointers, Arrays and Pointers, pointer arrays

UNIT-5

Self Referential Structures and Linked Lists

Creation of a singly connected linked list, traversing a linked list, insertion into a linked list, deletion from a linked list.

File Processing

Concept of file opening in various modes and closing of a file, reading from a file, writing onto a file.

RECOMMENDED BOOKS

Main Reading

1. Byron Gottfried "Programming with C" Second edition, Tata Mcgrawhill, 2000
2. R.G. Dromey. "How to solve it by computer", Seventh Edition, 2001, Prentice hall of India.

SUPPLEMENTARY READING

1. E. Balaguruswami, "Programming with ANSI- C", Fist Edition, 1996, Tata mcgraw hill.
2. A. Kamthane, "Programming with ANSI & Turbo C", First Edition, 2002, pearson Education.
3. Venugopal and prasad, "Programming with 'C', first Edition, 1997, Tata

4. B.W. Kermighan & D.M. Ritchie, "The C Progamming Language", Second Edition, 2001, prentice hall of India.

ITD- 103: STRUCTURED SYSTEM ANALYSIS AND DESIGN

UNIT - 1

Introduction

System Definition and concepts: General Theory systems, manual and automated systems, Real-life Business sub-systems. System Environments and Boundaries. Real- time and distributed systems. Basic principles of successful systems. Approach to system development: Structured system analysis and design, Prototype, Joint Application development.

Systems Analyst

Role and need of systems Analyst. Qualifications and responsibilities. System Analysis as a Profession.

UNIT- 2

System Development Cycle

Introduction to Systems Development life cycle (SDLC). Various phases of SDLC: Study, Analysis, Design, development, Implementation, Maintenance.

Systems documentation consideration: Principles of systems documentation, Types of documentation and their importance, Enforcing documentation discipline in an organization.

UNIT- 3

System Planning

Data fact gathering techniques: Interviews, Group Communication, Questionnaires, Presentations & Site visits, Assessing Project Feasibility : Technical, Operational, Economic, Cost Benefits Analysis schedule, legal and contractual, Political, Modern methods for determining system requirements : Joint Application, Development program, Prototyping, Business Re- engineering. System selection plan and proposal.

UNIT – 4

Modular and Structured Design

Module specifications. Top-down and bottom-up design. Module coupling and cohesion. Structure charts.

System Design and Modeling

Process Modeling, logical and physical design, conceptual data modeling: Entity-relationship analysis, Entity-Relationship modeling, ERDs and DFDs, Concepts of normalization, process description; Structured English, Decision tree, Decision tables. Documentation : Data Dictionary recording Data descriptions.

UNIT – 5

Input and Output

Classification of forms, Input/output forms design. User-interface design, Graphical interfaces. Standards and guidelines for GUI design. Designing physical files and databases: Designing fields, Designing physical records, Designing physical files, Designing databases. Introduction to CASE tools, features, advantages and

limitations of CASE tools. Awareness about some commercial CASE Tools.

System Implementation and maintenance

Planning considerations. Conversion methods, procedures and controls. System acceptance criteria. System evaluation and performance. Testing and validation. Preparing user manual. Maintenance activities and issues.

Computer system Audit and security

Audit of computer system usage. Type of threats to computer system and control measures : Threat and Risk analysis, disaster recovery and contingency planning, Viruses.

RECOMMMENDED BOOKS

Main reading

1. J. Hoffer, "Modern systems Anlysis and desing", second edition, 2000, Joey George and joseph valacich, pearson education.
2. A. Dennis and B.H. wixom, "Systems Analysis and design", First edition, 2002, John wiley & sons, lnc.

Supplementary Reading

1. J. Whitten, L.Bentley and k. dittman, "System Analysis and design methodes", Fifth Edition, 2000, Tata Mcgraw Hill.
2. K.C. Laudon and J.P. Laudon, "Management information system", seventh Edition, 2002, pearson education.

ITD- 104 DATABASE MANAGMENT SYSTEMS

(Common for PGDCA, PGDIT courses)

UNIT – 1

Introduction to database Management System (DBMS)

Why database. Characteristics of data in database. DBMS, what is database ,advantage of DBMS,

Database Architecture and Modeling

Conceptual, physical and logical models, role of DBA. Database design

UNIT – 2

Entity Relationship Model

Components of ER Model, ER modeling symbols. Super class and sub class types. Attribute inheritance. Specialization. Generalization. Categorization.

Relational DBMS Model

Introduction to Relational DBMS, RBMS Terminology.

UNIT - 3

Database Normalization

Keys, relationships, first normal form., functional dependencies, second normal form, third normal form, boyce- codd Normal form, forth normal form, fifth normal form, Case study

Relational Algebra and Relational Calculus

Relational Algebraic operations, tuple relational calculus, Domain relational calculus.

UNIT – 4

Introduction to SQL

History of SQL Characteristics of SQL Advantage of SQL. SQL data types and literals. Types of SQL commands. SQL Operators and their precedence. Tables, views and Indexes. Queries and sub queries. Aggregate functions. Insert, update and delete operations join, unions, intersection, minus. Cursors in SQL, Embedded SQL.

Back up and Recovery

Database backups. Why plan backups? Hardware protection and redundancy. Transaction logs. Importance of backups. Database. Data storage, Causes of failures, recovery concepts and terminology. Recovery facilities. Recovery techniques. Detached transaction actions. Disaster Database Management System.

UNIT – 5

Database Security and integrity

Types of integrity constraints. Restrictions on integrity constrains. Data security risks. Complex user management requirements. Dimensions of security. Data security requirements Database users. Protecting data with in the database. Granting and revoking privileges and roles. System viability factors. Authenticating users to the database.

RECOMMENDED BOOKS

Main Reading

1. A. Leon and M. Leon, "Database management systems," First Edition, 2002, Vikas publishing house (P) Ltd.
2. R. Elmasri , S.Navathe, "Fundamentals of database Systems," third Edition, 2000, Addison wesley

Supplementary Reading

1. H. Korth, A. Silberchafz, "database system," Third Edition, 1997, Mcgraw- hill internation.
2. B. Desai, "An Introduction to database syste," Galgotia publication
3. D.K. Kroenke, "Database processing: Fundamentals, Design Implementation," prentice hall of India.
4. P. Bhattacharya and A.K. majumdar, "Database Management system," First Edition, 1996, Mcgraw Hill.

ITD-105 Web Technologies

(Common for PGDCA, PGDIT and PGDBC courses)

UNIT I

Basic Web Concepts - How the web server works – static web pages-Dynamic web pages-How scripting languages work – Server side scripting Language – Client Side Scripting – Overview of HTML – Formatting text and pages – Linking pages – Formatting the body section of the web page – Using block level Elements –Using Text level Elements – Including audio and video files in web pages – Stylesheets –

Imagemaps – Frames – Tables – DHTML – Creating Layers – Moving and Sliding objects

UNIT II

Java Script: object, names, literals-operators and expression-statements-functions-events-windows-documents-frames- data types-statements-I/O-built in functions- Handling Events – Browser object model – Verifying forms - Cookies . - VBScript: variables, operators, intrinsic functions-procedures- Arrays and control statements – objects – FileSystemobject, Dictionary object, folder object , Drive object and File object.

UNIT III

Introducing XML – Main features of XML technology – XML syntax – Elements –Attributes – Entity references – Processing instructions – CDATA sections – Document structure – Document Type Definition – Writing DTD's – Formal DTD structure – Conditional sections – Data modeling and XML –DOM(Document Object model) and XML – Simple API for XML – Namespaces and schemas – XSL (Extensible Stylesheet Language) – XML and Databases – CSS and XML.

UNIT IV

Introduction to PHP – Advantages of PHP – Functions – Data types – Arrays – SQL – Connecting Databases using ODBC – Files – Forms – Images –Imap objects.

UNIT V

ASP fundamentals – Request object – Response object – Server object – ObjectContext object – Error object – Application object – Session object – Global.asa file – ASP components – Connecting Databases – Serverside includes

References:

1. McCoy, Mastering Web Design, BPB Publications, New Delhi, 3rd Edition
2. Pitts-Moultics, Natanya & Sanders CC & Chandakamesh, Dynamic HTML
3. Petroutsos & Schongar, VBScript unleased, Samsnet,1997
4. Wagner, Richard et al, JavaScript Unleased
5. Aaron Weiss, The Complete Idiot's guide to JavaScript, PHI, 2nd Edition
6. Eric. C.Richardson, Programming web server, Galgotia Publications, 1996
7. Lee Scot Johnson et.al., "Using Active Server Pages", Que,, Information Technology.
8. Purcell, Marry Jane Maria, ABC of JavaScript, BPB Publications, 1997
9. Moulding , Peter., PHP Black Book, Dreamtech Press Ltd, 2001.
10. Browl, Martin., The Complete Reference – Perl – Tata Mcgraw Hill,2002.

PRACTICAL

(Paper-VI) I.T. & Programming Language Lab: Laboratory exercises based on Paper- I and Paper-II. Theory part related to software packages in Paper I may be taught in the Laboratory using computer and Multimedia Projector

(Paper-VII) Data Base Management Laboratory: Laboratory exercises based on Paper-IV using MS Access

(Paper-VIII) Web Technology Lab.: Laboratory exercises based on Paper-V using HTML, JavaScript, Vbscript, XML and ASP The theory paper and