

# **Maharishi Mahesh Yogi Vedic Vishwavidyalaya**

**DIRECTORATE OF DISTANCE EDUCATION**

**Syllabus**

**Post Graduate Diploma in Computer Application (PGDCA)**

w. e. f. July 2012

**PGDCA SEMESTER – I**

S. No.	Paper Code	Paper No.	Paper Name	Marks
1.	1DPGDCA1	I	Fundamentals of Maharishi Vedic Science (Maharishi Vedic Science – I)	100
2.	1DPGDCA2	II	Fundamentals of Computer and Information Technology	100
3.	1DPGDCA3	III	Operating System	100
4.	1DPGDCA4	IV	PC Packages	100
5.	1DPGDCA5	V	Programming Fundamentals using C	100
6.	1DPGDCA6	VI	Practical – 1DPGDCA3, 1DPGDCA4 and 1DPGDCA5	100

**PGDCA SEMESTER – II**

S. No.	Paper Code	Paper No.	Paper Name	Marks
1.	2DPGDCA1	I	Advanced Concept of Maharishi Vedic Science (Maharishi Vedic Science – II)	100
2.	2DPGDCA2	II	OOPS and Programming with C++	100
3.	2DPGDCA3	III	System Analysis and Design	100
4.	2DPGDCA4	IV	Data Base Management System	100
5.	2DPGDCA5	V	Programming with VB.net	100
6.	2DPGDCA6	VI	Practical – 2DPGDCA2, 2DPGDCA4 and 2DPGDCA5	100
7.	2DPGDCA7	VII	Project	100

# FUNDAMENTALS OF MAHARISHI VEDIC SCIENCE

## (MAHARISHI VEDIC SCIENCE – I)

### UNIT - 1

Meaning & importance of Guru Pujan.

Meaning of meditation, Mann, Intelligence, Chita, Ego, Thought .

### UNIT - II

Name of forty areas of Vedic Science and their expression in Human Physiology and characteristics of consciousness.

Consciousness, types of consciousness, characteristics of higher stages of consciousness.

### UNIT - III

Maharishi's Yoga, Transcendental Meditation- a general Introduction, Types of Speech, TM Sidhi Programme, Principle of Yoga Asanas and their Concept.

### UNIT - IV

Introduction: Maharishi Vedic Management.

Fundamental elements of Vedic Management –Totality

Management of Science and Art .

### UNIT - V

Vedic Management and Leadership.

The Idea Leadership is based upon the Totality of Employee's Style

### Suggested Readings:

- Chetna –His Holiness Maharishi Mahesh Yogi Jee
- Maharishi Sandesh - 1 and 2 , II-His Holiness Maharishi Mahesh Yogijee
- Scientific Yoga Ashanas –Dr. SatPal.
- Dhyani Shailly by Brahmchari Dr. Girish Ji

# **FUNDAMENTALS OF COMPUTER AND INFORMATION TECHNOLOGY**

## **UNIT-1**

Introduction to computer and information technology : History of development of computers, computer system concept , characteristics, capabilities and limitation , types of computer – analog, digital, hybrid, general, special purpose, micro, mainframe, super, generation of computer, personal computer (PCs) –IBM PCs, characteristics, PC/PCXT/PCAT-configurations, Pentium and Newer PCs specification and main characteristics, types of PCs-Desktop, Laptop, Notebook, Palmtop, Workstation etc , their characteristics.

Computer Organizations and Working: Basic component of a computer system –control unit, ALU, INPUT /Output function and characteristics, memory –RAM, ROM, EPROM, PROM and other types of memory.

## **UNIT-II**

Input Devices: Keyboard, Mouse, Trackball, Joysticks, Digitizing tablet, Scanner, Digital Camera, MICR, OCR, OMR, BAR-CODE Reader, Voice Recognition, Light Pen, and Touch Screen.

Output Devices: Monitor –characteristics and types of monitor –digital, analog size, resolution, refresh rate, Interlaced /Non Interlaced, Dot Pitch, Video Standard –VGA,SVGA,XGA etc, Printer –Daisy wheel, Dot Matrix, Inkjet, Laser, line printer , plotter, sound card and speakers.

## **UNIT-III**

Storage Devices: Storage Fundamental –Primary VS Secondary, Data Storage and Retrieval method –Sequential, Direct and Index Sequential, Various Storage Devices –Magnetic Tape ,Magnetic disks, Cartridge Tape, data drives, hard disk drives, floppy (Winchester disks), Disks, Optical Disks, CD,VCD,CD-R,CD-RW, ZIP Drive.

Computer Software: Need, types of software –system software, application software, system software-operating system, utility program, programming Language, assemblers, compiler and interpreter.

## **UNIT-IV**

Operating System: Function, types –Batch, Single, Multiprogramming, Multiprocessing. Programming languages- Machine, Assembly, High Level and 4GL. Merit and Demerits of Programming Languages.

Number System: Data representation in computer, number system of computer –Binary, Octal, Hexa-Representation & their conversion, coding system –ASCII, BCD, EBCDIC etc.

## **UNIT-V**

Data Communication and Networks: communication channels –twister, coaxial, fiber, optic. Types of Networks –LAN, WAN, MAN etc, Topologies of LAN –Ring, BUS, STAR, MESH and TREE topologies , components of LAN-media , NIC,NOS, Bridges, HUB, Routers Repeater and Gateway .

Computer virus: Virus working principles, types of viruses, virus detection and prevention, viruses on networks. Use of communication and IT in daily life.

An Introduction : Modern Science and Vedic Science , Unified field based Computer Science.

### **Text & Reference Books:-**

1. Learning Window 98 step by step by Rajeev Mathur , BPB Publication.
2. Learning Word 97 for Window by Rajeev Mathur , BPB Publication,
3. Learning Excel 97 for Window by Rajeev Mathur , BPB Publication.
4. A First Course in Computer by Sanjay Saxena , Vikas Publishing House New Delhi.
5. Microsoft Office 2000 by A. Mansoor by Pragya Publications.
6. Office 97 Interactive Course by Greg Perry, Tec media.
7. Microsoft Office 2000 by A. Mansoor by Pragya Publications.

# OPERATING SYSTEM

## UNIT-I

Disk Operating System (DOS) Introduction History & version of DOS basic –physics structure of disk drive name , Fat ,File & directory structure and naming rules , booting process , DOS system files. DOS command: Internal –DIR , MD , CD,RD,COPY,DEL, REN , VOL,DATE,TIME,CLS,PATH, TYPE etc. External – CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, TREE,MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB , HELP, SYS ,etc Executable V/s Non executable file in DOS.

## UNIT-II

Window XP introduction to Window XP and its features. Hardware requirement of Window , Window concept , Window Structure , Desktop , Taskbar , Start Menu, My Picture , My Music ,Working with recycle bin-restoring a delete file , emptying the recycle bin. Managing files, folder and disk-navigating between folder , manipulating files and folder , creating new folder , searching files and folder ,my computer –exploring hard disk , coping and moving files and folder from one drive to another map, paint , command prompt window explore –exploring hard disk , coping and moving files and folder from one drive to another , formatting floppy drive and other Explore facilities burning CD Entertainment CD player , DVD Player , Media Player , sound Recorder , volume Control , movies maker.

## UNIT-III

Advances Feature of window XP:\_Managing hardware & Software – Installing of Hardware & Software , using Scanner web camera , printer sharing tools-backup , Character map , clipboard viewer , disk defragmenter , drive space , scandisk , system information , system monitor , drive converter (FAT 32) , disk cleanup , using window update . communication – Dial up Networking Direct Cable connection , hyper terminal , phone dial , Browsing the web with internet explorer , communication through outlook express , Multiple user feature of Window Creating and deleting user , changing user password , etc Accessibility Feature of window –Sharing Information Between Program , Sharing folder and drives browsing the entire networks , mapping window shared drives , using shared printer –understanding OLE-Embed/link Using cut and paste a Embed /link using Insert Object –Manage embedded / Linked Object.

## UNIT-IV

Linux : history & feature of Linux Structure file system of Linux , hardware requirement of Linux various flavors of Linux Program & process , Process creation and process identifier , function of profile and login file in Linux kernel.

## UNIT-V

Multi –User feature of Linux , login and logout from Linux system ,Linux command – be, cal , cat , cd, chgrp, chmod, clown ,clear , cmp, copy, date, find, ps, kill, is, mail, mkdir, more, my, rm, rmdir, wc, who, who is, grep, write, telnet, pipeline, concept, using, floppy, and cdrom, in linux, vi editor.

### Text & Reference book:

- Dos Quick reference by Rajeev Mathura , Golgotha publication
- Linux computer by BPB publication
- Peter Norton Complete Guide To Linux By peter Norton .

## PC PACKAGES

**UNIT-I:** Office Packages – Office activities and their software requirement., word Processing, spreadsheet, presentation graphics, database, introduction and comparison of various office suites like MS office, Lotus Office, Star Office, Open Office etc, MS Word Basics: Introduction to MS Office; Introduction to MS Word; Features & area of use. Working with MS Word; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document ; Different Page Views and layouts; Applying various Text Enhancements; Working with – Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features; Bullets, Numbering, Auto formatting, Printing & various print options.

**UNIT – II:** Advanced Features of MS-Word : Spell Check, Thesaurus, Find & Replace; Headers & Footers; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with Columns, Tabs & Indents; Creating & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References and Graphics; Mail Merge, Envelops & Mailing Labels.

**UNIT – III:** MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different view of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

**UNIT – IV:** MS Power Point: Introduction & area of use; Working with MS Power Point; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slide; Working with Notes, Handouts, Columns & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with Power Point Object; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options.

**UNIT – V:** Outlook Express: Setup E-mail account with outlook, sending and receiving mail through outlook, concepts of CC and BCC, forwarding mail, Draft messages, formatting E-mail message, Concept of MIME Protocol, attaching files and items into messages, inserting hyperlink using outlook editor creating and using send and receive group E-Mails, opening received messages, opening messages with attachment, replying to mail forwarding messages flagging for further action, setting email option, managing contacts with outlook, Setting up multiple email accounts on single machine.

### TEXT & REFERENCE BOOKS:

Windows XP Complete Reference, BPB Publications.

MS Office XP Complete BPB Publication.

MS Windows XP Home edition complete, BPB Publications.

I.T. Tools and Applications, A. Mansoor, Pragma Publications.

# Programming Fundamentals using C

## UNIT - I

Program Concept, Characteristics of Programming, Various Stages in Program Development, Algorithms, Flow Charts, Programming Techniques – Top Down, Bottom Up, Modular, Structured, Features, Merits, Demerits and Their Comparative Study. Programming Logic - Simple, Branching, Looping, Recursion, Programming Testing & Debugging.

## UNIT- II

Introduction to C Language, C Language Standards, Features of C, Structure of C Program, Introduction to C Compilers, Creating and Compiling C Programs, IDE, Features of Turbo C Compiler. Keywords, Identifiers, Variables, Constants, Scope and Life of Variables, Local and Global Variable, Data Types, Expressions. Operators - Arithmetic, Logical, Relational, Conditional and Bit Wise Operators, Precedence and Associativity of Operators, Type Conversion. Basic Input/Output Library Functions ,Character Input/Output getch(), getchar(). getche(), putchar(). Formatted Input/Output - printf() and scanf(), Mathematical & Character Functions.

## UNIT- III

Declaration Statement, Conditional Statement - if Statement, if else Statement, Nesting of if... else Statement, else if Ladder, The ?: Operator, switch Statement. Iteration Statements - for Loop, while Loop, do-while Loop. Jump Statements: break, continue, goto, exit(). Arrays - Concept of Single and Multi Dimensional Arrays Strings: Declaration, Initialization, Functions .

## UNIT – IV

The Need of C Functions, User Defined and Library Function, Prototype of Functions, Prototype of main() Function, Calling of Functions, Function Arguments, Argument Passing: Call By Value and Call By Reference, Return Values. Nesting of Function, Recursion, Array as Function Argument, Command Line Arguments, Storage Class Specifier - Auto, Extern, Static, Register.

## UNIT - V

Defining Structure, Declaration of Structure Variable, Type def, Accessing Structure Members, Nested Structures, Array of Structure, Structure Assignment, Structure as Function Argument, Function that Return Structure, Union.

## TEXT & REFERENCE BOOKS:

- *BALAGURUSWAMY, "PROGRAMMING IN C", TMH PUBLICATIONS*
- *GOTTFRIED SCHAUMS OUTLINE SERIES, "PROGRAMMING WITH C", TMH PUBLICATIONS*
- *MAHAPATRA, "THINKING IN C", (PHI)PUBLICATIONS*
- *ANURAG SEETHA, "INTRODUCTION TO COMPUTERS AND INFORMATION TECHNOLOGY", RAIN PRASAD & SONS, BHOPAL*
- *S.K. BASANDRA, "COMPUTERS TODAY", GALGOTIA PUBLICATIONS.*
- *PETER JULIFF "PROGRAM DESIGN" PHI PUBLICATIONS*



## **Maharishi Vedic Science – II**

### **UNIT – I**

Classical and Scientific introduction about forty areas of Vedic Science.

### **UNIT – II**

Third Law of Thermodynamics.

Miessener's effect.

Maharish's Effect-Society, Environment, Behavior and effect on moral value.

### **UNIT – III**

Pradhavansabhav, Atantabhav, Annyonabhav, Pragbhav.

Meaning of “Yogastha Kuru Karmani”

Meaning of “Gyanam Chetanayam Nihitam”

### **UNIT – IV**

Theory of Karma-Prarabadha, Kriyamana, Sanchieta.

Theory of Invincibility .

Introduction to Maharishi absolute theory of Government.

### **UNIT – V**

Theory of Ayurved.

Theory of Dincharya & Ritucharya.

### **Text and Reference Books :-**

Maharishi Sandesh Part – I, II

Chetna Vigyan- His Holiness Maharishi Mahesh Yogi Ji.

Dhyan Shailly by Brahmchari Dr. Girish Ji

# OOPS AND PROGRAMMING WITH C++

## UNIT-I

**PRINCIPLES OF OBJECT-ORIENTED PROGRAMMING:** Object-Oriented Programming Paradigm, Basic Concepts of Object-Oriented Programming, Benefits of OOPs, Object-Oriented Languages, Applications of OOP, C++ Statements, Class, Structure of C++, Program, Creating the Source File, Compiling and Linking.

## UNIT-II

**TOKENS, EXPRESSIONS AND CONTROL STRUCTURES:** Introduction Tokens, Keywords, Identifiers, Basic Data types, User Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Scope Resolution Operator, Member Dereferencing Operators, Manipulators, Type Cast Operator, Expressions and Implicit Conversions, Operator Precedence, Control Structures.

## UNIT-III

**CLASSES AND OBJECTS:** Specifying a class, Defining Member Function, making an Outside Function Inline, Nesting of Member function, private member function, Arrays within a class, Memory Allocation for Objects, Static Data Member, Static Member Functions, Arrays of Objects, Object as Function Arguments.

**CONSTRUCTORS AND DESTRUCTORS:** Introduction, Constructors, parameterized Constructors, Multiple Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructors, Dynamic Constructors and Destructor.

**FUNCTIONS IN C++:** The Main Function, Function Prototyping, call by Reference, Return by reference, Inline Functions, Default Argument, Const. Arguments, Function Overloading, Friend and Virtual Function.

## UNIT-IV

**OPERATOR OVERLOADING AND TYPE CONVERSIONS:** Introduction, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators Using Friends, Manipulation of strings using operators, Rules for Overloading Operators, Type conversions.

## UNIT-V

**INHERITANCE: EXTENDING CLASSES:** Introduction, Defining Derived Classes, Single Inheritance Making a Private Member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance.

**POINTERS, VIRTUAL FUNCTIONS AND POLYYPHISM:** Compile time Polymorphism, run time polymorphism, Pointers to Objects, This Pointer, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions.

## TEXT & REFERENCE BOOKS:

Object Oriented Programming with C++ by E. Balaguruswami. TMH Publications ISBN 0-07-462038-x

Object Oriented Programming in C++ by Nabajyoti Barakati SAMS PHI Pvt. Ltd.

Insights into OOPS & C++. Rajeshwar Shukla, Pragya Publications .

# System Analysis and Design

## UNIT-I

The System Concept, Characteristics, Elements and Types of a system, System Development Life Cycle (SDLC) , Considerations for candidate systems and Prototyping. The role of System Analyst.

## UNIT-II

System planning and Initial Investigation Information Gathering, information gathering tools. Structured Analysis, The Tools of Structured Analysis (DFD, Data Dictionary, Decision tree and Pseudo Codes Decision Tables), pros and cons of each tool. System performance definition, description of outputs, Feasibility Study Cost/ Benefit Analysis: Data Analysis, Cost/Benefit Analysis, The system proposal.

## UNIT-III

The process and Stages of System Design: Design methodologies, development activities. Input design, output design forms design, types of forms, and basics of form design, layout considerations and forms control.

## UNIT-IV

File structure, file organization, objectives of database, data structure. System Testing and Quality Assurance, Why system testing, what do we test for, the test plan quality assurance, trends in testing, role of data processing auditor. Training and Documentation.

## UNIT-V

Implementing and software maintenance, Conversion, combating, resistance to change, post implementation review, software maintenance. Hardware/Software Selection and the Computer Contract, suppliers, procedure for hardware/software selection, financial considerations in selection, the computer contract. System Security, Disaster Recovery Planning .

## TEXT & REFERENCE BOOKS:

- System Analysis and Design, Elias M. Awad ,Galgotia Publications (P) Ltd.
- System Analysis and Design. Interactional Ed. Perry Edward McGraw Hill Publications.
- Information Technology & Computer Applications, by V.K. Kapoor, Sultan Chand & Sons, Delhi.
- System Analysis and Design, A. Mansoor, Pragya Publication.

# DATA BASE MANAGEMENT SYSTEM

**UNIT – I DBMS: An Introduction** : Data Base Management System-Basic Concepts, Data and Database, Database System: Concept and Meaning, Disadvantages of File Systems, Advantage of Database Approach, Disadvantages of Using a DBMS, Database Languages, Database Administrator, Database Designers, Database Users. Database Manager, Data Base Management System-Architectures and Features, Data Abstraction, DBMS Architecture, Data Independence, System Architecture, Data Model.

**UNIT – II Entity Relationship Model** : Entities and Relations: Entities and Entity Sets, Attributes, Relationships, Design Choice, Key, ER-diagram, The Entity Relationship Diagram, Types of Attributes, Role, Attribute of Relationships, Participation, Cardinality Constraints, Multiple Relationships, Keys, Weak Entity Sets, EER- model, Specialization and Generalization, Constraints on Specialization and Generalization, Aggregation, Simplification, Constraints beyond the ER Model.

## **UNIT – III Relational Data Model**

Relations: What is Relation?, Different Features of a Relation, Relation Scheme, Constraints, Entity Integrity Constraints, Referential Integrity, Relational Algebra-I, Operands of Relational Algebra, The Selection Operator, The Projection Operator, Union, Intersection and Set- Difference, Cartesian Product, The Renaming Operator, Completeness of Relational Algebra, Relational Algebra-II, The Join Operator, Division Operator, Database identification, Relational Operations are Closed, Outer Join, Generalized Projections, Aggregate Functions, Implementing Relational Algebra Operations.

**UNIT- IV Relational Database Design** : Functional Dependencies, Anomalies in Databases, Functional Dependencies, Inference Rules for FDs, Attribute Closure, Normal Forms, First Normal Form, Second Normal Form, Third Normal Form, Boyce-Codd Normal Form, Decomposition and Other Dependencies, Attribute Preservation, Loss-Less Join Decomposition, Dependency Preservation, Multi-Valued Dependency, Join Dependencies, The Process of Normalization.

**UNIT – V SQL: A Query Language** : Data Definition With SQL, SQL Schema Definition, Table Definition, Column Definition, Data Types in SQL, Domain Definition, Table Constraints, Modification, Catalog, Basic SQL Queries, Basic SQL Query, Union, Intersect, Nested Queries, Aggregate Operators, GROUP BY and HAVING Clause, Joined Relations, Joined Conditions

## **Text Books:-**

1. Henry F.Korth & A. Silberschatz: Data System Concepts. Mc-GrawHill.
2. Arun K. Majumdar & P.Bhattacharya: Data Base Management System. TMH

## **References Books:-**

1. Bipin C. Desai: An Introduction to Database System, Galgotia Pub. Co.Ltd.
2. Jeffrey O. Ullman: Principles of Database Systems, Galgotia Pub. Co.Ltd.
3. James Martin: Principles of Database Management . PHI
4. James Martin, Computer Database organization. PHI

# PROGRAMMING WITH VB. NET

## UNIT-I

Introduction to Net, Net framework feature & architecture, CLR common Type System, MSIL, Assemblies and class libraries. Introduction to visual studio, Project basic, types of project in. Net, IDE of VB.Net –Menu bar, Toolbar, solution Explore, Toolbar, Properties Window from designer, Output Window, object Brower. The environment: Editor Tab, format tab, general tab, docking tab, visual development & event drive Programming –Method and events.

## UNIT-II

The VB.Net Language –Variable –Declaring variables , Data types of variable , forcing variables declaration scope & lifetime of a variable , constant , Array types of array , control array , collection , subroutines, function , passing variable number of Argument optional argument , returning value from function control flow statement : conditional statement , loop statement . MsgBox & Input box.

## UNIT-III

Working with form: Loading showing and hiding form, controlling , one form within another . GUI Programming with window form: Textbox , label , Button , list box, combo box, checkbox, picture box, radio button , panel , scroll bar, timer , list view , tree view , toolbar , status bar , There properties , method and events . Open file Dialog. Save file Dialog, font Dialog , color Dialog , print Dialog , link label . Designing menus: context Menu & shortcut Keys.

## UNIT-IV

Object oriented programming: classes & object, field properties, Method & Event, Constructor, and Inheritance. Access specifiers: Public Private, Protected. Overloading , my base & My class Keyword , Overview of OLE, Accessing the Win 32 API from VB.net .com technology , advantage of com+, com & .net , create User control , register User control , access com component in net application.

## UNIT-V

Database programming with ADO.Net – Overview of ADO, from ADO to ADO.net Accessing data using server explore, creating connection, command, data Adapter and data set with OLEDB and SQLDB. Display data on data bound control, display data on data grid.

### **Text & Reference Books:**

- VB.NET PROGRAMING BLACK BOOK BY STEVEN
- HOLZNER –DREAMTECH PUBLICATIONS
- MASTERRING VB.NET BY EVANGELOS PETROUTSOS- BPB