POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (PGDCA)

ONE YEAR DIPLOMA PROGRAMME

SYLLABUS

SESSION 2007-08

MAHATMA GANDHI CHITRAKOOT GRAMODAYA VISHWAVIDYALAYA, CHITRAKOOT, SATNA (M.P.)

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION (PGDCA)

BACKGROUND

Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalaya is the first modal of a full - fledged Rural University setup on the basis of Dr. Radhakrishanan Commission Report (1994). In a way it represented a rebellion against the traditional elitist top-down pattern of education and indeed represents a movement for people's education

The Gramodaya Vishwavidyalaya setup in February 1991 is completing 15 years of its functioning and is ready for an innovative programmed of practice based learning, action based reach and need based extension programmed. Development of new courses based on the needs and aspiration of the society is a continuous process in this university. The academic programmers offered job oriented, which is the need of the day.

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

Due to ever inversing potential of Information Technology, Madhya Pradesh is planning to use Information Technology an effective tool to solve many hitherto unsolvable social and economic problems of eth tribal and remote rural areas.

Gramodaya University has started a One Year Post Graduate Diploma course in Computer Applications to answer the present day needs of enterprises and IT supported e-governance and e-commerce in the village context.

OBJECTIVES OF THE COURSE

(1) The objective of the courses is to prepare students who have graduated or passed intermediate examination in any discipline and are willing to start their carriers in computer field. After successful completion of the course a students can start his/her career as a "Programmer" after PGDCA and Computer Operator, Instructor or Programming Assistant. The courses are designed in such a way that even a candidate who has no or a little knowledge of computer can take these courses. These courses could be a launching pad for those who wish to pursue their higher studies in the field of Computer Applications.

(2) To provide deep training to youth from rural sector working skill in all those areas of IT that has a bearing on social sector.

(3) To provide a deeper perception of the problem and solution approaches in the rural development.

CAREER AVENUES OF THE COURSE ARE

Employment & Self-Employment avenues like Web Designing, System Analysis, Computer Programmer, Software Development Organization, Networking Tasks, Information Centers, Computer Dealership and Consultancy.

GENERAL INSTRUCTION

- Period of the programme – 1 Year

- Course Fees – 10,000/-
- Entrance Qualification – Graduate
- Admission Process – Students who have completed graduation in any discipline for PGDCA. Selecting is based on an Entrance Test that will be conducted by the University. The University in separate will inform date of the entrance test. Admission will be given on the basis of merit list.
- Course Administration – As per norms of MGCGV, Chitrakoot.

MAHATMA GANDHI CHITRAKOOT GRAMODAYA VISHWAVIDYALAYA, CHITRAKOOT, SATNA (MP)

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

SCHEME EXAMINATION

FIRST SEMESTER

Sub. Code	Subject	Credit	CFA	ESE
PGDCA 101	Fundamentals of Computers & IT	3+0=3	20	80
PGDCA 102	Operating System Concept	3+0=3	20	80
PGDCA 103	PC Package	3+0=3	20	80
PGDCA 104	RDBMS	3+0=3	20	80
PGDCA105	Lab-I (MS Office & RDBMS)	0+3=3		
	Total Credit	12+3=15		

SECOND SEMESTER

Sub. Code	Subject	Credit	CFA	ESE
PGDCA 106	GUI Programming in VB	3+0=3	20	80
PGDCA107	Analysis & Deign of information system	3+0=3	20	80
PGDCA108	Elective Paper I (I) E-Commerce (ii) Internet & Web designing	3+0=3	20	80
PGDCA109	Programming in C++	3+0=3	20	80
PGDCA 110	Lab-II (VB & C++)	0+3=3	20	80
PGDCA 111	Project work	0+1=1	20	80
	Total Credit II-sem.	12+4=16		
	Total Credit (I Sem. + II Sem.)	31		

PGDCA 101 - FUNDAMENTALS OF COMPUTERS & IT

3+0=3 Credit

Unit-1: Fundamentals of Computers & Information Technology: A simple model of a computer, computer generations and classification. Computer system characteristics, types of computers, applications of computers, algorithms, flow chart, introduction of information technology.

Unit-2: Number System & Information Representation: Number systems, binary, decimal, octal and hexadecimal, representation of integers and fractions, number systems conversion, coding – BCD, ASCII, ISCII, EBCDIC & Gray Code.

Binary Arithmetic: Binary addition, binary subtraction, signed numbers, two's complement representation of numbers, addition/subtraction of numbers in 2's complement notation, binary division.

Unit-3: Input/Output units & Computer Memory: Input unit & devices, output unit & devices, memory cell, types of memory, read and memory, serial access memory, magnetic hard disk, floppy disk, compact disk, magnetic tapes and pen drive.

Unit-4: Computer Languages: Programming language, machine & assembly language, higher level languages, compiler, assembler and interpreter.

Unit-5: Computer & Communication: Analog & digital signals, modulations, modem, data communication, physical communication media, twisted, coaxial, fiber-optics, wireless in local loop, cellular communication system, networks, type of networks, topologies, communication protocols, internet.

REFERENCE BOOKS

- Fundamentals of computers – V. Raja Raman
- Digital Computer Fundamentals – Thomas C. Bartee

PGDCA 102 - OPERATING SYSTEM CONCEPT

3+0=3 Credits

Unit-1: Introduction of Operating System: History & evolution, types of OS, need of OS, type: single user, multi-user, batch processing, multitasking, multiprogramming, multiprocessing, time sharing, real time, major functions of O.S., layered organization, comparative study of poplar OS.

Unit-2: MS-DOS: Introduction, terminology of MS-DOS, Structure of MS-DOS, OS commands, internal commands (dir, del, cop0y, cd, rd, md, rename, prompt, ver, vol. type, path, time, date, etc.), External Commands (tree, chkdsk, fdisk, backup, restore, format etc.)

Unit-3: Advance MS-DOS: Use of function keys in DOS, file redirection and pipelining, batch commands, use of and creation of batch file, configuring files, DOS ways of formatting disk, handling files.

Unit-4: Windows: Important feature of Windows (9x onwards), basic elements, GUI, OLE, DESDTOP and its icons, creating, renaming and moving various folders and files, creating shortcuts, windows explorer, control panel and accessories, equivalent windows command for the DOS internal and external commands.

Unit-5: UNIX: Evolution of UNIX, feature of UNIX, components of UNIX, file system and concept of files, directories, file oriented commands like – is, mkdir, cd, radar pad, inter user communication commands like – write, mail mega, etc. other commands like – kill, data, we, sleep, who, ps etc.

REFERENCE BOOKS

- Mastering Windows 3.1 (BPB) – Cowart R.
- UNIX for you (THM) – Kopaker P.K.
- DOS 6 and 6. Instant reference (BPB) – Thomas R.

PGDCA 103 - PC PACKAGE

3+0=3 Credits

Unit-1: MS windows, Introduction to M.S. Windows, features of windows, various versions of windows & its use, working with windows, my computer & recycle bin, desktop, icons and windows explorer, screen description & working styles of windows, dialog boxes & toolbars, working with files & folders, shortcuts & auto starts, accessories and windows settings using control panel, start button & program lists, installing new hardware & software.

Unit-2: 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-3: 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, creation & working with tables including conversion to and from text, margins & space management in document, adding references and graphics, mail merge, envelops & mailing labels.

Unit-4: MS Excel, introduction and area of use, working with MS Excel, concepts of workbook & worksheets, using wizards, various data types, using different features wit h data, cell and texts, inserting, removing & resizing of columns & rows, working with data & ranges, different views 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.

Unit05: MS PowerPoint: Introduction & area of use, working with MS PowerPoint, creating a new presentation, working with presentation, using wizards, slides & its different views, inserting, deleting and copying of slides, working with notes, handouts, columns & lists, adding, graphics, sounds and movies to a slide, working with PowerPoint, objects, designing & presentation of a slide show, print presentations, notes handouts with print options

REFERENCE BOOKS

- Microsoft Office 2000, 8 in 1 by Joe Harbraken, Prentice Hall of India, ISBN – 91-203-1582-0.

PGDCA 104 – RELATIONAL DATABASE MANAGEMENT SYSTEM

3+0 = 3 credits

Unit-1: Basic Concept: An introduction to database system, basic data system terminology, purpose of DBMS, data independence, an architecture of DBMS: schema, subschema, mapping, physical & logical data, basic file systems, file organization: sequential, index sequential, hosting, B-tree based index, file organization based on dynamic hashing with immediate splitting.

Unit-2: Model of Real World: Details of E-R model, three data models: an overview of three main data models i.e. hierarchical model, network model, relational model and their inter comparison, concept of relation, relational algebra: Basic operation like union, intersection, difference, product join, the relational calculus: domain & tuple calculus, relational database design: Integrity constraints.

Unit-3: Functional Dependency: Single value and multi value functional dependency, normal forms: I, II, III, Boyce Cod & IV normal forms, join dependency, query processing & database software: query interpretation, equivalence of expression, estimation of query processing cost, query optimization by algebraic manipulation, join algorithms.

Unit-4: Types of Data Base languages: Procedural and non-procedural language, relational commercial query languages, QBE, SQL: introduction, basic structure, the power of SQL (creation, inserting, deletion, indexing & modification of databases in SQL), query optimization strategies.

Unit-5: Management Considerations & Future Trends: Security & Integrity: introduction, access control, crypto systems, statistical database security; concurrency control: transaction, database system architecture, serializability, locking, database recovery: kinds of failure, recovery techniques, object, an overview of oriented model, distributed database: structure, tradeoffs, design, client server database, knowledge databases.

TEXT BOOKS:

- Henry F. Koerth & A. Silbershatz: Data Base System Concepts, MGC.
- Arun K. Majumdar & P. Bhattacharya: Data Base Management System, TM.

PGDCA 105- Lab-I (MS Office & RDBMS)

SECOND SEMESTER

PGDCA 106 – GUI Programming in VB

3+0 = 3 Credits

Unit-1: Visual Basic Overviews: IDE of Visual Basic 6.0 (Menu bar, tool box, project explorer, properties windows, form layout), visual basic intrinsic control, form designers & code windows, visual basic explicit controls, introduction to forms, common properties, common methods, common events, form objects, form life cycle, variables & procedures, scope and lifetime of variables, control structures (IF….THEN, ELSE, select case, DO…WHILE Loop, FOR…NEXT), EXIT FOR and EXIT DO statement, WITH…END with statement, overview of native data type, aggregate data types, procedures, scope, parameters, list and return values, error handling, control flow, standard EXE project.

Unit-2: Visual Basic Library: Working with numbers, working with strings, working with date & time, file handling and file controls, classes and objects, advance forms and dialog: MDI forms window common controls, tree view control, list view control, status bar control, progress bar control, slider control, date time picker control: ActiveX controls, common dialog control, rich text box, Stab control.

Unit-3: Database Programming: Overview of ODBC, DAO, RDO, OLEBD, ADO, working with database tools, data environment design, connection objects, data binding with data environment design, working with ADOs, building and connection string, opening the connection, asynchronous connection, opening a record set object, basic operation on a database using command objects.

Unit-4: Tables and Reports: Data grid control, hierarchical flex grid control, data report designer, ActiveX EXEs, ActiveX DLLs, remote ActiveX components (DCOM) creating user controls using ActiveX controls projects, creating code COM, active server pages: Built in ASP objects, response object (write, buffer, clear, flush, end, redirect, expires, expire absolute method).

Unit-5: Request Object: Form collection (query string, form), HTTP headers, reading the HTTP headers request, server variables method, environment variable, cookies: reading and writing cookies, tradeoffs of cookies, session object: session variable, application objects: application variable, session vs. application object, global as a file, ASP components: add, rotator, content linker and browser capabilities, server object: reading and writing files on the web server, ASP object.

REFERENCE BOOKS

VB 6 Ulleashed – Tec media
ASP Unleashed - Tec media

PGDCA 107 – ANALYSIS & DESIGNING OF INFORMATION SYSTEM

3+0 = 3 credits

Unit-1: The system concept, characteristics, elements and types of a system, the system development life cycle, consideration for candidate systems prototyping, the role of system analyst, advantages of using computerized information system (IS), six major types of information system, the changing matter of information technology, challenges of information systems, relationship between organization and information systems.

Unit-2: 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, tools and approaches: advantages and disadvantages of using IS software tools, idea of object oriented programming, CASE tool, PERT & CMP.

Unit-3: The process and stages of system design: design mythologies, development activities, input design, output design, and form design, type of forms, basics of form design, layout considerations and forms control, building information system: traditional system development life cycle (SDLe), analysis: problem identification, fact gathering, Fact analysis, feasibility study, feasibility report.

Unit-4: File structure, file organization, objective 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, design: physical and logical design, file design, I/O design, database design, limitation of traditional life cycle approach, prototyping, outsourcing information system, A typical case study of information system.

Unit-5: 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 consideration in selection, the computer contract, system security, disaster recovery planning.

REFERENCE BOOKS

- System Analysis and Design, Elias M. Award, Golgotha Publication (P) Ltd.
- System Analysis and Design, International Ed., Perry Edwards, McGraw Hill Publication.

PGDCA- 108 Elective Paper I

(i) E-COMMERCE

3+0 = 3 credits

Unit-1: Electronic Commerce: Introduction to information technology and business electronic, data interchange (EDI), benefits of EDI, Electronic commerce over the internet, some examples of internet commerce can be taken (e.g., commerce net).

Unit-2: Electronic Communication: PCs and networking (network topology, communication media), electronic mail (computer communication systems, ISOs OSI model, the X 4000 message handling system, internal mail, internet addresses, SMTP, MIME, POP protocols, domain naming system, e-mail security, MSP & LDAP protocols), the internet (internet communication protocols, internet mails, mailing lists, internet tools: telnet, ftp, Archie, gopher, WAIS, WHOIS, WWW etc, browsers) and intranet (intranet services, implementation).

Unit-3: EDI & E-Commerce: Electronic data interchange (introduction, components, costs/benefits, implementation & legal issues), UN/EDIFACT standard, the internet and extranets for electronic commerce, identification and tracking tools for electronic commerce (the EAN system) UNICITRAL model law for e-commerce.

Unit-4: Concerns for e-commerce growth: internet bandwidth and technology issues, security issues (security concerns & solutions, handling electronic cash over the internet, cryptography).

Unit-5: E-Commerce and Rural Area: how much progress has been made in rural sector, what can be the future plans etc? Some case studies and be taken here, a case study may be done to see how to start a e-commerce site over the internet, some other case studies can be taken during the course of the syllabi.

REFERENCE BOOKS

1.

2.

(ii) INTERNET & WEB DESIGNING

3+0 = 3 Credits

Unit-I: Internet Overview – Importance and applications of internet, world wide web, email, web browsers, web clients and servers, URL, internet protocols: HTTP, FTP, TCP/IP, Domain names portals.

Unit-2: Web Design: Software and hardware requirements, rules for good website design, web publishing concepts, domain name registration, space on host server for website, concepts of search engines.

Unit-3: HTML Basics: Introduction to HTML, concepts of hypertext, version of HTML, Elements of HTML, syntax, head and body section, building HTML documents, inserting text & images, hyperlinks, backgrounds and color controls, different HTML tags, table layout and a presentation use of font size and attributes, list type and its tags, use of frames and forms in web pages.

Unit-4: Beyond Basic: Adding flair and impact to the web pages using graphical and animation techniques, Netscape editor, FrontPage and PhotoShop tools, gif and jpg files, scanning pictures.

Unit-5: Advanced HTML: Use of tables, frames, forms, dynamic web pages, and multimedia on web.

REFERENCE BOOKS

- Html Complete: BPB Publication
- The Internet – Christian Crumlish
- Teach Yourself Internet in 24 hours - Techmedia

PGDCA 109– PROGRAMMING IN C++

3+0 = 3 Credits

Unit-1: Introduction to OOP: Procedural, structured and Object Oriented Programming (OOP); object, classes, inheritance, polymorphism, reusability, benefits and applications of OOP, C++ and OOP, structure of C++ program, basic data types, sure defined data types, reference variable, operators, structures, union etc.

Unit-2: Prototypes, default arguments, const arguments in functions, Inline functions, call by reference, function overloading, friend and virtual functions, classes and objects, Declaring a class, defining an object, data hiding and encapsulation, public and private data members, and functions.

Unit-3: Constructor and destructors, parameterized constructors, multiple constructor in a class, copy constructors, array of object, object as a function, arguments, returning objects, the this pointer, memory allocation for objects, operator overloading- unary and binary operators, type conversions, pointers to functions.

Unit-4: Inheritance: inheritance and derivation, single, multi level, multiple, hierarchical and hybrid inheritance, constructor in multiple inheritances, over riding functions, ritual methods, ambiguity resolution, pure virtual functions, virtual function and constructors and destructors, object slicing, member classes, nesting of classes.

Unit-5: Streams: C++ stream classes, unformatted and formatted I/O operations, member functions of cin manipulators, managing output with manipulators and user defined manipulators with arguments, file classes for file stream operations, file I/O with streams, file modes, binary versus text files, binary I/O, random access, error handling during file operations, command line argument, elementary database management, Templates and Exception handling.

REFERENCE BOOKS

- Programming in C++ - E. Balagurusamy
- Introduction to C++ - Cooper

PGDCA 110 - Lab-II (VB & C++)

0+3 =31 credits

PGDCA 111- Project Work

0+1 = 1 credits