M.J.P. Rohilkhand University, Bareilly

Course Structure & Detailed Syllabi

For

Post Graduate Diploma in Computer Application

(w.e.f. session: 2010-11)

Note:
The new course structure and syllabi will be effective from the academic session 2010-11.
COURSE STRUCTURE AND SYLLABI FOR  
(P.G.D.C.A.)

MJP ROHILKHAND UNIVERSITY BAREILLY

POST GRADUATE DIPLOMA IN COMPUTER APPLICATION

Course Structure

I Semester

<table>
<thead>
<tr>
<th>S. No.</th>
<th>SUB CODE</th>
<th>Subject</th>
<th>Periods/week</th>
<th>Evaluation Scheme</th>
<th>Subject Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>L  T  P</td>
<td>Sessional Exam</td>
<td>End Semester Exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Theory</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PGD101</td>
<td>Fundamentals of Information Technology</td>
<td>4 2 0</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>PGD102</td>
<td>“C” Programming &amp; Data Structure</td>
<td>4 2 0</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>PGD103</td>
<td>Operating Systems</td>
<td>4 2 0</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>4</td>
<td>PGD104</td>
<td>Data Base Technology</td>
<td>4 2 0</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>5</td>
<td>PGD105</td>
<td>Web Technology &amp; Internet</td>
<td>4 2 0</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Practical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PGD101P</td>
<td>“C” Programming &amp; Data Structure Lab</td>
<td>0 0 3</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>7</td>
<td>PGD102P</td>
<td>Operating System (Windows &amp; Linux Lab)</td>
<td>0 0 3</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>PGD103P</td>
<td>Web Technology Lab</td>
<td>0 0 3</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>PGD104P</td>
<td>Minor Project (Based on PGDP 104)</td>
<td>0 0 3</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>20 10 12</td>
<td>125</td>
<td>775</td>
</tr>
</tbody>
</table>
# Course Structure
## II Semester

<table>
<thead>
<tr>
<th>S.No.</th>
<th>SUBJECT CODE</th>
<th>Subject</th>
<th>Periods/weak</th>
<th>Evaluation Scheme</th>
<th>Subject Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td>T</td>
<td>P</td>
</tr>
<tr>
<td>1.</td>
<td>PGD201</td>
<td>Object Oriented Programming and Java</td>
<td>04</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>2.</td>
<td>PGD202</td>
<td>System Analysis and Design</td>
<td>04</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>3.</td>
<td>PGD203</td>
<td>Visual Basic</td>
<td>04</td>
<td>02</td>
<td>00</td>
</tr>
<tr>
<td>4.</td>
<td>PGD204</td>
<td>Computer Network</td>
<td>04</td>
<td>02</td>
<td>00</td>
</tr>
</tbody>
</table>

### Practical

<table>
<thead>
<tr>
<th></th>
<th>SUBJECT CODE</th>
<th>Subject</th>
<th>Periods/weak</th>
<th>Evaluation Scheme</th>
<th>Subject Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>PGD201P</td>
<td>Java Programming Lab</td>
<td>00</td>
<td>00</td>
<td>03</td>
</tr>
<tr>
<td>6.</td>
<td>PGD202P</td>
<td>Visual Basic Programming Lab</td>
<td>00</td>
<td>00</td>
<td>03</td>
</tr>
<tr>
<td>7.</td>
<td>PGD203P</td>
<td>Major Project</td>
<td>00</td>
<td>00</td>
<td>09</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>16</td>
<td>08</td>
<td>15</td>
</tr>
</tbody>
</table>
PGDCA
SYLLABUS
MJP ROHILKHAND UNIVERSITY, BAREILLY

I SEMESTER

FUNDAMENTALS OF INFORMATION TECHNOLOGY
PAPER I
CODE: PGD-101

UNIT-I


UNIT-II
Definition of information, Data Vs Information, Introduction to Information representation in Digital Media, Text, image, graphics, Animation, Audio, Video etc., Need, Value and Quality of information, Category and Level of Information in Business Organization.

RAM/ROM, Computer Hardware, CPU, Various I/O devices, Peripherals, Storage Media, Software Definition, Role and Categories, Firmware and Humanwer.

UNIT-III
Number System and radix- Binary, octal, Decimal, Hexadecimal. Conversion from one system to another. Fractional numbers. One’s and two’s Complement Representation. Binary Arithmetic: Addition and subtraction , Representation of signed and unsigned binary numbers.

Binary codes- Weighted and non-weighted code. ASCII, EBCDIC, BCD, GRAY and EXCESS-3 codes. Self-complementary codes. Error detection and correction, Parity bit.

Logic circuits-Logic gates NOT, AND, OR, NAND, NOR, XOR, XNOR gates. Universal operation of NAND and NOR gates.

UNIT-IV.
Computer Languages, Generation of Languages, Translators-Interpreters, Compiler/Interpreters, Compilers, Flow, Charts, Dataflow Diagram, Assemblers, Introduction to 4GLs, Software Development Methodology, Life Cycles, Software Coding, Testing, maintenance, ISO.

UNIT V
Elementary Concepts in Operating System, textual Vs GUI Interface, Introduction to DOS, MS Windows, MS office Tools, MS WORD, MS EXCEL, MS Power Point, Tools for Data Management, Basics of Database management system, Introduction to basic Commands of Dbase, Foxpro, SQL etc.

UNIT VI

References:
1. D S Yadav, “Foundations of IT”, New Age, Delhi
‘C’ PROGRAMMING AND DATA STRUCTURE
PAPER II
CODE: PGD-102

UNIT I

Introduction To ‘C’: Development of C Special features of C language, Structure of a C program, Constants, Literals reserved words, Identifiers, Data types and their sizes, Expression, Statements, Input and output functions, Formatted Input/ Output, Operator and expressions.

Program Structures: Conditional and unconditional branch control structures, Loop Control structures, Break and Continue in Loop structures, C functions, Library functions, User-defined functions, arguments and parameters, Scope rules for identifiers, C structures and union. Declaration and initialization.

UNIT II

Array and Pointers: Array declaration, Multidimensional arrays, String, Rules to initialize arrays, Pointers, declaration of a pointer variable, The address pointers, Pointer arithmetics, Dynamic storage allocation.

UNIT III


UNIT IV

Linear Data Structure: Linear Arrays, Array Storage, Structures, Application of array, Linked Lists, Storage, Structures linked list application, Stacks, Definitions and concepts, Stack application polish notations and expression, Queue operation, Queue implementation and applications.

UNIT V

Non Linear Data Structure: Trees, Basic terminology, Binary Trees, Inorder, Postorder, preorder traversals, Binary Search Trees (BST), Operations on a BST – Insertion, Deletion, Search for a key in BST, Sorting and Searching.

References:

2. Let us C by Y.P.Kanetkar.
3. Introduction of data structures with application by P.G. Sorenson.
4. “Magic with C” AB Publication
OPERATING SYSTEM

UNIT-I.

Historical view, Process management and scheduling –state model, process view of OS, job Scheduling, process scheduling, Types of OS- Batch processing, multiprogramming, multitasking, Time sharing & real time system, Function of an OS, structure of OS layered ,kernel based ,microkernel based Structure, Memory management-segmentation , paging and virtual Memory.

UNIT-II

File Organization and accessing techniques: Indirect, Line, Sequential , Hashed.

UNIT-III

Introduction , Evolution of Unix OS ,Features & Structure of Unix OS , Difference from Other OS.
Fundamental concepts of Unix System security ,Login, file permissions, home directory, Super user Login/Logout .Unix file system, Special files, Hierarchical file system, use of special files, Introduction to V I Editor. Basic commands of  Unix.

UNIT-IV

Windows 98 & Windows XP

Overview of Windows 98 & Windows XP: GUI, Menu and Menu Bar, Dialogue box, Icons, Control Panel, File system, Managing files and folders, Managing User Accounts, Managing Disks, Managing Desktop, Program Files, Accessories: Word Pad, Note Pad, Paint, etc.

References:
1. Operating systems - Colin Ritchie (BPB).
4. Introduction to the X windows system -O. Jones (prentice Hall).
DATABASE TECHNOLOGY
PAPER IV
CODE: PGD-104

Unit I
What is database. Traditional file system and Database approach, Advantages of using Databases, types of Databases, concept of data items, fields, records and files, data models, SCHEME AND INSTANCES, DATA INDEPENDENCE DATA BASE LANGUAGES AND INTERFACES E-R Model Concepts, Notations & Examples For E-R Diagrams, Architecture And Concepts Of Relational Databases.

Unit II.
Introduction and features, SQLplus oracle data types.
Table :- creation, insertion, updation, deletion of data contents, modification of Structure, removing deleting, dropping of tables, select of commands, alter table Command.
Data constraints:-- null value, unique key, primary key, foreign key, logical operator, Range searching, pattern matching, oracle functions.

Unit III
Joins:-- joining multiple tables, equi joins, self join, union, intersect and minus clause. Indexes views:--
Creation, updation, destroying, selection of data, granting permissions, permissions on The object created by user, grant statement.

Unit IV
Cursors, procedure and function, concepts creation, execution, syntax.
Triggers:-concept, use, how to apply database triggers syntax.

Unit V
setting up MS Access, designing a database, Add & editing data, tables, queries, forms & Reports.

References:
1. Data Base Management : Objectives, System Function & Administration - Everest (TMH)
3. How to do Everything with Access 2002 -Anderson(TMH)
6. Korth, "Database and its Concept", TMH.
UNIT I

**Internet Principals:** Introduction to Internet, Clients Server Model, Protocol, Internet IP Address, Domain Name, Internet Services, Electronic Mail, World Wide Web, Internet Security, Electronic Commerce (E-Commerce) and Electronic Data Interchange(EDI)

UNIT II

**Introduction to HTML:** A brief History, HTML Tag, HTML Documents, Header Documents, Body Sections, Heading, Link Document using Anchor Tag, Formatting Characters, Font Tag, Images Characters, Listing, Tables in HTML

UNIT III

**Frames and Forms:** Frames Definitions, Frames, Nested Frames, Elements of a Form

UNIT IV

**Elements of JavaScript:** Data Types, Variables, Operators, Conditional Statements, Array Objects, String Objects

UNIT V

**Server Side Script with JSP:** Clients Responsibilities, Server Responsibilities, Introduction to JSP, JSP Architecture, JSP Servers, JSP Tags, Request Object, Response Objects

UNIT VI

**JSP with JDBC:** Creating JDBC Data Source Name, Introduction to JDBC, Prepared Statement Class (SQL Statement).

References:

1. The internet complete reference – Hahn, TMH
2. Internet book – Comer, PHI
3. Web Technology & Design B – C. Xavier, New Age International
6. DOT NET Framework with ASP.NET & C#”, Dhanpat Rai Publication
7. Magic with HTML, DHTML and Javascript”, Laxmi Publication.
II SEMESTER

OBJECT ORIENTED PROGRAMMING AND JAVA
PAPER I
CODE: PGD-201

Unit I
Abstract data types Introduction, model of real world, attributes, autonomy, generation of correct Application, reusability, classes, instance values, methods and messages, Creating and destroying objects, constraints on object and instance variables, Pre and post conditions methods.

Unit II
Inheritance:-Inheritance, inheritance with subtyping, redefining instance variables, hiding instance Variables, inheriting methods, overriding, invoking super class methods, including super class methods — metaclasses, different types of inheritance:- single inheritance, Multiple inheritance, hierarchical inheritance, multilevel inheritance, hybrid inheritance, Defining derived class, visibility modes, protected: to make a private member inheritable.

Unit III
Object Oriented :Concepts and implementation Introduction, polymorphism, object identity, modeling, abstraction, object modeling Technique(OMT), object modeling concepts, object oriented design, why OOD, object Oriented programming languages, object oriented languages, object oriented database Object oriented user interface.

UNIT IV
Overview of Java language
C++ Vs Java, Java and internet, Java and WWW, Java support systems, Java environment, Java program structure, tokens, statements, Java virtual machine, Constants and variables, data types, declaration of variables, scope of variables, Symbolic constants, type casting. Operators:-arithmetic, relational, logical, assignment, increment and decrement, Conditional, bitwise, special, expression and its evaluation. Decision making and Branching :-If statement, if …else …statement, nesting of if ..else. Statement, else …if ladder, switch, ?operators, Loops, while, do, for, jumps in loops, Labeled loops.

UNIT V
Classes objects and methods
Defining a class, adding variables and methods, creating object, accessing class members, constructions methods, overloading static methods, nesting of methods.

UNIT VI
Arrays: one dimensional & two dimensional arrays, strings, vectors, wrapper classes, defining interfaces, extending interfaces, implementing interfaces, accessing interface variables, system packages, using system packages, naming conventions, creating packages, accessing a package, using package, adding a class to a package, hiding classes.

Creating Threads, Extending the Thread class, stopping and blocking a Thread, life cycle of Thread, Using Thread method, Thread Exceptions, Thread priority, Synchronization.

Applet programming:
Local and remote applet, applet Vs application, writing applet, applet life cycle, creating an executable applet, designing a web page, applet tag, adding applet to HTML file, running applet, passing parameters (arguments) to applet, getting input from user.

References:
4. The Java programming language - Ken Arnold, James Gosling (Pearson Education).
5. Programming with Java - E. Balagurusami (TMH)
6. Object Oriented Analysis and Design with Examples, Grady Booch (Benjamin/Cummings 2nd ed).
UNIT I
Overview: The system concept, Elements of system, Types of system, System Development life cycle - Recognition of need –problem identification, Feasibility study, Analysis, Design, Implementation, Post implementation and Maintenance, Consideration for candidate system, Prototyping, Choice of design methodologies, Fact finding techniques, Auditing trail.

UNIT II

UNIT III

UNIT IV
Input/ Output and forms Design: Introduction, Input design-Input data, Input Media & Devices output design: Categories of output, Selection of output media & equipment, Design principle, Output design, documentation and its use, Output packaging, Form design: What is a form? Classification of forms, requirements of form design, Carbon paper as a forms copier, Types of forms, layout consideration, Form control, Procedures.

UNIT V
File organization & data base design: Introduction, File structure, File organization:- Sequential, Indexed, Indexed sequential organization, Inverted list organization, Direct access organization, Data base design objectives of data base key, terms, Logical and physical views of data, Data structure normalization, The role of data base administrator.

UNIT VI

UNIT VII

References:
1. Systems Analysis and Design by Elias Awad
2. Introducing Systems Analysis and Design by Lee
UNIT I

Introduction to Visual BASIC: Introduction to Visual Basic, Features of VB, The controls, The Properties, Events, Methods, Developing an Application, Design the User Interface, Write code to Respond to User Input/Events

UNIT II

Creating an Application: The objective, The tool box, Project Explorer, The Properties Window, The Form Window, Understanding Projects, Customizing the Toolbar, what is on the Toolbar, Text Control Bar, The Picture Box, Label Box, Option Button, Frame, List Box, Combo Box, Data, Command Button, Check Box etc.

UNIT III


UNIT IV


UNIT V

Graphics in Visual Basic Form , picture box , image box , sizing images , coordinate system ,scale properties And methods , drawing curves , drawing pixels ,drawing boxes , fillings . timer control MDI form and their properties , interfacing with other packages .

VB interfacing with office 97, VB interfacing with MS Access, VB interfacing with Oracle, Creation of setup files.

References:
4. Begining Visual Basic 6 & SQL Server 7 , Cornell (SPD)
UNIT I


UNIT II


UNIT III

Fundamentals of Networks: Point to Point Networks, Broadcast Networks, Multicast Networks, Physical Layer Coding Techniques-RZ, NRZ, Differential NRZ, Manchester, Differential Manchester coding, Switching-Circuit Switching, Message Switching, Packet Switching, Confirm and unconfirm services, Framing-Time Based, Character Based, BIT Based, violation of encoding technique & combined approach, Error detection & correction codes – Hamming code, CRC.

UNIT IV


UNIT V

LAN Technologies: CSMA/CD or Ethernet & IEEE 802.3 Standard, Token Bus and IEEE 802.4 Standard, Token Ring and IEEE 802.5 Standard.

Overview of DNS, FTP, TELNET, HTTP, SMTP and client/server computing.

References:
1. Computer Networks by Tanenbaum (PHI)
2. Computer Communication and Networking by Forzen (PHI)