



INSTITUTE OF HUMAN RESOURCES DEVELOPMENT

Prajo'e Towers, Vazhuthacaud, Thiruvananthapuram, Kerala, India. Pin 695 014
<http://www.ihrd.ac.in>

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

(Two semesters)

Scheme & Syllabus 2010

(Effective from January 2010 admission)



INSTITUTE OF HUMAN RESOURCES DEVELOPMENT

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

(Two semesters)

Subjects of study and Scheme of Assessment
(Scheme-2010)

First Semester

Code	Subject	No. of Hrs/Week		Minimum Marks			Maximum Marks		
		L	P	W/P	S	T	W/P	S	T
PGDCA101	Computer Organization & Operating Systems	3	-	40	20	75	100	50	150
PGDCA102	Programming Techniques	3	-	40	20	75	100	50	150
PGDCA103	Software Engineering & Database Management Systems	3	-	40	20	75	100	50	150
PGDCA104	Internet & Web Technology	3	-	40	20	75	100	50	150
PGDCA105	Computer Lab-1 (PC skills,HTML,CSS,JavaScript)	-	3	40	20	75	100	50	150
PGDCA106	Computer Lab-2 (C,C++)	-	3	40	20	75	100	50	150
PGDCA107	Computer Lab-3 (VB.Net,SQL)	-	3	40	20	75	100	50	150
TOTAL MARKS							700	350	1050

Second Semester

Code	Subject	No. of Hrs/Week		Minimum Marks			Maximum Marks		
		L	P	W/P	S	T	W/P	S	T
PGDCA201	Advanced Web Technologies	3	-	40	20	75	100	50	150
PGDCA202	Programming in Java	3	-	40	20	75	100	50	150
PGDCA203	Computer Communication & Networks	3	-	40	20	75	100	50	150
PGDCA204	Computer Lab-4 (ASP.Net, PHP)	-	3	40	20	75	100	50	150
PGDCA205	Computer Lab-5 (Java)	-	3	40	20	75	100	50	150
PGDCA206	Computer Lab-6 (Linux, Networking)	-	3	40	20	75	100	50	150
PGDCA207	Project work	-	3	40	20	75	100	50	150
TOTAL MARKS							700	350	1050

* L - Lecture P - Practical W - Written S - Sessional T - Total

PGDCA101 COMPUTER ORGANIZATION AND OPERATING SYSTEMS

PART A

Module 1. Introduction to computers (5 hrs)

Hardware - Functional units - classification of computers. Introduction to Binary and hexadecimal number systems - Logic gates - Representation of characters, integers, fixed and floating point numbers

Module 2. Memory and storage devices (8 hrs)

Concept of memory cell - size - primary memory - types - RAM and ROM, volatile and non-volatile - static and dynamic - flash memory - Survey of PC memory modules- DDR,DDR2,DDR3 etc. (4 hrs)

Secondary memory - hard disk, flash drive, magnetic tape - structure and comparison - hard disk interface types - PATA,SATA,SCSI, SAS etc.

Concept of optical storage devices - CD, DVD-R /DVD-RW- blue ray (4hrs)

Module 3. CPU (5 hrs)

Concept of CPU registers - opcode and operands - addressing modes - Instruction cycle (2hrs)

Microprocessors - interrupts - address, control, data buses - Cache memory - L1 & L2 cache - concept of parallel processing and pipe lining (2hrs)

Survey of current Intel and AMD processors - Mobile, Desktop, Server processors - supporting chipsets - North bridge and south bridge - FSB (1hr)

Module 4. I/O systems (12 hrs)

Serial, parallel & USB ports - Modem - Ethernet and wireless ports. (2hrs)

Types and features of I/O devices - keyboard, mouse, scanner, webcam, printers and monitor types.(4hrs)

Introduction Bio-metric access control devices - Finger print scanner, Iris scanner - ATM, RFID and smart cards

Typical Specification of desktop, mobile and server computers currently available (4hrs)

Anatomy of desktop system - motherboard, processor, memory, SMPS, drives, Add-on cards (2 hrs)

PART B

Module 5. Introduction to operating systems (5 hrs)

Software - type of software - system & application software

Language translators - assembler, compiler and interpreter (2 hrs)

Operating system - Definition, goals, structure, types - concepts of real-time, multi-user, time sharing, multi-programming, multi-processor system - POST and bootstrap (3 hrs)

Module 6. OS as a resource manager (15 hrs)

Resource management functions - memory management concepts - throughput and page replacement policy - virtual memory - demand paging and segmentation(3hrs)

Processor management concepts - process - life cycle of a process - thread - scheduling - pre-emptive and non-pre-emptive. Concept of semaphore and deadlock (3hrs)

File management concepts - directory structure - basic file operations - read, write, create, delete, reset - file protection and security - file and record locking - free space management (6hrs)

Device management concepts - type of devices - dedicated, shared & virtual - SPOOLing and buffering - concept of device drivers. (3hrs)

Module 7. Case study of Windows & Linux operating systems (10 hrs)

Basic installation requirement - concepts of booting - boot loader, multi-boot system - security system - user identification - Types of users - user management - Concept of Web-OS.

Text: 1. Computer fundamentals, Architecture & organization - B RAM - New age international

2. Introduction to operating system- Colin Ritchie - BPB

Ref: 1. Computer organization - Hamachar- TMH

2. Computer fundamentals - Rajaraman - PHI

3. Upgrading & Repairing Pcs With Cd - Scott Mueller - Dorling Kindersley (india) Pvt Ltd

4. System Software & Operating systems - Dhamdhare

5. <http://www.pctechguide.com>

PGDCA102 PROGRAMMING TECHNIQUES

MODULE 1 (10 hrs)

Steps in program development - Algorithm, flowchart, Coding, Compiling, Interpreter, compiler (ANSI standard, free compiler) - Types of errors, Linking and Executing - Concept of procedure oriented and object oriented languages. (3 hrs)

Structure of C program - C character set - Identifiers and keywords - Variables - Rules for constructing variables - Data types - primary data types (character(char), Integer(int), Float(float), Double(double), void) - Secondary data types - Array, Pointer, structure, union, enum etc. - Type Modifiers - Integers(long, short, signed and unsigned) - Character(signed and unsigned) - Format of data types(int %d, float %f char %c etc.) - Escape sequences(\n, \b, \t etc.) - Constants (Integer (decimal, octal, hex), Real, Character, Logical and String - Rules for constructing each constants - Variable declaration - Scope of variables - Local and Global - Storage classes(Introduction) (2 hrs)

Operators - (Arithmetic, Increment/Decrement, Modulo Division, Relational, Logical, Bitwise, Conditional, comma operator, sizeof operator), Precedence of operators, Associativity, Expressions, Type conversions in expressions, Type casting, Assignment statement, Type conversions in assignment. (4 hrs)

Preprocessor directives(#include, #define), concept of header files/Library files, comments, I/O functions (ANSI compatible) (1 hr)

MODULE 2 (10 hrs)

Control Structures - if statement, if else construct, nested if - use of relational operators and logical operators - switch statement (4 hrs). Concept of loop - While loop, for loop, do while loop, nesting of loops (5 hrs)

Break, continue, goto & return statements - exit() function (1 hr)

MODULE 3 (15 hrs)

Arrays - Concept of an array - Advantage - concept of dimension and size - Array declaration, Array Manipulations (accessing element, Entering data, Reading data, initialization) - printing - searching (linear search, binary search) - sorting (bubble sort, selection sort) (3hrs)

Two dimensional arrays - Initializing - Memory map - Reading - accessing elements - Concept of multi-dimensional arrays. (4 hrs)

Character strings - similarity between string and character array - Initializing character array - Null character - reading character strings (ANSI C compatible string functions) - standard library string functions(length, compare, concatenation, copy, substring etc.) (3 hrs)

Functions - Concept of a function - General form of a C function - Function with arguments - return statement - default return type and the type void - formal arguments, actual arguments - Scope rules of function - storage classes(automatic, register, static, global) - Function declaration and prototypes - Concept of call by value and call by reference - Recursion (5 hrs)

MODULE 4 (15 hrs)

Structures - Structure as a collection of data - applications - syntax of declaring a structure, Initializing structures, Accessing structure elements, Memory allocation of structure elements, arrays of structures, Structures and functions (Passing structure elements to functions, passing entire structure to functions), nested structures. (4hrs)

Concept of union, syntax of declaration and its use, Comparison of array, structure and union, concept of memory saving. (2 hrs)

Enumerated data type- use of enumerate data type, syntax of declaration - typedef statement. (1 hr)

Concept of pointers - pointer data type and its syntax, & and * operator - pointer expression - pointer assignment - pointer arithmetic - pointer comparison - Dynamic memory allocation - malloc(), calloc(), free() - Pointers and arrays - Array of pointers - Pointer to strings - pointers to pointers - pointer to functions - function returning pointer - pointer to structure - concept of self referential structure - command line arguments. (4hrs)

File handling in C - Concept of a file - text file in C - FILE pointer and its definition - meanings of the different members of the structure representing FILE - Disk I/O functions (ANSI C compatible) - Binary mode verses Text mode - formatted Disk I/O functions (ANSI C compatible) - simple file based programs. (4 hrs)

MODULE 5 (10 hrs)

Object oriented concepts - Features of OOPS (class, object, Data abstraction, Data hiding, Data encapsulation, inheritance, polymorphism etc..) - Syntax of a class declaration in C++ - Declaration of objects using classes.

Text : 1. Programming in C 3e - Stephen G Kochan - Dorling Kindersley (India) Pvt Ltd

2. PROGRAMMING IN ANSI C 4e - E BALAGURUSAMY - Tata Mcgraw Hill

Ref : 1. C Programming Language 2e - Brian W Kernighan, Dennis M Ritchie

2. Working With C - Yashavant Kanetkar - BPB

3. Object Oriented Programming With C++ - Balagurusamy E. - Tata Mcgraw Hill

4. <http://www.cs.cf.ac.uk/Dave/C/CE.html>

PGDCA103 SOFTWARE ENGINEERING & DATABASE MANAGEMENT SYSTEMS

Module 1 (15 hours)

System concept - definition, characteristics and elements of a system - types of systems - various phases of Software Development Life Cycle - feasibility - economical, technical, operational - Analysis, Design, Development and Implementation phases - Role of System Analyst - Different approaches to software development - waterfall model, spiral model, prototyping - 4GL - Structured System Analysis Tools and Techniques - System Flowchart, Data Flow Diagram, Data Dictionary, Structured English - Fact finding tools and Techniques - Brief Description of questionnaire, interview, on-site observation, review of documents and reports.

Module 2 (12 hours)

System Design - User interfaces design - Menu, Forms, Reports, Screens - Database Design - Advantages and limitations of DBMS - Redundancy, inconsistency, security, integrity, data independence - Different users of DBMS - End users, application programmers, sophisticated users, DBA - Architecture of DBMS - Different types of Data Models - Object based logical model (E-R Diagram), Record based logical model (Relational, Hierarchical, Network models) - Physical models(Storage structures and access methods in sequential, indexed, indexed sequential and direct access) - Different levels of databases - internal, conceptual and external levels) - schema and subschema.

Module 3 (15 hours)

Relational Databases - concepts of domain, tuple, degree, cardinality - keys -primary, secondary, candidate, foreign - Normalization based on functional dependencies (1NF,2NF,3NF) - rules, examples and anomalies - Integrity constraints - Entity integrity, Referential integrity - Recovery mechanisms - recovery from various problems of volatile and non-volatile storage devices - log, checkpoint - concurrency control - locks.

Module 4 (8 hours)

Code Design - various coding techniques - sequence code, significant digit code, alphabetic code, alphabetic derivation code, self checking code - Development and Implementation phase - H/W, S/W selection criteria - Conversion methods - parallel, phased, immediate - System testing and quality assurance - User training and maintenance
UML- diagrams - usecase diagram - sequence diagram - class hierarchy diagram - activity diagram - Documentation.

Module 5 (10 hours)

SQL Basic operations - DDL statements-(syntax,examples) - Designing a database - creating tables - Data constraints - DML statements - syntax and examples - adding data - querying single tables - retrieval, modification, deletion - Defining and using views - date functions - operators and aggregate functions - Querying multiple tables - simple queries - nested queries - DCL statements - syntax and examples.

References:

1. Software Engineering: A practitioner's Approach- Pressman. - McGrwa-Hill
2. Software Engineering Principles And Practices By Rohit, Khurana - Vikas Publishing House P. Ltd
3. Database System Concepts, Henry F Korth, Abraham silberschatz, Fourth Edition, McGraw-Hill
4. System Analysis and Design - Elias M Award - Galgotia
5. http://en.wikipedia.org/wiki/Unified_Modeling_Language

PGDCA104 INTERNET AND WEB TECHNOLOGY

Module 1

(10 Hours)

Basics of Internet & Intranet - Different Internet access methods - WWW - Internet Address and Domains - URL - Working of Web Browser - Different Browsers - Search Engines and Searching Techniques - Introduction to Web Server - Web Hosting, Web Pages, Portal, Blog, E-mail - Types of Web Documents - static, active & Dynamic.

Module 2

(15 Hours)

Concepts of HTML - Organisation of a Document in HTML - HTML tags - HTML Headings, Paragraphs, Links, Images, Elements, Attributes - class, id, style, title, Rules(Lines), Comments, Line Breaks - Text Formatting - Text Formatting Tags - Citations, Quotations, and Definition Tags - HTML Style Attribute - Links - Hyperlinks, Anchors, and Links - The href Attribute - The target Attribute - The name Attribute - Images - The Image Tag and the Src Attribute - Embedding video/audio in HTML - The Alt Attribute - Tables - Border Attribute - Headings in a Table - Empty Cells in a Table - Lists - Unordered Lists, Ordered Lists
HTML Forms and Input - The Form's Action Attribute and the Submit Button - Form Tags - Colors - Color Values - Web Standard Color Names - Frames- The Frameset Tag, The Frame Tag, Fonts - Font Attributes - Character Entities - Head - The Head Element, Information Inside the Head Element - Uniform Resource Locators - URL Schemes - Scripts - Insert a Script into HTML Page

Module 3

(15 Hours)

Introduction to Cascading Style Sheet (CSS), CSS Syntax, Comments, Id and Class, Background - Background Color, Background Image - Text - Text Color, Text Alignment, Text Decoration, Text Transformation, Text Indentation - CSS Font - Font Families, Font Style, Font Size - Setting Text Size - Using Pixels and Em - CSS Lists - Different List Item Markers, Unordered List, Ordered List, An Image as The List Item Marker - Crossbrowser Solution - CSS Tables - Table Borders, Collapse Borders, Table Width and Height, Table Text Alignment, Table Padding, Table Color

CSS Grouping and Nesting Selectors - Dimension - Display and Visibility - Block and Inline Elements, CSS Positioning - Static Positioning, Fixed Positioning, Relative Positioning, Absolute Positioning, Overlapping Elements - Float - Horizontal Align - Pseudo-classes - Image Gallery - Image Opacity/Transparency - Image Sprites

Module 4

(20hrs)

JavaScript - Introduction - JavaScript into an HTML page - JavaScript Statements - JavaScript Code, Blocks, Comments - Variables - Declaring (Creating) Variables, Assigning Values to Undeclared Variables, Redeclaring Variables - Arithmetic, Operators - Conditional Statements - If Statement, If...else Statement, If...else if...else Statement, Switch Statement - Popup Boxes - Alert Box, Confirm Box, Prompt Box - JavaScript Functions - Loops - for loop, while loop, Break and Continue Statements, For...In Statement - Events - onLoad and onUnload, onFocus, onBlur and onChange, onSubmit, onMouseOver and onMouseOut

Reference :

1. HTML 4 Unleashed - SAMS Techmedia, Rich Darnell
2. Mastering JavaScript - BPB
3. JavaScript Bible IDG Books, Danny Goodman
4. CSS - The Definitive Guide, O'reilly Publications

Recommended Weblinks :

- 1 http://en.wikipedia.org/wiki/Web_design
- 2 <http://www.w3schools.com>
- 3 <http://en.wikipedia.org/wiki/HTML>
4. <http://www.w3.org/Style/CSS/learning>

PGDCA105 COMPUTER LAB - 1
(PC skills,HTML,CSS,JavaScript)

Module 1. Basic PC-Skills

(20 Hrs)

Installation of Windows and Linux ,Familiarisation of Windows and Linux Desktops.(2 Hrs)
Practice on Office Package - WordProcessing - Opening and Editing a Document, Formatting a Document, Document Views, Spell Checking, Page Formatting, Headers&Footers, Line Spacing, Tab, Indentations, Creating Tables, Paragraph Alignment, Bullets and Numbering, Borders and Shading, Printing a Document, Mail-Merge (5 Hrs)
Spreadsheet - Workbook, Editing and Formatting Cells, Creating Formulas, Entering and Using Functions, Printing with Excel (5 Hrs)
Presentations - Creating & Inserting Slides, Formatting Slides, Slide Design, Slide Show Customisation, Slide Animation (3Hrs)
Utilities & Tools - .zip & .rar files - md5 checksum - sharing folders/printers over network - virus scanning and removal - PDF reader/creator - burning DVD/RW.
Audio system - Audio players - audio formats - plug-ins - Video system - Picture formats BMP,GIF,JPG - Video formats - MPEG,AVI,WMV,RM,VCD formats - codec - DivX,Xvid - Media players - skins - media converters(5 Hrs)

Module 2. HTML

(10 Hrs)

1. Create a simple HTML document about yourself or a topic of your choice using the basic tags
2. Create a simple HTML document using unordered list, ordered list and definition list
3. Create an HTML document with an internal link and an external link to a web site, and a web page
4. Create an HTML document to insert an image, align a short description to the bottom of the image and to the top of the image.
5. Create a Web page with the following features.
The correct structure (header and body) , A title, At least two different headings with separate content following each heading ,An unnumbered list with at least 3 items, A numbered list with at least 3 items, at least 4 links to other web pages, at least 1 picture.
6. Create an HTML form using all the input form tags.

Module 3. CSS

(10 Hrs)

1. Create a CSS script using Id, Class and Background Color and Image Tag Elements
2. Create a CSS script showing how CSS can be used within an individual tag
3. Create a CSS script showing how CSS can be used in the <head> of an HTML document
4. Create a CSS script showing how CSS can be used in an external file.
5. Create a CSS script using Text Color, Alignment, Decoration, Transformation, and Font Families, Style, Font Size Tag elements.
6. Create a CSS script using different List Item Markers, Unordered List, Ordered List, and an Image as List Item Marker Tag elements.
7. Create a CSS script using Table Borders, Width and Height, Text Alignment, Table Padding, Table Color Tag elements.
8. Create a CSS script showing how to create an Image Gallery.

Module 4. JavaScript

(15 Hrs)

1. Create a Java Script showing Declaration of Variables, Assigning Values to Undeclared Variables, Re-declaring Variables and Arithmetic Operators
2. Create a simple Java Script showing the use of Conditional Statements and Switch Statement.
3. Write Java Script demonstrating the use of for loop, while loop, Break and Continue and For...In Statement
4. Write simple Java Scripts to illustrate the use of Popup Boxes, Alert Box, Confirm Box and Prompt Box.
5. Write simple Java Scripts using JavaScript Functions and Java Script events.

Module 5.

(5 Hours)

Creation of Web pages using a GUI based HTML Editor, Case study of a sample Web Site.

PGDCA106 COMPUTER LAB - 2
(C,C++)

Note : Lab record should contain minimum 20 programs (Minimum 4 programs from each module of the theory paper PGDCA102).

List of recommended sample programs.

MODULE 1

1. Write a program to interchange the content of two variable without using another variable.
2. Write a program to reverse a number.
3. Write a program to display the number of occurrences of a given digit in a number.
4. Write a program to generate prime numbers to a certain limit.
5. Write a program to find the largest number from a given set of n numbers.
6. Write a program to display prime numbers in the Fibonacci series below 100.
7. Write a program to find the sum of the first ten terms of the series
 $1 + \frac{1}{2!} + \frac{1}{4!} + \frac{1}{6!} + \dots$

MODULE 2

1. Write a program to find the largest and smallest element in an array.
2. Write a program to search a given element in an array using linear search algorithm.
3. Write a program to search a given element in an array using binary search algorithm.
4. Write a program to sort a single dimensional array into ascending order using bubble sort algorithm.
5. Write a program to sort a single dimensional array into ascending order using selection sort algorithm.
6. Write a program to generate a unit matrix of order n x n.
7. Write a program to find the transpose of a square matrix.
8. Write a program to add two given matrix and display the resultant matrix.
9. Write a program to read a string and find the no of characters in it.
10. Write a program to reverse a string.
11. Write a program to check whether a given string is a palindrome or not.
12. Write a user defined function to find the sum of digits of a number.
13. Write a program using a function to check whether a given no is prime or not.
14. Write a program using a recursive function to find the factorial of a given number.
15. Write a program using a recursive function to find the n^{th} power of a number.

MODULE 3

1. Write a program using a function to interchange the values of two variables.(use pointers as arguments)
2. Write a program to allocate n numbers into an array using dynamic memory allocation method, and find the sum of these numbers.
3. Write a program to count the number of white spaces in a sentence.(using pointers and function)
4. Write a program (using pointer to string and function) to compare two strings.
5. Declare a structure containing itemcode, itemname, unit price and quantity.
6. Enter data into it and print the details with total price in a neat format.
7. Declare a structure containing name, rollno and marks of 5 subjects.Store the details of n students using array of structure. Find total mark of each student and print a rank list.
8. Write a program to create a text file and print the same.
9. Write a program to create a data file containing name, rollno and marks of three subjects of a set of students in a class. Read the above file and print the details with total mark in a neat format.
10. Write a program to create a binary file containing name, empno and salary of a set of employess in a company. Display the details of an employee against an empno accepted from the keyboard.
11. Write a program using command line arguments to copy the content of a file to another file.

MODULE 4

1. Create a class 'distance'
Member data : feet, inches
Member functions : accept() { to read data}
Convert() { convert distance into feet and display it}
Display() { display distance in feet and inches}
Write a program to illustrate the use of distance class by creating objects of distance.
2. Create a class 'time'
Member data : hours, minute, seconds
Member functions : accept() { to accept time}
Addtime() { to add two time objects}
Display() { display time}
Write a program to illustrate the use of time class by creating objects of time.

PGDCA107 COMPUTER LAB - 3
(VB.Net, SQL)

Part A - VB.NET

Module 1 (5 Hrs)
Introduction to event driven programming - Introduction to Visual Studio.Net IDE - Introduction to VB.Net - Data types, Variables, Constants, Converting between Data Types, operators & statements - Processing Decisions , Looping Structures , Procedures - Sub Procedures, Function Procedures, Arrays.

Module 2 (15 Hrs)
Windows Applications - Forms - Adding Controls to Forms, properties - methods.
Handling Events, MsgBox , InputBox - Working with Multiple Forms, Setting the Start up Form, SDI & MDI Forms - Handling Mouse & Keyboard Events, Common controls - Menu - Pop up Menu.

Module 3 (10 Hrs)
Introduction to SQL Server - Introduction to ADO.NET,Data Access with ADO.NET - ConnectionObject, Connection String, CommandObject, DataReaders, DataSets and DataAdapters, Accessing Data with server explorer, Working with System.Data.OleDb - Creating a New Data Connection - Creating and populating Dataset - Displaying Data in a Data Grid.

PART B - SQL

Module 4 (10 Hrs)
BASICS : Connecting to RDBMS Server - user login.
Naming a table - Assigning storage data types - Creating tables - Creating table from other tables - Describing Table structures - comments - Changing table-structure - Altering and Dropping tables - Manipulating data in tables -Select (where,having,like, in ,and,or,between,null)

Module 5 (10 Hrs)
Date functions - String Functions - Inserting data into tables - Deleting rows - Using UPDATE to change data - constraints (NOT NULL,UNIQUE, PRIMARY KEY,FOREIGN KEY,CHECK,DEFAULT).
Aggregate functions (sum,count,average, max , min) - COMMIT, ROLLBACK .
Adding columns - Saving and retrieving SQL commands - Editing SQL commands.

Module 6 (10 Hrs)
QUERY : Querying single tables - Projection, Selection - Ordering, grouping results - Accessing records from multiple tables - Sub queries, Nested queries.
VIEWS: Defining a View - Querying views - Defining Multiple Table views with JOIN and without JOIN - Inserting, Deleting and Updating data through views - Dropping views.

Reference :

1. Visual Basic .NET Black Book, by Steven Holzner
2. Visual Basic .NET 2003 in 21 Days. - Steven Holzner, SAMS Publications
3. The Complete Reference -Visual Basic .NET - Jeffrey R. Shapiro
4. Sql: A Beginner's Guide 3/e - Andy Opper, Robert Sheldon - Tata Mcgraw Hill
5. Learning Visual Basic .NET by Jesse Liberty
6. Visual Basic .Net programming in easy steps BY TIM ANDERSON, DreamTech Press
7. <http://www.java2s.com/Tutorial/VB/CatalogVB.htm>
8. <http://www.homeandlearn.co.uk/NET/vbNET.html>
9. <http://www.codeproject.com/KB/database/DatabaseAccessWithAdoNet1.aspx>
10. <http://www.programmingtutorials.com/vbnet.aspx>

Lab Activities

VB.Net

1. Familiarization of VB .Net IDE.
2. Demonstration of Visual Studio Installation.
3. Simple programs using different operators.
4. Simple programs using different types of IF statements.
5. Programs using looping structures
6. Programs using sub procedures, functions
7. Programs using arrays
8. Windows application using standard controls.
9. Programs to demonstrate event handling.
10. Programs using msgbox
11. Programs using inputbox
12. Programs using multiple forms.
13. Programs using MDI forms
14. Programs using Menu.
15. simple programs to print contents of table.
16. Programs to insert,delete,update and search for records in a table
17. Program to bind data to grid
18. Program to bind data to combo box.

SQL

1. Familiarization of RDBMS Environment.
2. Connecting to DBMS. Login and logout. Creating tables
3. Commands to insert records to table
4. SQL commands to describe structure of tables
5. To selecting records from tables,Deleting records.
6. Updating content of tables.
7. Commands to alter tables, drop tables.
8. SQL commands using where clause
9. SQL commands using Having clause
10. SQL commands using Like, in
11. SQL commands using or, and, between, Null
12. SQL commands using Date functions, string functions
13. SQL commands for deleting records,dropping tables.
14. SQL commands using constraints
15. Commands to access records from multiple tables
16. SQL commands for creating views, using join.
17. SQL commands for ordering records, grouping records
18. SQL commands using sub queries

Note : Lab record should contain minimum 20 programs.

PGDCA201 ADVANCED WEB TECHNOLOGY

PART-1 ASP.NET

Module 1 (5 Hrs)
Introduction to .NET - Requirements - .Net Architecture - .Net frame work - Common type system - Common language runtime, MSIL - Components of .Net - Intermediate Language - Just In Time (JIT) Compilation - .NET Base Classes - Introduction - Visual Studio .NET - Components of Visual Studio - Visual Studio.NET Integrated Development Environment - Referencing Components and controls - Projects.
Introduction to web servers, IIS, hosting & virtual hosting - Writing Code - Introduction to ASP.NET. ASP.NET Page HttpRequest Object - HttpResponse Object - Page Directives - @Page directive, @Import directive

Module 2 (15 Hrs)
ASP.NET Web Forms & Controls - Web controls - Link Button Control - Button Control - Label Control - CheckBox Control - RadioButton Control - HyperLink Control - Table Control - Image Control - Panel Control - ImageButton Control - TextBox Control - Simple Web Form Page - List Controls - DropDownList Control, CheckBoxList Control - RadioButtonList Control - Handling Events, AdRotator Control - Calendar Control - Validation controls - RequiredFieldValidator - RangeValidator - CompareValidator - RegularExpressionValidator - CustomValidator - Introduction to Trace.

Module 3 (10 Hrs)
Introduction to XML- Introduction to ADO.NET- ADO .Net Architecture - Review of ADO .Net (Introduction to ADO.NET, ConnectionObject, Connection String, CommandObject, DataReaders, DataSets and DataAdapters, DataTable, DataColumn, DataRow, Accessing Data with server explorer ,Working with System.Data.OleDb, Working with SQL.NET, Binding data to controls, Using Stored Procedures) - Crystal Report - XML in ADO .Net. Introduction to AJAX - Implementation of AJAX in ASP.Net - Simple examples like partial page update - Concept of master page - applying templates.

PART-2 PHP

Module 4 (15 Hrs)
Introduction to Server Side Scripting - Installation of LAMP/WAMP - Simple PHP scripts. (2hrs)
Variables and Expressions in PHP - Identifiers , Data Types (integers, floats, strings and booleans)
Creating Variables , Variable assignment, Variable Scope - Namespaces , User-defined Constants.(1hr)
PHP Operators - Arithmetic Operators , Logical Operators - Relational (Comparison) Operators - The Identity Operator, Bitwise Operators, Other Operators (1hr)
Conditional Tests - Events and Flow Control in PHP - True and False - If - Comparing Strings and Numbers - else and elseif - The ? : Operator - Comparing for equality or identity - The switch / case statement - Loops - while, do ... while, for - break and continue - exit (2hr)
Taking User Input from Forms - Review of HTML forms. - Creating forms with PHP GET and POST Methods - Security Protection from Cross Site Scripting - Obtaining data from forms through variables - Using hidden fields - Secure Web Forms(HTTPS and SSL) - Calling pages from themselves using forms(4hrs)
PHP Functions - Purpose of functions - Built-in functions - Declaring functions - Functions Arguments -Default Arguments - Return - Returning References - Variable Scope (global vs local) - Static variables - Recursion - include and require - Variable function calls. (2hrs)
Storing Data in Arrays using PHP - Indexing arrays, Using foreach - Add/remove elements from arrays -One-dimensional arrays - Multi-dimensional arrays - References to array elements. (2hrs)
String Manipulation in PHP - substring and [] operators - Case conversion, trimming - Formatting output data - Regular expressions.(1Hr)

Module 5 (15 Hrs)
Introduction to mysql - MySQL command Interpreter - Creating a database - Modifying a database - Administering a database.(3hrs)
Developing an application using PHP and MySQL - MySQL functions in PHP - Querying a database - User Driven Querying - Inserts, Updates, and Deletes - User Authentication and Management.(5hrs)
Concept Sessions and Cookies in PHP - Understanding PHP session variables - Create a PHP session variable - Register and modify PHP session variables - Cookie properties - Setting a cookie in PHP - Retrieving PHP - cookies - Expiring/Deleting PHP cookies - Drawbacks to cookies.(3hrs)
PHP objects - Object basics - Classes in PHP - PHP4 - constructors - PHP5 - constructors and destructors - Inheritance - Accessing instance data and functions - __sleep and __wakeup - Class constants.(4hrs)

- Text: 1. ASP .Net Compete Reference by Mathew MacDonald - TMH
2. Beginning Php 5 (2004 Ed.) - Dave W. Mercer, Allan Kent, Steven D. - Wiley India
Ref: 1. ASP .Net Unleashed, VB .Net programming - Wrox publication
2. Web References Learning Php 5 - David Sklar - Shroff/o'reilly
3. <http://www.w3schools.com/aspnet/default.asp> 4. <http://www.maconstateit.net/tutorials/ASPNET20/default.htm>
5. <http://asp.net-tutorials.com/> 6. <http://www.w3schools.com/ajax/default.asp>
7. <http://www.expertrating.com/courseware/DotNetCourse/DotNet-Tutorial.asp>
8. <http://www.php.net/manual/en/> 9. <http://www.w3schools.com/php/default.asp>

PGDCA202 PROGRAMMING IN JAVA

Module 1

(15 Hrs)

Review of Object oriented concepts - class, object, encapsulation, data hiding, abstraction, Polymorphism, inheritance.
Features of Java - Platform independence, garbage collection, Byte code, virtual machine, web applications.
Components of JDK environment - javac, java, jar, javadoc etc.
Programming concepts - Identifiers, Data types, operators, expressions
Java coding conventions, input and output operations, programs using classes and objects, scope and visibility modes, static members, wrapper classes, command line arguments , instance and reference of objects.
Constructors, finalize method, overloading.
Control structures - if, if..else, switch, goto, looping statements, break, continue, labeled break, labeled continue.

Module 2

(12 Hrs)

Inheritance - extends keyword, subclass and superclass, use of this & super - method overriding - final keyword - Interfaces - implements key word
Brief overview of Java API packages - lang, util, io, net, applet, awt, sql
Arrays, Array of arrays, Strings, String handling functions.
Packages - package, import statements, user defined packages
Exception handling - try, catch, finally, throw and throws keywords, built in exceptions, user defined exceptions.
Multi threading - definition, Thread Life cycle, priority of threads, synchronized keyword, inter thread communication.

Module 3

(13 Hrs)

Applets - Java Graphic fundamentals, applet life cycle, Drawing Text, Lines and Shapes (rectangles, ovals, Arcs, Polygons) - Colors, Fonts, Displaying images, Reading Parameters.
Creating user interface components using Javax.swing package(JButton, JTextField, JLabel, JCheckbox, JRadioButton, JComboBox, JList, JPanel, JMenu, JMenuBar, JMenuItem, JOptionPane, JFrame, JApplet).
Layout Managers - FlowLayout, GridLayout, CardLayout, BorderLayouts.
Event driven programming - ActionEvent, ActionListener, ItemEvent, ItemListener,MouseEvent, MouseListener, MouseMotionListener, KeyEvent KeyListener , WindowEvent, WindowListner - Creating stand alone GUI applications.

Module 4

(10 Hrs)

Java.util package - List, Vector, iterator, Enumeration, String Tokenizer.
Java I/O package - File, FileInputStream, FileOutputStream, FileReader, FileWriter, BufferedReader, PrintWriter, DataInputStrem, DataOutputStream, Stream Tokenizer, Scanner.
Database programming - JDBC - ODBC - Components of JDBC API - Connecting to a Database - Statements and Prepared Statements - Executing queries - updating database

Module 5

(10 Hrs)

Advanced java - Servlets, Java Servlet API, Generic and HTTP servlets, session tracking, cookies.
Network Programming - Client-Server (using Socket, ServerSocket, URL, InetAddress)

Text: Thinking in Java - Bruce Eckel-2nd Ed.

Ref : 1. Programming with Java - Balaguruswamy
2. Java unleashed - Second Edition - Michael Morrison
3. Java 2 Complete Reference - 5th Edition - Herbert Schildt
4. <http://www.sun.com>

PGDCA203 COMPUTER COMMUNICATION & NETWORKS

Module 1 Fundamentals (9 hrs)

Digital and Analog signals - Bandwidth - Baud Rate - Data Rate Capacity - Bit Rate - Concept of multiplexing - FDM, TDM - Concept of Serial and Parallel transmission - Synchronous and Asynchronous transmission - Simplex, Half Duplex & Full Duplex transmission

Module 2 Transmission Media and networking hardware (12 Hrs)

UTP cables Optical Fiber Wifi - Transmission impairments - Introduction to Telephone Networks - switching Techniques - Packet, Circuit, message Ethernet - CSMA/CD - Ethernet standards
Modems - Types, Standards Cable modems, ADSL modems.
Networking hardware Network Interface Cards - Repeaters, Hubs, Switches, Bridges, Routers - Wireless cards - access points - Bluetooth.
Internet Access methods - Dial-up, ISDN, DSL, CABLE, wireless.

Module 3 Computer Networks (12 Hrs)

Introduction to networks - Topologies - Bus, Tree, Star & Ring - Introduction to ISO-OSI 7 Layer Model - TCP/IP model. Study of TCP/IP layers - Comparison with ISO-OSI model.

Module 4 Introduction to Mobile networks (8 Hrs)

Cellular Wireless Networks - Principles - Basic ideas about GSM, CDMA.
Introduction to GPRS & 3G Networks.

Module 5 Introduction to TCP/IP (10 Hrs)

Introduction to TCP/IP protocol suite - TCP/IP architecture - Internet protocol - IP address- classes - IPV4 & IPV6 - concept of subnets - basic idea of IP routing - study of TCP - UDP protocol & comparison.
Concept of Domain names & URLs - Study of http, ftp, smtp, pop3 protocols.

Module 6 Network security (9 Hrs)

Introduction to firewalls - proxy servers - E-commerce and internet Security
Introduction to SSL - https - Basic idea of cryptography - public key encryption - Digital signatures
Cyber threats - hacking - cracking - spoofing - password attacks - phishing - denial of service attacks - piracy
Introduction to cyber laws in India.

Text : 1. Data Communications and Networking - Bohrouz Forouzan, II Edition, McGraw Hill
2. Computer Networking: A Top-Down Approach. James F. Kurose, Keith W. Ross Pearson

Ref : 1. Data Communications - William Stallings, VIII Edition, Pearson Education
2. Computer Networks - Andrew S Tanenbaum, IV Edition, Prentice Hall India)
3. Introduction to cryptography- Phil Zimmermann
4. <http://oreilly.com/catalog/linag2/book/index.html>

PGDCA204 COMPUTER LAB - 4
(ASP.NET, PHP)

Part A - ASP.Net	
Lab Activities	Sample Programs
<ol style="list-style-type: none"> 1. Familiarization of Visual Studio IDE 2. Introduction to Web Forms 3. Demonstration of Web Hosting & Virtual Hosting 4. Simple web applications using standard webcontrols 5. Web application for handling form events 6. Web applications for handling keyboard and mouse events 7. using calender control 8. Programs using adrotator control 9. Programs using different validation controls 10. Programs to demonstrate trace. 11. web applications to display records in a table. 12. web applications to display records in a data grid 13. displaying XML data in form 14. web applications to Insert, Delete, Search, Update records in a table. 15. Binding data to grid 16. Binding data to controls like combo box. 17. Programs using stored procedures 18. Programs to demonstrate crystal report 19. Programs using master page 20. Programs using templates 21. simple program using AJAX. 	<ol style="list-style-type: none"> 1. Develop a Web application to find the biggest of 2 numbers entered in a Textbox. 2. String processing: Accept two strings and perform the following: <ol style="list-style-type: none"> (1) String concatenation (2) Case conversion (3) Determine the length (4) Reverse the string 3. Create a registration form and include validation control. (Use the IsPostBack property) 4. Create a student information form and insert data into the database and display the result in a data grid. 5. Assume that a student database is given. Perform the following operation: <ol style="list-style-type: none"> (1) Search (2) Update (3) Delete 6. XML data binding 7. Implement a stored procedure 8. Implement AdRotator control 9. Design an ASP.NET application to prepare student mark sheet using any database. 10. Design an ASP.NET application to prepare employee pay slip using any database. 11. Develop a web application to display records using Data Grid view. 12. Programs for demonstrating event handling. 13. Program using menus. 14. data binding 15. Program using crystal reports. 16. Simple programs using AJAX
Part B - PHP	
<p>Installation of lamp server Installation of wamp server Simple web applicarions using PHP username, password authentication, table look up, mark list etc Webforms . secure webforms Sessions Cookies Session tracking PHP and mysql- PHPMYadmin. Building data base driven applications from the case study.</p>	<p>Recommended Case studies (Any four)</p> <p>Marklist user authentication with passwod using Mysql user authentication with passwod using Mysql and sessions and cokiees Studetnts Database Digital Library College Admission</p>

PGDCA205 COMPUTER LAB - 5
(Java)

Note : Lab record should contain minimum 20 programs (Minimum 4 programs from each module)

Module 1 (10 Hrs)

Simple programs using control statements
Programs using class, object, constructors and destructor concepts
Simple programs using command line arguments

Module 2 (15 Hrs)

Programs to demonstrate inheritance, overloading and Overriding
Programs using Package and Interface concepts
Programs handling arrays, sorting, searching, managing matrices
Programs for string processing using string functions
Programs using Threading & Multithreading concepts (both by implementing Runnable interface and extending Thread class)
Programs to demonstrate the working of both language defined exceptions and user defined exceptions.

Module 3 (15 Hrs)

Simple applets
Applets to draw Lines and Shapes (rectangles, ovals, Arcs, Polygons)
Applets with animation using thread concepts
Applets that get parameters from html pages
Programs to demonstrate the behaviour of JButton, JTextField, JLabel, JCheckBox, JRadioButton, JComboBox, JList, JPanel, JOptionPane, JFrame, JApplet
Programs to display images and text in various fonts
Sample programs using JMenu, JMenuBar, JMenuItem, to create menus
Sample programs using various layout managers
Sample programs using various listeners

Module 4 (10 Hrs)

Programs to demonstrate the behaviour of List, Vector, String Tokenizer.
Programs using various streams
Programs using various file streams
Simple programs for various database operations (database querying, updating)

Module 5 (10 Hrs)

Managing java enabled web servers
Simple Servlets - Simple Servlets which access database
Simple programs to demonstrate Session tracking and cookies
Programs using URL, URLConnection and InetAddress classes
Simple Client-Server programs (using Socket, ServerSocket)

[SCHEME 2010]

PGDCA206 COMPUTER LAB - 6
(Linux, Networking)

Module 1

Introduction to Linux - Booting - login - simple commands - ls, cp, cd, pwd, cat, tac, mkdir, rm, mv, more, file, we, man, cmp, who, ln, nl, date, rev - file permissions - chmod, umask (6 Hrs)

Module 2

bash - wild card characters - grep - pipe - tee - command substitution - shell variables - sub shells - export - filters - pr, head, tail, cut, paste, sort, uniq, nl, grep, tr, join - Editors - vi and emacs - Communication & Scheduling commands - mail, talk, write, wall, at, cron - process related commands - ps, kill, nohup, nice, time - tar- gzip - package management in linux. (9 Hrs)

Module 3

Shell programming - shell variables, read, echo, command line arguments, &&, ||, if, while, case, for, until, test, set, shift, trap. (8 Hrs)

Module 4

X-Windows systems - concepts, window managers, KDE and GNOME - setting up servers - DHCP - proxy server, web server (4 Hrs)

Module 5

Networking - Study of networking in windows and linux
Windows - Ipconfig, traceroute, nslookup, ping ,route - Setting up a workgroup - sharing of folders and printers.
Linux - ifconfig, ping , nslookup, netstat, route - Troubleshooting networks. (24Hrs)

Module 6

System Administration - Booting, init, runlevels, creating users, system databases - passwd, group, shadow, inittab, inetd.conf - startup scripts - shutdown - mount - fsck - network administration - netstat, ping, traceroute, ifconfig - telnet & ftp (5 Hrs)

Module 7

Survey of Linux Distributions - bootable live CD - setup Internet connection. (4 Hrs)

PGDCA207 PROJECT WORK

1. AIM: To expose student to industry-standard project practices, through a real-life project work under time and deliverable constraints.

2. PROJECT GUIDELINES

The minimal phases for the project are: Project search, finalization and allocation, Investigation of system requirements, Data and Process Modeling, System Design, Program design, Program coding and unit testing, System integration, System implementation .

3.1 Project Planning: The topic should be chosen in Semester 1 itself , though on exceptional cases, for valid reasons, the project guide may waive this condition. Related reading, training and discussions should start from semester 1 itself. Project work should be completed within 60 Hrs of Lab duration.

3.2 Selection of project work: The project can be any type of the following.

(a) Developing solution for a real-life problem : Examples are Accounting Software Package for a particular organization, Computerisation of administrative functions of an organization, Web Based Commerce, etc.

(b) Innovative Product development: These are projects where a clear-cut requirement for developing a computer based solution may not be existing, but a possible utility for the same is conceived by the proposer. An example is a Malayalam Language Editor with Spell Checker, Simulation Software for eLearning, Digital Water Marking Software, ..

(c) Research level project: These are projects which involve research and development and may not be as structured and clear cut as in the above case. Examples are Malayalam Character Recognition, Neural Net Based Speech Recogniser, Biometric Systems, Machine Translation System etc. The methodology and reporting of such projects could be markedly different from type (a) and is left to the proposer/external supervisor of the projects

3.2 Selection of Team: To meet the stated objectives, it is imperative that Major Project is done through a team effort. Though it would be ideal to select the team members at random (drawing lots) and this should be strongly recommended, due to practical considerations, students may also be given the choice of forming themselves into teams with 3 to 5 members (teams less than 3 members may be permitted in exceptional cases, for valid reasons). A gender mix should also be strongly suggested. A team leader shall be elected .Teams shall maintain team meeting minutes and ensure that every team member has tasks assigned in writing. Team meeting minutes shall form a part of the Project Report. Even if students are doing projects as groups, each one must independently take up different modules of the work and must submit the reports also independently (though, in such cases, some common materials is permissible). Evaluation will also be done independently.

3.3 Selection of Tools: No restrictions shall be placed on the students in the choice of platforms/tools/languages to be utilized for their project work, though open source is strongly recommended, wherever possible. No value shall be placed on the use of tools in the evaluation of the project.

Students may also choose to do project in the college/institute (or partially in the college/institute and partially in an external organization), especially product-based work, but in such cases the supervisors must ensure that the industry practices are followed .

3.4 Documentation:

One copy should be maintained by each student and a copy from the group to the college library. The format for preparation of the project report is standardized from 2010 onwards (students need not consult earlier project reports). The following are the major guidelines: The final outer dimensions of the report shall be 21 cm X 30 cm. The colour of the flap cover shall be light green. Only hard binding should be done, with title of the thesis and the words "<BRIEF TITLE> PGDCA Project Report 200..." displayed on the spine in 20 point, Bold, Times New Roman, as in example below. In case the title is too long, a shorter version of it may be used (Like "Image Pro" instead of "Image Pro - An Interactive Image Processing package").

- The text of the report should be set in 12 pt, Times New Roman, Single Spaced.
- Headings should be set as follows: CHAPTER HEADINGS 20 pt, Times New Roman, Bold, All Caps, Centered.

1. SECTION HEADINGS 12 pt, Times New Roman, Bold, All Caps, Left Adjusted.

1.1 Section Sub-headings 12 pt, Times New Roman, Bold, Left Adjusted.

Titles of Figures, Tables etc are done in 12 point, times New Roman, Italics, Centered.

Some general guidelines on documentation stylistics are:

- Double quotes and single quotes (“”, “”) should be used only when essential. In most cases words put in quotes are better highlighted by setting them in italics
- Page numbers shall be set at right hand top corner, paragraph indent shall be set as 3.
- Only single space need be left above a section or sub-section heading and no space may be left after them.
- Certificate should be in the format: “Certified that this report titled..... is a bonafide record of the project work done by Sri/Kum..... under our supervision and guidance, towards partial fulfillment of the requirements for the award of the Post Graduate Diploma in Computer Application of IHRD” with dated signatures of Internal Guide and Head of Institution.
- If the project is done in an external organization, another certificates on the letterhead of the organization is required: “Certified that his report titled..... is a bonafide record of the project work done by Sri/Kum..... under any supervision and guidance, at theDepartment of..... (Organization) towards partial fulfillment of the requirements for the award the Post Graduate Diploma in Computer Application of IHRD “
- Space for signature of Internal & External Examiners shall be provided in the facing sheet or index page.
- References shall be IEEE format (see any IEEE magazine or transaction). Take care in use of italics and punctuation. While doing the project, keep note of all books you refer, in the correct format, and include them in alphabetical order in your reference list. Eg: A book is cited as: Kartalopoulos, S V Understanding Neural Networks and Fuzzy Logic, BPB Publishers, 1996, pp. 21-27. (pp.21-27 indicates that pages 21-27 have been referred. If the whole book is being referred, this may be omitted. If a single page is referred, say 7, it may be cited as p.7

<p><PROJECT TITLE></p> <p><STUDENT'S NAME> <COLLEGE/INSTITUTION NAME></p> <p>PROJECT REPORT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF POST GRADUATE DIPLOMA IN COMPUTER APPLICATION OF IHRD</p> <p>2010</p>
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Drafts should be read, modified, spell checked and grammar checked at least twice during the course of the project and before a final printout is taken, the same may be got approved from the internal guide. The students should send two interim reports to internal guides. This will also help the students in their report writing.

Regarding the body of the report, as an indicative example, the following is given (though students should not attempt to fit every kind of project report into this format):

- Organizational overview (of the client organization, where applicable)
- Description of the present system
- Limitations of the present system
- The Proposed system- Its advantages and features
- Top level DFD of the proposed system with at least one additional level of expansion
- System flowchart
- Menu Tree
- Program List
- Files or tables (for DBMS projects) list. Class names to be entered for each file in OO systems.
- List of fields or attributes (for DBMS projects) in each file or table.

- Program - File table that shows the files/tables used by each program and the files are read, written to, updated, queried or reports were produced from them.
- Reports List with column headings and summary information for each report.
- System Coding and variable/file/table naming conventions
- Screen layouts for each data entry screen.
- Report formats for each report.

Program documentation is suggested on the following lines:

- Program id
- Program function explanation
- Data entry screen (reproduced from system documentation).
- Report layout (reproduced from system documentations)
- Program level pseudocode or flowchart.
- Decision tables, decision trees, with English explanation where necessary.
- Program listing
- Test data
- Test results.

3.5 Methodology:

Wherever applicable, object oriented approach should be used for software development. The project report should generally contain details of the following steps (though students should not attempt to fit every kind of project into this format):

(a) Analysis

- Study of existing systems and its drawbacks (general)
- Understanding the functionalities of the system (detailed)
- Preparation of requirement
- Conduct of Feasibility study
- Identification of relevant Objects
- Abstraction of each object (attributed and methods)
- Relationship between objects

(b) Design

- Design of each subsystems
- Design of each classes
- Design of communications between objects
- Design of Algorithms for problem solving
- User interface Design
- Any other steps if necessary

(c) Coding and Implementation

(d) Testing

(e) Security, Backup and Recovery Mechanisms

(f) On line help and User Manuals

(g) Upgradability Possibilities

3.6 Project IPR & Utilisation: The intellectual property rights in all project work done by the students shall vest with IHRD, except in cases where some external organizations seek undertaking from students to concede IPR in all work done in their organization or under their guidance. Where possible, students should attempt to obtain at least a joint IPR for IHRD. In cases where project works are of public utility, students shall be asked to publish their work including source code and documentation, in so far as their rights are clear.

4. REFERENCES

4.1 Core References

- S A Kelkar, Software Project Management, Prentice Hall of India
- W Alan Randolph, Barry Z. Posner, Effective project planning and management, Prentice Hall of India, ISBN 0-87692-776-2

4.2 Additional References

- Greg Mandanis, Software Project Management Kit for Dummies, IDG Books, ISBN 81-265-0100-6
- Joel Henry, Software Project management, ISBN 0-201-75865-2

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1. Question paper pattern

Duration of Exam. : 3 Hrs.

Maximum marks : 100

Part - A Multiple choice / fill in the blanks type questions

Part - B Short Answer type Questions with answer size up to 1 page per question.

Part - C Descriptive type Questions with answer size up to 2 to 3 pages per question.

Marks Distribution

Part	No. of questions.	Need to be answered	Marks/Question	Total
A	20	20	1	20
B	10	8	5	40
C	6	4	10	40
Total		32	...	100

Remarks:

1. Each part should cover questions from each module in the syllabus.
2. The level of difficulty shall be as follows
 - i) Easy Questions : 30% -40%
 - ii) Intermediate level to difficult : 30% -40%
 - iii) Difficult questions : 20% -30%
3. The question paper setters must prepare and submit the question papers as per the following guidelines.
 - i) Question paper must be designed and prepared to fit in an A4 size paper with one inch margin on all four sides.
 - ii) Prepare the Question in MS-Word/Open office-Write document format. Use only "TimesNewRoman" font with size 10. Align text to both left and right margins.
 - iii) Please leave 5 cm. free area at the top of the front page of each question paper to place examination details/Question paper header by the examination department.
 - iv) Avoid placing 1 or 2 questions in the last part in a fresh page, unless it is absolutely necessary. In such case, try to accommodate above questions in the previous page(s) by adjusting top/bottom margins and line spacing, if possible. This will reduce printing expenses.
 - v) Specify marks for each question/part clearly.
 - vi) Clearly specify the number of questions to be answered for each Part.
 - vii) Confirm that no questions in part B is repeated in Part C also.
 - viii) Avoid repeating questions in Part C from the immediate previous examination.
 - ix) Key for evaluation must be prepared and enclosed in a separate cover and should be submitted along with the question paper set. Key for evaluation must specify evaluation guidelines for each part in the question paper, otherwise the key prepared will be treated as incomplete.
 - x) Submit Question paper in Laser print out form only. Hand written and printed in poor quality printers is not acceptable.

[scheme 2010]

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS

2. Scheme for Continuous Evaluation.

1. For Theory Papers : Weightage

- a). Average of minimum Two test papers : 30 %
- b). Average of minimum Two Assignments : 30%
- c). Score for Seminar : 20%
- d). Score for Class Attendance. : 10%
- e). Overall performance in the class. : 10%

2. For Practical Papers : Weightage

- a). Average of minimum Two Lab tests : 30 %
- b). Average of minimum Two Lab Assignments : 30%
- c). Maintenance of Lab record : 20%
- d). Score for Lab Attendance. : 10%
- e). Overall performance in the Lab. : 10%

3. Teachers shall submit Mark list for Continuous Evaluation to the Head of Institution in the following format.

Subject:

Sl no.	Regno.	Name	a.Test	b.Assignment	c.Seminar	d.Attend	e.Performance	Total

4. Head of Institution/Co-ordinator shall forward Continuous evaluation marks to the Examination Department in the following format only.

Centre:

Sl no.	Regno.	Name	PGDCA101 50	PGDCA102 50	PGDCA103 50	PGDCA104 50	PGDCA105 50

5. Continuous evaluation(sessional) marks must be published in the notice board at least one week before the commencement of theory examinations after getting approval from the Head of Institution/Co-ordinator.
