

Syllabus

Diploma in Computer Application (DCA)

***One Year Diploma Course
in
Computer Application***



Computer Centre
SHRI LAL BHADUR SHASTRI NATIONAL SANSKRIT UNIVERSITY
(A Central University established an act of Parliament)
Under Ministry of Education, Govt of India.

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Diploma in Computer Application
(DCA)

Duration	:	01 Year
Credit	:	32 Credits
Semester	:	Two Semester (16 Credit per Semester)
Eligibility	:	10+2 Passed
Medium	:	Hindi/English
Total Course Fees	:	Rs. 10000/-

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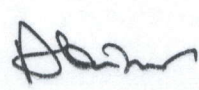

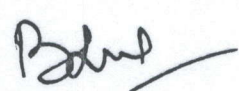
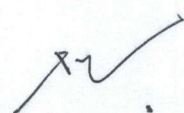
SCHEME FOR DIPLOMA IN COMPUTER APPLICATION

SEMESTER-I:

Paper Code	Paper Title	Scheme		Duration (Hour)	Theory Paper	Practical Exam	Internal Evaluation	Total Marks
		L	P					
DCA-01	IT Tools, Techniques & Applications	3	1	40	50	30	20	100
DCA-02	Problem solving through Python	3	1	40	50	30	20	100
DCA-03	Database Management System	3	1	40	50	30	20	100
DCA-04	Internet & Computer Network	3	1	40	50	30	20	100
Total		16		160				400

SEMESTER-II:

Paper Code	Paper Title	Scheme		Duration (Hour)	Theory Paper	Practical Exam	Internal Evaluation	Total Marks
		L	P					
DCA-05	Web designing and Publishing	3	1	40	50	30	20	100
DCA-06	Programming in PHP	3	1	40	50	30	20	100
DCA-07	Database Design in MySQL	3	1	40	50	30	20	100
DCA-08	Project	0	4	40	0	0	0	100
Total		16		160				400

DCA-01: IT Tools, Techniques & Applications

UNIT 1:

Computer System Concepts, Computer System Characteristics, Capabilities And Limitations, Types of Computers, Basic Components of A Computer System - Control Unit, ALU, Input/output, types of Memory, Printers and Its Types -Dot Matrix, Inkjet, Laser, Plotter, Sound Card And Speakers, Storage Fundamentals Primary Vs Secondary Data Storage And Retrieval Methods, Various Storage Devices.

UNIT 2:

Windows concepts, features and tools, Software and Types of Software, Operating System, Application Software and its Types, Virus, Types of Viruses, Anti-Virus. DOS & its command, Introduction Linux.

UNIT-3

Introduction to Word Processing, document manipulations, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing a Document, Moving, Scrolling in a document, Opening Multi document windows, Editing Text, Selecting, Inserting, deleting, moving text, Previewing documents, Print a document from the standard toolbar, Print a document from the menu, shrinking a document to fit a page, Reduce the number of pages by one, Formatting Documents.

UNIT-4

Working with MS-Excel, data, text, dates, Cell formatting values, saving, Toolbars and Menus, Working with single and multiple workbook – coping, renaming, moving, adding and deleting, coping entries and moving between workbooks, Working with formulas & cell referencing, selecting ranges, sorting, Formatting of worksheet, Previewing & Printing worksheet, Introduction of Photoshop – Tools, Designing, Layers etc. Introduction of power point and working with power point.

Reference Book:

- 1 Sinha, P.K.(2007). *Computer Fundamentals*. New Delhi: BPB Publications.
2. Mukhi, Vijay (2008). *Working with UNIX*. New Delhi: BPB Publications.
3. Rajaraman, V. (2014). *Fundamental of Computer*. New Delhi: Prentice Hall India Pvt. Limited.

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DCA-02: Problem solving through Python

UNIT 1:

Introduction to Python, Running your first Python Programs, Writing Python Code, Python "Hello" programme, Python Data Types and Variables, Define Python syntax - Using Numeric Variables, Using String Variables Printing with Parameters, Getting Input from a User, String Formatting.

UNIT 2:

Flow Control, list operations, Strings and special kinds of special kind of string lists, Tuples, Sets, Dictionaries, Functions.

Conditional formation, creating Logical Expressions, syntax of looping, format of operators and conditionals. "if" & "Else" Statement, Operators & condition format with loops and within loops, and More Complex expressions

UNIT 3:

Function, Class and Objects, Function Inputs and Outputs, Local and Global Scope Python Classes, Thinking about Objects, Class Variables and Methods, Managing Class Files

Error Handling, Troubleshooting, Important Tools, Using the Python Debugger.

UNIT 4:

Working with Files, Errors and Exception Handling, Modules, Packages, Regular Expressions, Python Classes, Object programming.

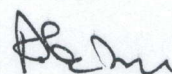
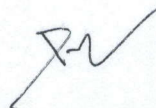
Introduction to NumPy Basics: Work on NumPy array manipulation to access data and subarrays and to split, reshape, join arrays etc.

References:

Learning Python, 5th Edition Fifth Edition by Mark Lutz

Python Cookbook, Third edition 3rd Edition by David Beazley, Brian K. Jones

Python Crash Course: A Hands-On, Project-Based Introduction to Programming 1st Edition by Eric Matthes



DCA-03: Database Management System

UNIT 1:

Introduction: An overview of database management system, database system Vs file system, Database system concept and architecture, data model schema and instances, data independence and database language and interfaces, data definitions language, DML, Overall Database Structure.

UNIT 2:

Data Modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to tables, extended ER model, relationship of higher degree

UNIT 3:

Relational data Model and Language: Relational data model concepts, integrity constraints, entity integrity, referential integrity, Keys constraints, Domain constraints, relational algebra, relational calculus, tuple domain calculus.

UNIT 4:

Data Base Design & Normalization: Functional dependencies, normal forms, first, second, & third normal forms, BCNF, inclusion dependence, loss less join decompositions, normalization using FD, MVD, and JD alternative approaches to database design.

References:

1. Korth, Silbertz, Sudarshan, " Database Concepts", McGraw Hill
2. Date C J, " An Introduction to Database Systems", Addison Wesley
3. Elmasri, Navathe, " Fundamentals of Database Systems", Addison Wesley

DCA-04: Internet & Computer Network

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UNIT 1:

Definition of Internet, Internet organization and committees, Internet, Growth of Internet, Anatomy of Internet, Internet Application, Portals, Introduction about WWW, Definition of DNS (Domain Name System), IP Address.

UNIT 2:

Introduction about search engines (Mozilla, Netscape, Opra) Email, Digital Marketing Introduction about mail protocol (SMTP, MME), X.25, Frame relay, PPP, NNTP, SMPT, etc.

UNIT 3:

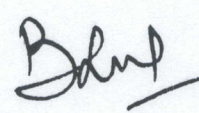
Introduction of Computer Network, purpose of network, real time usage, Definition of Networks, Types of Network, Topologies, PSTN, PSDN, VAN ISDN, PDNS, Wide Area Network.

UNIT 4:

OSI References method, TCP/IP model, FTP, HHTTP, HTTPS, Addressing in Internet (Class A,B,C,D,E) Definition of Ethernet, Intranet, Telnet, Wireless communication, Virtual Circuits, ISDN model, CSMA/CD, Explanation of all layers of OSI and TCP/IP Model.

References:

- S. Tanenbaum (2003), Computer Networks, 4th edition, Pearson Education/ PHI, New Delhi, India.
- Behrouz A. Forouzan (2006), Data communication and Networking, 4th Edition, Mc Graw-Hill, India.
- Kurose, Ross (2010), Computer Networking: A top down approach, Pearson Education, India.



DCA-05: Web Designing and Publishing

UNIT 1

Introduction to Web Design Introduction of Internet, WWW, Website, Working of Websites, Webpages, Front End, Back End, Client and Server Scripting Languages, Responsive Web Designing, Types of Websites (Static and Dynamic Websites).

Editors Downloading free Editors like Notepad++, Sublime Text Editor, Making use of Editors, File creation and editing, saving.

UNIT 2:

HTML 5 Introduction, HTML Basics, Head Section and Elements of Head Section, Formatting Tags, Div, Pre Tag Anchor links and Named Anchors Image Tag, Paragraphs, Comments, Tables, Lists, HTML Form, Form Elements, Frames, Page layout Semantic elements- Header, Section, Nav, Article, Aside, footer, Form Validations - Require Attribute, Pattern Attribute, Autofocus Attribute, email, number type, date type, Range type. HTML Media (Audio/ Video)

UNIT 3:

Introduction to CSS, Types of CSS, CSS Selectors: Universal Selector, ID selector, Tag Selector, Class Selector, Sub Selector, Attribute Selector, Group Selector, CSS Properties: Back Ground properties, Block Properties, Box properties, List properties, Border Properties, Positioning Properties, CSS Lists CSS Tables, CSS Menu Design CSS Image Gallery, CSS Framework Web Site Development using Bootstrap/W3.CSS.

JavaScript Introduction to Client Side Scripting Language, Variables in Java Script, Operators in JS, Conditions Statements, JS Popup Boxes, JS Events, Basic Form Validations in JavaScript, Java Scripts function.

UNIT 4:

Web Publishing and Browsing Overview, SGML (Standard Generalized Markup Language), Web hosting Basics, Documents Interchange Standards, Components of Web Publishing, Document management, Web Page Design Considerations and Principles, Search and Meta Search Engines, WWW, Browser, HTTP, Publishing Tools.

References:

1. HTML5, Black Book, Kagent Learning Solution Inc, 2014
2. Mastering HTML, CSS & JavaScript Web Publishing by Lemay Laura, BPB publications
3. HTML & CSS: The Complete Reference by Thomas Powell

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DCA-07: Database Design in MySQL

UNIT 1:

Introduction of MySQL, Features, Installation of MySQL, Introduction of phpMyAdmin, Data Types, Primary Keys, Null values and Not Null Values, Auto Increment, Use the Where clause, Conditional statements, Multiple conditions ,

UNIT 2:

Data Definition Language - CREATE Database, Select Database and Drop database, Create table, Alter table, truncate table, drop table and MySQL views.

MySQL Operators, Logic Values, Null Values, Patterns also known as Wildcard characters, Compare Column Values, Group Data ,Filtering.

UNIT 3:

MYSQL Queries: Data Manipulation Language - INSERT, UPDATE, DELETE, SELECT, MySQL clauses where, distinct, from, order by , group by ,MySQL Conditions – AND, OR, AND/OR, LIKE, IN, NOT, IS NULL, IS NOT NULL, BETWEEN, MySQL aggregate Functions, MySQL Date Time Functions.

SQL JOINS - Inner Join, Left Outer Join, Right Outer Join, Saving the Query Results and, Exporting Generating Reports

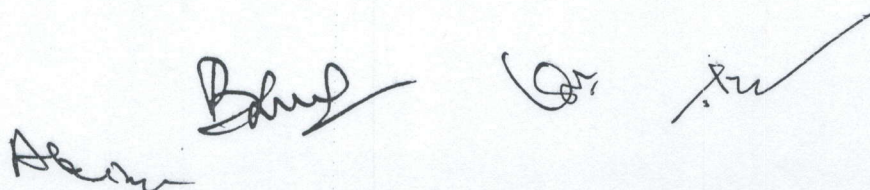
UNIT 4:

Importing and Exporting Data, Update Data, Distinct Values, Top Values, Sub queries with "In", Inline Views, Create a Simple View, With Check Option

References:

1. A Hands-On Guide to Relational Database Design 3rd Edition by Michael J. Hernandez
2. The Beginning Database Design Solutions by Rod Stephens
3. SQL Antipatterns: Avoiding the Pitfalls of Database Programming By Bill Karwin

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DCA-06: Programming in PHP

UNIT 1:

Introduction to PHP, Evaluation of Php, Basic Syntax, Defining variable and constant, Php Data type, Operator and Expression.

UNIT 2:

Handling Html Form With Php, Capturing Form Data, Dealing with Multi-value filed, Generating File uploaded form, Redirecting a form after submission, Decisions and loop, Making Decisions, Doing Repetitive task with looping, Mixing Decisions and looping with Html.

UNIT 3:

What is a function, Define a function, Call by value and Call by reference, Recursive function, String, Creating and accessing String, Searching & Replacing String, Formatting String, String Related Library function. Array, Anatomy of an Array, Creating index based and Associative array, Accessing array Element, Looping with Index based array, Looping with associative array using each() and foreach(), Some useful Library function.

UNIT 4:

What is OOP, Classes/Objects, Constructor, Destructor, Access Modifiers, Inheritance, Constants, Abstract Classes, Interfaces, Traits, Static Methods, Static Properties, and Namespaces.

References:

1. The Joy of PHP Programming: A Beginner's Guide – by Alan Forbes
2. PHP & MySQL Novice to Ninja – by Kevin Yank
3. Head First PHP & MySQL – by Lynn Beighley & Michael Morrison

DCA-08: Project

second semester student are required to develop a project. To complete the second semester, students need to submit followings:

1. Project Report
2. Project working code.

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