

SWAMI VIVEKANAND UNIVERSITY, SIRONJA, SAGAR (M.P.)



SYLLABUS

For

**Diploma in Information Technology
Semester -V**

**Swami Vivekanand University, Sironja Sagar
2014-2015**

Swami Vivekanand University, Sironja Sagar (M.P.)

Swami Vivekanand Vishwavidyalaya, Sagar

CREDIT BASED GRADING SYSTEM

Program Name: Three Year Diploma

Scheme for Diploma in Information Technology

Name of Scheme: CGPA

w.e.f. Session-July-2013

Scheme of Studies and Examination for FIFTH SEMESTER

COURSE CODE	COURSE TITLE	THEORY BLOCK							PRACTICAL BLOCK						Practical Credit	Total Credit	Grand Total of Marks
		Lectures	Continuous Evaluations		End of Term / Semester Evaluations			Theory Credit	Practical	Continuous Evaluations	End of Term / Semester Evaluations						
		Hrs per Week	Term Work, Quiz, Assignment	Mid Term Test(Two)		Theory Paper			Hrs per Week	Lab Work, Quiz, Assignment	Practical/ Oral Examination (VIVA-VOCE)						
				I	II	No.	Marks				Durations	No.	Marks	Durations			
DCIT-501	Networking with Transmission Control Protocol (TCP) / Internet Protocol (IP)	04	10	10	10	01	70	03	04	02	20	01	30	03	02	06	150
DCIT-502	Java Programming	04	10	10	10	01	70	03	04	02	20	01	30	03	02	06	150
DCIT-503	Wireless Communication and Mobile Computing	04	10	10	10	01	70	03	04	-	-	-	-	-	-	04	100
DCIT-504	Software Engineering	04	10	10	10	01	70	03	04	02	20	01	30	03	02	06	150
DCIT-505	Elective –I (Refer table below)	04	10	10	10	01	70	03	04	02	20	01	30	03	02	06	150
	TOTAL	20	50	50	50	05	350	15	20	08	80	04	120	12	08	28	700

Theory Credit : 20

Theory Marks : 350

Practical Credit : 08

Practical Marks : 120

Quiz, MST, Lab Work : 230

TotalCredit : 28

TotalMarks : 700

Elective – I	
5051	Dot Net Technologies
5052	Advanced Web Technology

Minimum Pass Grade in Theory and Practical : "D"

DCIT-501

Networking with Transmission Control Protocol (TCP)/Internet Protocol (IP)

UNIT – 1

Introduction

Transmission Control Protocol Suit. Addressing – Logical Address, Physical Address, Port Address, IP Versions, Connecting Devices: - Repeater, Hub, Bridge, Router. Classful Addressing: Recognizing Classes, Netid And Host Id, Classes and Blocks, Network Addresses, Masking, CIDR Notion, Multi Homed Devices, Special Addresses, Private Addresses, Unicast, Multi Cast, Broadcast Addresses, Subnetting, Super Netting, Subnet Mask, Supernet Mask. Delivering , Forwarding and Routing Of IP Packets. Delivery :- Connection Type, Direct Versus Indirect Delivery Forwarding:- Forwarding Techniques, Forwarding With Classful Addressing And Classless Addressing. Routing:- Static Versus Dynamic Routing , Routing Table. Structure Of Router, ARP, RARP.

UNIT – 2

Internet Protocol

Internet Protocol Datagram, Fragmentation:- Maximum Transfer Unit (MTU), Field related to fragmentation, Checksum calculation at the sender, Checksum calculation at the receiver. ICMP (Internet Control Message Protocol), Types of messages, Message Format, Error Reporting – Destination Unreachable, Source Quench, Query:- Echo request and replay, Time Stamp Request and Replay, Debugging Tools :- Ping, Trace-route. IGMP (INTERNET GROUP MANAGEMENT PROTOCOL) Message Format, Joining a Group, Leaving a Group, Monitoring Membership.

UNIT – 3

Transmission Control Protocol (TCP)

TCP Services, Process To Process Communication, Stream Delivery Service, Full Duplex Communication, Connection Oriented Service, Reliable Service, TCP Features- Numbering System, Flow Control, Error Control, Congestion Control , Segment- Format, Encapsulation, Connection Establishment, Data Transfer, Connection Termination. Flow Control-Sliding Window Protocol, Silly Window Syndrome Error Control-Checksum, Acknowledgement, Retransmission, Congestion Control.

User Datagram Protocol (UDP)

User Datagram Protocol (UDP) - Process To Process Communication, Port Number, Socket Address, User Datagram, Checksum Calculation at Sender and Receiver, UDP Operation.

UNIT – 4

Routing

Routing Protocol, Intra And Inter domain Routing, Distance Vector Routing- Initialization, Sharing, Updation, RIP- , Message Format, Request And Response , Link State Routing, OSPF-Areas, Metrics, Types Of Link, Graphical Representation, OSPF Packet. Host Configuration- Bootp And DHCP BOOTP- Operation, Packet Format, DHCP- Static Address Allocation, Dynamic Address Allocation, Manual And Automatic Configuration, Packet Format, Transition States, Exchanging Messages.

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Unit – 5

Host Configuration

Host Configuration- Bootp And DHCP BOOTP- Operation, Packet Format, DHCP- Static Address Allocation, Dynamic Address Allocation, Manual And Automatic Configuration, Packet Format, Transition States, Exchanging Messages.

Services

Domain Name System (DNS) Flat Name Space, Hierarchical Name Space, Domain Name Space, Distribution Of Name Space, DNS In Internet, Resolution:-Resolver, Mapping name to address, Mapping address to name. Telnet, FTP, TFTP, Email Protocol:- SMTP, POP, IMAP. Private Networks, Virtual Private Network, Network Address Translation, Ipv6:-Address Space Assignment, Packet Format, Comparison between IPv4 and IPv6, ICMPv6:- Error Reporting. Transition from IPv4 to IPv6:-Dual Stack, Tunneling, Header translation.

ReferenceBooks:

1. B. A. Fourozan, TCP/IP Protocol Suite, Tata McGraw Hill
2. Internetworking with TCP/IP, Douglas E. Comer, Publisher- PHI, New Delhi
3. Computer Networks, Andrew S Tanenbaum, Publisher- PHI, New Delhi
4. TCP/IP Illustrated by Richard Stevens, Publisher- Addison –Wesley.

Listofexperiments

1. Observation and Study of Various Network component and Devices.
2. Installation and configuration of various types of Network Devices like Switches and Routers.
3. Identifying valid IP Addresses, Defining Subnet IDs and Host IDs.
4. DHCP, BOOTP, DNS, FTP, TFTP, VPN, Telnet Configuration.
5. Designing a network system for an organization using TCP/IP Network using
 - a. Class A address
 - b. Class B address
 - c. Class C address
6. Design a Network using IPv6 addressing.
7. Router Configuration using RIP , OSPF protocol.

DCIT-502

Java Programming

UNIT – 1

OVERVIEW OF JAVA LANGUAGE

JAVA and its support systems, JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, C++ Versus JAVA, Constants & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting, Operators: Arithmetic, Relational, Logical Assignments, Increment & Decrement, Conditional, Bit wise, Special, Expressions & its Evaluation. Control statements: If statements and its variant, Switch statement, ? Operator, While loop, Do while loop, For loop, Break and continue, Labeled Loops.

CLASSES, OBJECTS & METHODS

Defining a Class, Adding Variables & Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance: Extending a Class, Overriding Methods, Concept of public, private and protected, Final Variables & Methods, Final Classes, Finalizer Methods, Abstract methods & Classes, Static class, Visibility Control.

UNIT – 2

JAVA PACKAGES

Arrays : One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interfaces Variables, Systems Packages, Using System Packages, Naming Conventions, Creating Packages, Accessing a Package, Using Package, Adding a Class to a Package, Hiding Classes.

MULTITHREADED PROGRAMMING

Creating Threads, Extending the Threads Class, Stopping & Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, basic exception handling, Threads Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface.

UNIT – 3

APPLET PROGRAMMING

Local & Remote Applets, Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

UNIT – 4

JDBC

Understanding JDBC, JDBC Architecture, types of JDBC driver, Register JDBC driver, establish a database connection, execute an SQL statement, process the result, close the data base connection.

Unit – 5

File handling and simple GUI Design

Introduction, Data records, reading and writing to text files, simple GUI design JOptionPane class, message dialog-presenting information to user, input dialog-reading data from the user, confirmation dialog - getting confirmation from user.

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TextBooks:

1. E. Balaguruswami, Programming in Java, 2nd Edition, TMH Publications.
2. Herbert Shield, Java complete reference TMH publication.

ReferenceBooks:

1. Peter Norton , Peter Norton Guide to JAVA Programming, Techmedia Publications.
2. Stroker, Plew, 1998, An introduction to JAVA, Thomson learning.

ListofExperiments

1. Programs using various decisions making & looping statements of JAVA.
2. Programs to demonstrate the use of array, Class & packages.
3. Programs using Concept of public, private and protected, Final Variables & Methods.
4. Programs using Final Classes, Finalizer Methods, Abstract methods & Classes, Static class, Visibility Control.
5. Program for creating & extending thread.
6. Programs to demonstrate the use of multiple threads.
7. Programs to create an applet for "HELLO" & call this in HTML.
8. Programs to demonstrate the use of various applet tags,
9. Designing data entry forms using various building blocks at client side.
10. Program to connect single & multiple databases using JDBC concept.
11. Program to read & write a text file.
12. Program for GUI design using JOptionPane class.

DCIT-503

Wireless Communication and Mobile Computing

UNIT – 1

Introduction to wireless technology

Comparison of wired and wireless mechanism, Basic equipments in wireless communication: Wireless access point, Wireless access cards, routers etc., various types of wireless communication technologies used in Mobiles, Antennas etc. Concept of spread spectrum, various types of spread spectrum, spreading sequences.

UNIT – 2

Wireless LAN

Wireless local loops, Wireless access protocols, Various types of wireless LAN technologies like infrared, microwave LANs etc., IEEE 802.11x standards for wireless LANs.

UNIT – 3

Cellular system infrastructure

Cell fundamentals: Cell site, cell capacity, frequency reuse, clustering, co channel interference, Cell splitting, cell sectoring, Mobile station(MS), Base transceiver station (BTS), Mobile switching Center (MSC), Functions of MSC, Base station system, Base station control, HLR, VLR, Mobile station(MS) registration.

UNIT – 4

GSM Technology

GSM network architecture, GSM channel concepts: logical channels, Broadcast channel, Common control channel & dedicated control channel, GSM identities: Mobile station associated numbers, Network Numbering plans, mobile station roaming number, GSM system operation: GSM call setup phase, GSM call confirmation and call accepted, GSM location updating, GSM Connection release. Overview of CDMA technology. Reflection & Propagation models:- Mobile radio propagation, Ground reflection model, Diffraction sculpturing, indoor propagation models, Outdoor propagation models, Ray tracing.

UNIT – 5

Evolution and Deployment of cellular system

Short Message Services (SMS), Enhanced Message services(EMS), Multimedia Message Services (MMS) & Mobile Instant Messaging(MIM), 1G cellular Systems, 2G cellular Systems, 2.5G cellular Systems, 3G cellular Systems, 4G cellular Systems, Emerging wireless technologies

ReferenceBooks:

1. "Wireless Communication and Networks" by William Stallings, 1st edition.
2. "Wireless and Mobile Network Architectures" by Yi-Bing Lin and Imrichchlamtac
3. Wireless & Cellular Telecommunications, 3/e, Dr. William C.Y. Lee, TMH
4. Introduction to Wireless telecommunication systems and networks, Mullett, cengage learning.
5. Wireless Communication : Principle and practice – T.S. Rappaport
6. Mobile Communication – Schwartz
7. "Introduction to wireless and mobile systems" - 2nd edition by Dharmprakash Agrawal & Qing- An Zeng, Cengage Learning, Indian edition.
8. "Wireless Communication", T.L.SINGAL TMHI NEW DELHI.

DCIT-504

Software Engineering

UNIT – 1

INTRODUCTION TO SOFTWARE ENGINEERING

Software characteristics, Software myths. Components, application; process, methods, tools & view of S/E; software process Capability Maturity Model, life cycle models (water fall, incremental, spiral, RAD, prototyping, object oriented) fourth generation model.

UNIT – 2

SOFTWARE PROJECT PLANNING

Responsibilities of Software Project manager, Project planning Objective, Software scope, Software project estimation technique, Decomposition techniques, Estimation models, Scheduling, staffing, Risk Management, Software configuration Management.

SOFTWARE REQUIREMENT ANALYSIS, SPECIFICATION & MODELING

Analysis principles, system specification, software requirement specifications, functional specifications, software prototyping, specification, data modeling, data flow diagrams, ER Diagram, Mechanics of structured analysis, data dictionary.

UNIT – 3

OBJECT –ORIENTED CONCEPT

Object Oriented Concepts, Unified Modeling language Diagram (Use Case Diagram, Class Diagram, Sequence Diagram, State Chart Diagram) Elements Of Object Modeling, Management Of Object Oriented Software Projects, Object Oriented Analysis, Domain Analysis, OOA Process Conventional v/s OO Approach, Object –Relationship Model.

UNIT – 4

DESIGN CONCEPT PRINCIPLE AND METHODS

Design Process, Design Principles, Design Concepts, Effective Modular Design, Design Documentation, Architectural Design, and Architectural Design Process - Optimization, Procedural Design.

UNIT – 5

SOFTWARE TESTING

Software Testing Fundamentals: Principles & objectives, V model. Testing Methodology: Unit Test, Integration Test, Functional testing, System Testing, Acceptance test, White Box & Black Box testing techniques Gray box testing, Retesting and Regression testing, Debugging & reliability Analysis. Testing Documentation: Test Requirement, Test Plan, Test case design and execution (Study of manual testing tool : Quality center) Software Reliability And Quality Management: Concepts of S/W Quality Control and Assurance, Software Reliability, ISO 9000 & 9001, Standard SEI –CMM15.

SOFTWARE IMPLEMENTATION AND MAINTAINANCE

Characteristics reverse engineering, maintenance process model, estimation of maintenance cost.

TextBooks:

1. Roger S. Pressman, Software Engineering A Practitioner's Approach, McGraw Hill,

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ReferenceBooks:

1. Software engineering A Precise Approach by Pankaj Jalote's, Wiley India.
2. Rajib Mall, Fundamental of Software Engineering, PHI.
3. Software Engineering by Kassem A. Saleh J.Ross Publishing
4. Ron Patton, Software Testing, BPB.
5. Gazzi, Fundamental of Software Engineering, PHI.
6. Maryhauser Anneliese Von, Software Engineering Methods Management, Academic Press.
7. Wirts Brock Elal, Designing object oriented software, PHI.
8. Rajaraman V, Analysis and Design of Information System, PHI.

DCIT-505* Elective – I (DCIT-5051 Dot Net Technologies)

UNIT – 1

Introduction to .NET

Introduction to Microsoft.Net Framework, Building blocks in .Net, Drawback of previous languages, Understand .Net, Common language runtime (CLR), Common type system (CTS), Difference between ASP and ASP.Net, Introduction to IIS, web application and its usage, ASP.Net IDE Visual studio .Net, Creation of web forms, Using web form controls.

UNIT – 2

ASP.Net Objects and components

Response object, Server object, Application object, Session object, ASP.Net scope, state, view state, post back and configuration, Object Creation: Scripting, Drive, Folder, File, Use of object, Server Components: Ad Rotator, Content Linker, Browser Capabilities Use and Creation of global.asa file, Application object: Events, Methods and collections, Example, Session object: Enabling and disabling of session, Event, Properties, Method, Collection.

UNIT – 3

ADO.Net

ADO.Net in ASP.Net: Connection, Dataset and data reader, Data table and data row, Web.config introduction, Binding data with data grid, Accessing and manipulating data, ADO .Net: Server control templates and data binding techniques, Data access in .Net using ADO.Net, Server control templates available for data binding like repeater, data list and data grid controls.

UNIT – 4

ASP Transactions and e-mail

Transactions, Transaction db design, CDONTS object, Email sending web page creation.

UNIT – 5

Working with XML in ASP.NET

Basics of XML, XML support in .NET, XML Validation Overview, XML Parsing API's in .NET, Parsing XML with the XmlTextReader, Parsing XML using DOM Objects, Generating XML with the XmlTextWriter, Introduction to XSLT, Transforming XML using .NET's XSLT classes, Viewing relational data as XML, Dataset XML Properties and Methods, Using the XmlDataDocument Class Syncing between DataSets and XmlDataDocuments.

ReferenceBooks:

1. G. Andrew Duthie Microsoft ASP.Net, Step, Microsoft .Net.
2. Programming with C#.NET by J.G.R. Sathiseelan and N. Sasikaladevi ,PHI Learning.
3. Stephen Walther, ASP.Net Unleashed, SAMS.
4. Microsoft ASP.NET 4.0 Step by Step by Shepherd, PHI Learning.
5. Jesse Liberty, Dan Hurwitz-Programming ASP.Net.
6. Dave Mercer-ASP.Net, TMH.

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List of experiments

1. Design registration form of polytechnic college using text box, text area, radio list, check list, and button etc. using Autopostback property.
2. Design application for following function:
(1) Login (2) Surfing (3) Logout taking into considerations (Application, Session, Server object, global.asa file and their events, methods and collection) also demonstrate enabling and disabling of session).
3. Creation of file, entry, reading data from a file.
4. Create following using components:
(1) Advertisement (using Adrotator)
(2) Book example (using Next function)
(3) Find capabilities of browser (Browser object capabilities)
5. Online application (student, employee, product, shopping mall)
(a) Using dataset, datareader
(b) Using datatable and datarow (use datagrid to display data)
(c) Bind data to datagrid using properties/templates
(d) Display details (student, employee, product, etc.) using data list (4 cols per line).
6. Application to send email.
7. Using the Xml Text Reader to Parse XML.
8. Creating XML Documents with the Xml Text Writer.
9. Examining the Web. config File.

DCIT-505* Elective - I (DCIT-5052 Advanced Web Technology)

UNIT – 1

INTRODUCTION

History, Current and Future Versions of MySQL and PHP, How to Get MySQL, Installing MySQL on Windows, Trouble Shooting your Installation, Basic Security Guidelines, Building PHP on Windows with Apache, Windows, php.ini. Basics, The Basics of PHP scripts. The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output.

UNIT – 2

BASIC WORKING

Working with Functions: What is function?, Calling functions, Defining Functions, Returning the values from User-Defined Functions, Variable Scope, Saving state between Function calls with the static statement, more about arguments. Working with Arrays: What are Arrays, Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance Working with Strings, Dates and Time: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

UNIT – 3

WORKING WITH FORMS

Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, Working with File Uploads.

UNIT – 4

MYSQL BASICS

Understanding the database design process: The Importance of Good Database Design, Types of Table Relationships, Understanding Normalization. Learning basic SQL Commands: Learning the MySQL Data types, Learning the Table Creation Syntax, Using Insert Command, Using SELECT Command, Using WHERE in your Queries, Selecting from Multiple Tables, Using the UPDATE command to modify records, Using the DELETE Command, Frequently used string functions in MySQL, Using Date and Time Functions in MySQL.

UNIT – 5

PHP WITH MYSQL

Interacting with MySQL using PHP: MySQL Versus MySQLi Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record.

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Reference Books:

1. Sams, Teach Yourself PHP in 24 Hours, Third Edition
2. Wrox, Beginning PHP, Apache, MySQL Web Development.
3. Web enabled commercial application development using HTML, DHTML, JavaScript, Perl CGI, Ivan Bayross, BPB.
4. Learning PHP & MySQL: Step-by-Step Guide to Creating Database-Driven Web Sites by Michele Davis and Jon Phillips.
5. Web Technologies by Godbole, Tata Mc Graw.
6. Html: Css/ Javascript/ Dhtml (I Performance Series) by Steven E. Callihan.
7. Web programming Building Internet Applications, Chris Bates, Wiley.

List of experiments

1. Write a program to print PHP information.
2. Create a web page HTML and execute a PHP file on submission of the HTML form and display the information using PHP.
3. Write a program to find the factorial of a number and display.
4. Write a program to implement the concept of if-else and while loop.
5. Write a program to show that array is received on server side during multiple options in SELECT.
6. Write a program to show the concept of cookie.
7. Write a program to redirect the browser.
8. Write a PHP script showing function call.
9. Write a program in PHP to create a file and write the data into it.
10. Create a database of an employee in MySQL.
11. Write a program to connect to the database already created in MySQL.
12. Write a program to read, write, update and delete the database using PHP.