Department of Computer Sciences
NORTH MAHARASHTRA UNIVERSITY, JALGAON – 425 001

COURSE STRUCTURE WITH CREDIT

M.Sc. (Information Technology)

	Course	Marks	Hour/week	Credit	Total
	IT-101	100	04	04	
	IT-102	100	04	04	
	IT-103	100	04	04	
Semester-I	**IT-104**	100	04	04	**28**
	IT-105	100	04	04	
	IT LAB-I	100	06	04	
	IT LAB-II	100	06	04	
	IT-201	100	04	04	
	IT-202	100	04	04	
	IT-203	100	04	04	
Semester-II	**IT-204**	100	04	04	**29**
	IT-205	100	04	04	
	IT LAB-III	100	06	04	
	IT LAB-IV	100	06	04	
	Seminar	25	01	01	
	IT-301	100	04	04	
	IT-302	100	04	04	
	IT-303	100	04	04	
	IT-304	100	04	04	
Semester-III	**IT-305**	100	04	04	**31**
	IT LAB-V	100	06	04	
	IT LAB-VI	100	06	04	
	Softskill Development Course	75	02	03	
Semester-IV	**Industrial Training/Project**				**12**

NORTH MAHARASHTRA UNIVERSITY, JALGAON
Department of Computer Science

Proposed SYLLABUS for M. Sc. (Information Technology)
(With effect from June-2010)

Semester-I

IT-101 Advanced Operating Systems
IT-102 Advanced DBMS
IT-103 Object Oriented Analysis & Design
IT-104 Modern Concepts in C++ Programming
IT-105 Web Designing and Navigation
IT-Lab-I Lab on DBMS & C++
IT-Lab-II Lab on OS Administration & Web Designing and Navigation

Semester-II

IT-201 Advanced Java-I
IT-202 Web Publishing & Data Storage Technologies
IT-203 Windows Programming & VC++
IT-204 C# using .NET Framework
IT-205 Internet Programming
IT-206 Seminar
IT-Lab-III Lab on C# and .NET & PHP
IT-Lab-IV Lab on VC++ and Windows Programming & Java Programming-I

Semester-III

IT-301 Software Engineering
IT-302 Current Computing Trends-I
IT-303 Current Computing Trends-II
IT-304 Advanced Java-II
IT-305 Network Programming
IT-306 Soft Skills Development
IT-Lab-V Lab on Current Computing Trends I & II
IT-Lab-VI Lab on Network Programming & Java Programming-II

Semester- IV

IT-401 Full Time Industrial Training

Semester- I

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Course Code: IT-101

Title: Advanced Operating Systems

Unit I:
Review of Linux OS, Server Management, FTP Servers, Web Servers: APACHE, DNS, DHCP Server. Mail Server: SMTP, POP, IMAP, Network Administration, Configuring Network Connections, NFS, NIS, Samba, Administering TCP/IP Networks.   **[05]**

Unit II:
Review of Shell Programming, Working with Files, UNIX file structure, system calls and device drivers. Library functions. Low level access, standard I/O library, file and directory Maintenance, scanning directories.   **[06]**

Unit III:
Unix environment- Program arguments, environment variables, time and date, temporary files, user information, host information, logging, resources and limits Curses - concepts, initialization and termination, output to the screen, reading from the screen, cleaning, screen moving the cursor, character attributes, keyboard, windows, subwindows, keypad Color, pads.   **[10]**

Unit IV:
MySQL database installation and administration, accessing MySQL data from C, Development tools make command and make files.   **[05]**

Unit V:
Processes and signals, Process structure, starting new processes, signals posix thread, advantages and disadvantages of thread, synchronization, thread attribute, canceling thread, threads in abundance.   **[14]**

Unit VI:
Programming GNOME using GTK, GNOME architecture desktop, Programming in GNOME using GTK+, GTK+GNOME libraries, glib, GTK+ GNOME basic.   **[10]**

References:
i)   Richard L. Peterson, "The Complete Reference Linux", fifth edition, Tata McGraw Hill 2003, ISBN 0-07-052849-7.
ii) Neil Mathew & Richard stone, "Beginning Linux Programming", Third edition, Wrox publication, 7th Indian reprint 2003. ISBN:- 81-265-0484-6
iii) Richard stones & Neil Mathew, "Beginning Linux Programming", second edition, Apress publication, 4th Indian reprint 2003, ISBN:- 81-7366-200-2

Course Code: IT-102
Title: Advanced DBMS

Unit I:
Database System Architecture:
Centralize d System, Client-Server Database, Parallel and Distributed System, Server System Architectures, Network types. **[10]**

Unit II:
Object Oriented & Object Relational Databases:
Concepts of Object, Need for complex data types, Introduction to object and object database, Object oriented data model, Persistent programming languages. **[10]**

Unit III:
Distributed Databases:
Introduction, Homogeneous and Heterogeneous Distributed Databases, Networks, Design issues, Distributed Query Processing. Distributed Transactions. Concurrency Control, Deadlocks in Distributed Systems. **[10]**

Unit IV:
Parallel Databases;
Introduction, I/O Parallelism, Interquery Parallelism, Intraquery Parallelism, lntraoperation Parallelism, Interoperation Parallelism. **[10]**

Unit V:
Advance Transaction Processing:
TP Monitors. Real Time Transaction. Transaction Workflow, Long Duration Transaction, Transaction Management in Multidatabase. **[10]**

References:
1) Database System Concepts Silberschatz, Korth, Sudarshan McGraw Hill International Publication, International Edition.
2) Introduction to Distributed Databases by Ozu, Pearson Publication.

Course Code: IT-103

Title: Object Oriented Analysis and Design

Unit I Object Oriented Analysis:

Identifying Usecase – Business object analysis – Usecase driven object oriented analysis – Usecase model – Documentation – Classification – Identifying object, relationships, attributes, methods – Super-sub class – A part of relationships Identifying attributes and methods – Object responsibility

[10]

Unit II Object Oriented Design:

Design process – Axions – Colollaries – Designing classes – Class visibility – Refining attributes – Methods and protocols – Object storage and object interoperability – Databases – Object relational systems – Designing interface objects – Macro and Micro level processes – The purpose of a view layer interface

[10]

Unit III

What is object Orientation, What is OO Development, Modeling as a Design Technique, Class Modeling, Advanced Class Modeling, State Modeling, Advanced State Modeling, Interaction Modeling, Advanced Interaction Modeling **[15]**

Unit IV

Process Overview, System Conception, Domain Analysis, Application Analysis, System Design, Class Design **[10]**

Unit V

Implementation Modeling, OO Languages, Databases, Programming Style **[05]**

References:

1. Object Oriented Modeling and Design with UML Second Edition, Michael Bhala, James Rumbaugh, Prentice Hall of India, ISBN:81-203-3016-1

2. Ali Bahrami, "Object Oriented System Development", McGraw Hill International Edition, 1999.

3. Booch, Jacobson, Rumbaugh, Object Oriented Analysis and Design with Applications, Third Ed., Pearson Education, 2010.

Course Code: IT-104

Title: Modern Concepts in C++ Programming

Unit I:

Review of basic C++ concepts like data type, control structure, classes, structure, Inheritance, Polymorphism. **[04]**

Unit II:

Pointers, pointer arithmetic, string literals, pointers in to arrays, constants and pointers, references, void Pointer, operator overloading, pointer to class members [fields functions] **[08]**

Unit III:

Exception handling, Error handling, grouping of exceptions, catching exceptions, exceptions and new. Exceptions in constructor and destructor, exception specification, uncaught exceptions, standard exceptions. **[04]**

Unit IV:

RTTI, RTTI constituents, cost of RTTI, namespaces, using namespaces, avoiding name clashes, name lookups, namespace composition, namespaces aliases, Namespace and 'C' code. **[06]**

Unit V:

Templates, class templates, string template, instantiation, template parameters, type checking, function templates, template argument deduction, specifying template arguments, function template overloading, default template argument, specialization, derivation and templates, member template, convergence. **[08]**

Unit VI:

Standard Ternplate Library (STL), STL generic Programming, organization of STL, header filers, containers, container types, Sequence containers, sorted associated containers: iterators, integrator types, generic STL algorithms, function object, container adaptors, iterator adapter, function adaptors. **[20]**

References:

1. Danny Kaleve, "The ANSI'ISO C++ Professional programmer's Handbook" Printice hall India .Indian Reprint, 1999, ISBN 81-203-1630-4.
2. Bjarne Stroustroop, "The C++ Programming language", 3rd Edition, Person Education Asia, 2000, ISBN 81-7808-126-1.
3. Stanlev. B. Lippman, Jose Lajori, "C++ Primer", 3rd Edition, Person Education Asia, 2000, ISBN-81-7808-048-6.
4. David R. Musser, Atul Saini, "STL Tutorial & Reference guide", Person Education Asia, Second Indian Reprint 2000, ISBN-81-7808-132-6.

Course Code: IT 105

Subject Title: Web Designing & Navigation

Pre-requisite: Basic knowledge of HTML, Preliminary information about websites and internet surfing

Unit I : <u>Internet Basics</u> **[04]**

History & structure of the Internet, Internet connection types & devices, Internet browsers & client side technologies, web sites: classification, structure, anatomy of urls & domain specifiers, web page basics: elements, structure, browser window size, monitor resolution

Unit II : Advance HTML & CSS [08]

Linking with anchor tag including internal links, absolute & relative referencing of web resources, borders & margins, imagery, unicode fonts, div & span tags, HTML table tags, html form tags, positioning & floating, introduction to css: typography, consistency, types of styles, specifying class within html document

Unit III : Web Site Design process [08]

Design goals: site purpose, look and Feel, usability & accessibility, web content: Conceptualization & research, content organization, planning 'look & feel', interaction, aesthetics: page templates & layouts, artistic layer, color schemes

Unit IV : Web Navigation Foundation [15]

Need for navigation, web navigation design, understanding navigation, information seeking, seeking information online, web browsing behavior, information shape, experiencing information, navigation mechanism: step navigation, paging navigation, breadcrumb trail, tree navigation, site maps, directories, tag clouds, A–Z Indexes, navigation bars and tabs, vertical menu, dynamic menus, drop-down menus, visualizing navigation, browser mechanisms, types of navigation, categories of navigation, page types, labeling navigation, vocabulary problem, aspects of good labels, labeling systems, persuasive labels, sources of labels

Unit V : Web Navigation Design Framework [15]

Qualities of successful navigation, evaluation methods, Persuasive architecture, creating a navigation concept and concept diagrams, Information structures: Linear structures, webs, hierarchies, facets, emergent structures, Organizational schemes and categories, creating site maps and detailed site plans, Layouts: determining navigation paths, visual logic, page template, wireframes, navigation in the context of search, faceted browse, navigating, rich web applications, browser controls, the back button, and pop-up windows, types of interaction, capturing and refinding information, designing web applications for interaction, inductive user interfaces

Reference Books :

1) Learning Web Design, Jennifer Niederst Robbins, 2007, 3rd Edition, O'Reilly, ISBN-10: 0-596-52752-7
   ISBN-13: 978-0-596-52752-5[C]
2) Web designing in Nut Shell (Desktop Quick Reference), Jennifer Niederst Robbins, O'Reilly
   ISBN: 1-56592-515-7 [M]
3) Designing web navigation, James Kalbach, 2007, O'Reilly publication, IS BN-10: 0-596-52810-8
   IS BN-13: 978-0-596-52810-2[L]

Course Code: IT Lab-I

Title: DBMS & C++ Lab

Laboratory Assignments

DBMS Lab:

1. Creating database tables and using data types.
   - Create table
   - Modify table
   - Drop table
2. Practical Based on Data Manipulation.
   - Adding data with Insert
   - Modify data with Update
   - Deleting records with Delete
3. Practical Based on Implementing the Constraints.
   - NULL and NOT NULL,
   - Primary Key Constraint
   - Foreign Key Constraint
   - Unique Constraint
   - Check Constraint
   - Default Constraint
4. Practical for Retrieving Data Using following clauses.
   - Simple select clause
   - Accessing specific data with Where
   - Ordered By
   - Distinct
   - Group By
5. Practical Based on Aggregate Functions.
   - AVG
   - COUNT
   - MAX
   - MIN,
   - SUM
   - CUBE
6. Practical Based on implementing all String functions.
7. Practical Based on implementing Date and Time functions.
8. Practical Based on implementing use of UNION, ITERSECTION, SET, DIFFERENCE.
9. Implement Nested Queries & all types of JOIN operation.
10. Practical Based on performing different operations on a view.
11. Practical Based on implementing use of Procedures.

12. Practical. Based on implementing use of Triggers
13. Make Database connectivity with front and tools like VB, VC++, D2K.

C++ Lab:

1) Write a program to implement function overloading forcing data hiding.
2) Write a program to implement operator overloading.
3) Write a program to implement function template.
4) Write a program to implement class template.
5) Write a program that demonstrates pointer to members of class.
6) Write a program that demonstrates vectors, dqueue, list, set, multiset, map, multimap operations using suitable iterators.
7) Write a program to demonstrate generic algorithm for sorting, search, conditional search, fill, generate, replace, reverse, rotate, swap, heap operation merge.

Course Code: IT LAB-II

Title: OS Administration & Web Designing and Navigation

Laboratory Assignments

OS Administration:
1. Demonstrate various server configurations like: FTP MAIL, DNS, APACHE, DHCP, TCP/IP network
2. Write simple shell scripts to demonstrate file administration, output redirection
3. Demonstrate Unix file/directory structure
4. Write program to print various Environment variable as configured on your desktop.
5. Write Program(s) to demonstrate concept & uses of curses library functions to manage the screen and keyboard for basic input, output control, multiple windows, keypad and colors.
6. Demonstrate DDL & DML features of MySQL.
7. Write Program to demonstrate- processes and threads.
9. Write Programs to demonstrate GNOME/GTK+ based GUI development.

Web Designing and Navigation

The Instructor / Committee will prepare list of assignment to be completed before the beginning of the semester.

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Semester- II

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Course Code: IT-201

Title: Advanced Java - I

Unit I

Overview of Core Java: Classes, Objects, Inner Classes, Nested Classes and Interfaces   **[02]**

 Exception Handling: What is Exception, Exception arguments, Caching an exception, The try block, Exception handlers, Creating your own exception, The exception specification, Caching any exception, Re throwing an exception, Standard Java exceptions, Performing cleanup with finally.   **[04]**

Collections: Collections interfaces, Concrete Collections (Linked lists, Array List, Hash sets, Tree sets, Maps) The Collections framework, searching and sorting algorithms, legacy Collections.   **[06]**

Unit II

Multithreading: What are Threads, Interrupting Threads, Thread properties, creating Threads, Threads priorities, selfish Threads, Threads groups, Threads synchronization, inter- Thread communication, deadlock?   **[06]**

Networking: Identifying a machine, connecting to a server using Socket object, Implementing, Server programs using ServerSocket object, serving multiple of clients, Introduction to Firewalls, Proxy Servers, and Datagrams.   **[06]**

Unit III

Java Database Connectivity: JDBC Architectures, JDBC Drivers, JDBC API, opening a database connection, Creating Statement & Prepared Statements, executing SQL Queries, Operating ResultSets, Scrollable & Updatable Resultset, Accessing Database Metadata, ResultSetMetadata, Transactions.   **[08]**

Servlets & JSP: The Basic Servlet, Http Servlet, Servlets and Multithreading, Handling Session with Servlets, The Cookie Class, The session class, Running the Servlets Examples, Getting started with Java Server Pages, JSP Basics 1: Dynamic Page Creation for Data Presentation, JSP Basics 2: Generalized Templating and server scripting, JSP Tag Libraries and JSTL, JSP Directives, JSP standard actions, JSP and Servlet   **[06]**

Unit IV

Remote Method Invocation: Remote Interfaces, Implementing the Remote Interface, Setting up the Registry, Creating Stubs and Skeletons, Using the Remote Object.   **[06]**

Enterprise JavaBeans: The Java Beans, Java Beans Vs EJBS, The EJB Specification, EJB Components, EJB Container And Server, Java Naming And directory Interface (JMDI), The Pieces of EJB Component, Enterprise Bean, Home Interface, Remote Interface Deployment descriptor, EJB_Jar File, EJB Operation, Types of EJBS session Beans, Entity Beans, Developing EJB.   **[06]**

References:

1. Core Java2 Vol I Fundemental Eighth Edition, The Sun Micro Systems Press Java Series By Horstmann Cornel.

2. Core Java2 Vol II Advanced Features Eigith Edition, The Sun Micro Systems Press Java Series By Horstmann Cornel.
3. Java How To Program 5th Ed.Deitel & Deitel, Prentice Hall, ISBN:0131016210.
4. Thinking in Java, 4th Ed. Bruce Eckel.
5. Beginning Java Server Pages by Vivek Chopra, Sing Li, Rupert Jones, Jon Eaves, John T. Bell by Wiley Publishing Inc. ISBN:0-7645-7485-X

Course Code: IT-202

Title: **Web Publishing & Data Storage Technologies (HTML, XML, MYSQL, PHP Database Connectivity)**

Unit - I

Overview of web client/server architectures, HTML and CSS & JavaScript, Building dynamic web pages using server-side includes and environment variables. **[04]**

Introduction to XML, XML advantages, XML Implementations, XML approach to web designing, logical and physical structure of XML documents Writing well-formed and valid XML documents based on W3C specifications, Creating valid XML documents using document type definitions (DTDs), elements, attributes, entities, Working with XML schemas, Formating XML using cascading stylesheets, Introduction to powerful Extensible Stylesheet Language Transformations (XSLT), XML Parses, Displaying XML using Internet Explorer and MSXML, Using data binding and XML Document Object Model (XML DOM) scripts to display XML in HTML Web pages. **[20]**

Unit - II

Introduction to PHP, PHP Installation & Configuration, PHP syntax, PHP variables and constants, Control structures, Data structures, Functions, Object Oriented Programming with PHP. **[08]**

Processing HTML forms and dynamically generating HTML documents, PHP function Extensions, File processing with PHP, Building applications with cookies and session objects, Sending emails with PHP.
[08]

Unit- III

Introduction to MySQL database management and SQL Language, How to develop PHP/MySQL applications. **[10]**

Introduction to PHP programming with XML. **[02]**

References:

1. Beginning PHP5 Publisher: Wrox Press Inc; ISBN: 0-7645-5783-1
2. XML Step by Step, 2nd Ed. Publisher.- Microsoft Press Inc; ISBN: 0-7356-1465-2
3. Mastering JavaScript, Publisher: Sybex, Author: James Jaworski; ISBN: 0-7821-21:19-X'

Web References

http://www.php.net
http://www.w3c.org

Course Code: IT-203

Windows Programming & VC++

UNIT I WINDOWS PROGRAMMING **[10]**

Windows environment – a simple windows program – windows and messages – creating the window – displaying the window – message loop – the window procedure – message processing – text output – painting and repainting – introduction to GDI – device context – basic drawing – child window controls

UNIT II VISUAL C++ PROGRAMMING – INTRODUCTION [10]
Application Framework – MFC library – Visual C++ Components – Event Handling – Mapping modes – colors – fonts – modal and modeless dialog – windows common controls – bitmaps

UNIT III THE DOCUMENT AND VIEW ARCHITECTURE **[10]**
Menus – Keyboard accelerators – rich edit control – toolbars – status bars – reusable frame window base class – separating document from its view – reading and writing SDI and MDI documents – splitter window and multiple views – creating DLLs – dialog based applications

UNIT IV ACTIVEX AND OBJECT LINKING AND EMBEDDING (OLE) **[10]**

ActiveX controls Vs. Ordinary Windows Controls – Installing ActiveX controls – Calendar Control – ActiveX control container programming – create ActiveX control at runtime – Component Object Model (COM) – containment and aggregation Vs. inheritance – OLE drag and drop – OLE embedded component and containers – sample applications

UNIT V ADVANCED CONCEPTS **[10]**

Database Management with Microsoft ODBC – Structured Query Language – MFC ODBC classes – sample database applications – filter and sort strings – DAO concepts – displaying database records in scrolling view – Threading – VC++ Networking issues – Winsock – WinInet – building a web client – Internet Information Server – ISAPI server extension – chat application – playing and multimedia (sound and video) files

BOOKS

1. Charles Petzold, "Windows Programming", Microsoft press, 1996 (Unit I – Chapter 1-9)
2. David J.Kruglinski, George Shepherd and Scot Wingo, "Programming Visual C++", Microsoft press, 1999 (Unit II – V)

REFERENCE
1. Steve Holtzner, "Visual C++ 6 Programming", Wiley Dreamtech India Pvt. Ltd., 2003.

Course Code: IT-204

Title: C# using .NET Framework and SharePoint 2007

Unit I

.NET Architecture, C# Basics, Objects and Types, Inheritance, Arrays, Operators and Casts, Delegates and Events **[12]**

Unit II

Generics, Collections, Reflection, Errors and Exceptions, Assemblies, Threading and Synchronization **[14]**

Unit III – SharePoint 2007

Collaborative Application Markup Language (CAML) Primer, Introduction to the SharePoint Object Model, , Working with Sites and Webs, Managing SharePoint Lists, Advanced List Management , Handling List Events, Introduction to Web Parts, Working with Out-of-the-Box Web Parts, Developing Full-Featured Web Parts, Programming with Features and Solutions, Introduction to SharePoint Designer, Themes, Cascading Style Sheets with MOSS 2007, Master Pages, Page Layouts. **[24]**

References:

1. Professional C# 2008 by Christian Nagel, Bill Evjen, Jay Glynn, Morgan Skinner, Karli Watson by Wiley Publishing Inc. ISBN: 978-0-470-19137-8
2. Microsoft® SharePoint® 2007 Development by Kevin Hoffman, Robert Foster by Sams Publishing. ISBN: 978-0-672-32903-6.
3. Professional Microsoft® SharePoint® 2007 Design by Jacob Sanford, Randy Drisgill, David Drinkwine, Coskun Cavusoglu by Wiley Publishing Inc. ISBN: 978-0-470-28580-0

Course Code: IT-205

Title: Internet Programming (Asp .Net 3.5)

Unit I

Application and Page Frameworks , Asp .Net Server Controls and Client Side Scripts, Asp .Net Web Server Controls., Validation Server Control, Working with Master Pages, Themes and Skins **[12]**

Unit II

Data Binding in Asp .Net 3.5, Data Management with ADO .Net, Querying with LINQ, Site Navigation, Personalisation, Membership and Role Management, Portal Framework with Web Parts **[24]**

Unit III

Asp .Net Ajax, Security, State Management, Caching, User and Server Controls, File I/O and Streams, Building and Consuming Services, Packing and Deploying Asp .Net Application **[14]**

References:

1. Professional Asp .Net 3.5 in C# and VB by Bill Evjen, Scott Hanselman, Devin Rader, by Wiley Publishing Inc. ISBN:978-0-470-18757-9.
2. Programming Microsoft ASP.NET 3.5, Dino Esposito, Microsoft Press, 2008.

Course Code: IT-206

Title: Seminar

1. The seminar shall be conducted as per the following depending on the applicability of the subject - Every week there shall be a period for seminar wherein the students have to select the topic, carry out literature survey and prepare seminar report.

2. No grade will be given for the seminar. However, the completion of the credit for the seminar shall be compulsory.

Course Code: IT Lab-III

Title: Lab on C#, SharePoint 2007 & PHP
Laboratory Assignments

C#, SharePoint 2007:

1. Demonstrate the concept of Implementation and Interface Inheritance in C#.
2. Demonstrate simple delegate, multicast delegate and events.
3. Demonstrate Lists, Queues, Stacks, Linked List, Collections in C#.
4. Demonstrate Attributes and Reflection in C#.
5. Demonstrate Exception Handling (In-built & user-defined exceptions).
6. Demonstrate Threading and Synchronization in C#.
7. Demonstrate the concept of Lists in SharePoint (Create a list, enumerating a list, accessing list values, assigning event handlers).
8. Create site and web site in SharePoint.
9. Create a Web Part in SharePoint.
10. Create a web site using various features of SharePoint designer (Master pages, CSS, Themes, Page Layouts and out-of –the-box web parts)

PHP:

1) Implement a XML based application demonstrate validation using DTDs.
2) Implement a XML based application to demonstrate validation using XML Schema.
3) Implement a XML based application to transform XML w.th XSLT.
4) Implement a XML based application to access XML data using DOM (Document Object Model).
5) Implement a PHP program to display a Well-Come page based on client browser.
6) Implement a PHP program to process HTML forms.
7) Implement a PHP program to demonstrate Object Oriented Programming in PHP
8) Implement a PHP program to demonstrate use of Cookies & Session objects.
9) Implement a PHP program to demonstrate database handing.
10) Implement a PHP program to access XML data.

Course Code: IT Lab-IV

Title: Lab on VC++ and Windows Programming & Java Programming-I

Laboratory Assignments

Windows Programming:

1. Write a window program to demonstrate line drawing with left mouse button. The color & width of the line should change with every new line

2. Write a Window Program that displays a small rectangle with every left mouse button. Double Clicking on existing rectangle should erase the rectangle.

3. Write a Window Program to display size of window and no. of left clicks; no. of right clicks and no. of double clicks. The data should be display at the center of the window. Size should be updated when user resizes the window object.

4. Write a Window Program to create filled rectangle and circle. on alternate left click. New figure should not erase the previous one. If user clicks inside any figure a mistake box is display.

5. Write a Window Program to create various brushes and change the background color to brushes on left mouse click.

6. Write a Window program to create a window object. Drag the left mouse buttons & display rectangle for which dragged line is a diagonal. Also demonstrate mouse capturing.

7. Write a window program to Move a ball horizontally inside the client area using timer. At each time lapse the ball should move left of the window and when it touches the left boundary of the window it should go to, the right of the window. and so on   .

8. Write a window program to display the characters entered by user from the keyboard. [Consider only alphabets and numbers only.

MFC Programming:

1. Create a SDI application to display size of window & total number of Left clicks, right clicks and double clicks in the center of the client area.

2. Create a SDI application that displays a dialog box with two field's viz. User name, Password and two push buttons. The dialog box is invoked as the user starts the application. After user pressed on 'OIL' button display the contents of username and password in the client area& the, password should be in the farm of sequences Of *.

3. Create a SDI application, which invokes a dialog box from a menu option. The dialog box has three scroll bars called red scroll, blue scroll, green scroll and a multiline edit box. As the user scrolls through these scroll bars the background color of the edit box changes.

4. Create a SDI application that displays a dialog box with five fields: Name, Age (Spinner control.), Qualification it has three check boxes-for MCA. M.Sc., M.Sc.-IT, Radio buttons for Sex & drop down combo box for Designation. As the user fills this information in this dialog box & pressed the 'OK' button. The information is display on the client area. The dialog should be invoked through a Menu option.

5. Create A SDI Application that invokes a dialog box from a menu called Dialog. The dialog has a track bar slider control, progress bar control and spinner control. As the slides through slider control the progress bar and spinner control should set the status. Display the value of current position set in trace bar.

6. Create a SDI application and implement modeless dialog box; data of one dialog box should be display in another dialog box when ok button of first dialog is press.
Note: - Both dialogs should be visible at same time.

7. Create a SDI application to create a dialog box with Multi column list control & display the student information in different columns. Student information: name, seat no, and class, rank should be considered.

8. Demonstrate splitter window, take Form view and simple view. The data entered in form should be displayed in the sample view.

9. Create an SDI application that contains an edit box; two buttons viz. Add, Remove & a list box. Whenever user enters a string in the edit box & presses the Add button data should be added to the List box & remove the data if :

       i). It is present in the list.

       ii). Press remove button at runtime.

10. Write a Program that capture Home, Page Up, Page Down, End & all arrows   keys as user presses these keys. Program should display appropriate message in the   client window.

11. Write a Window Program to draw sine wave.

12. Create a SDI application and create a dialog box with Single Column list box & a tree control. List contains family name and tree control contains family, hierarchy. As the user selects a family name from list a particular family in the tree control.

13. Create SDI application to Demonstrate Bitmaps. Also change the background color and icon of your application

14. Create a SDI application. Create a access database with a single table of your choice. Fill at least five six records in it. Display the contents of table in the multi column list view.

15. Create a SDI application with the following menu options. Display the selected menu item in the client area. Menu item should have check marks on it when selected.

       Cricket ------------ Football

       One run ----------Corner

       Four run----------Goal

       Sixer------------Penalty Kick

Java Programming-I:

1. Implement a Java Program to demonstrate basic concepts like inner classes, nested classes, interfaces etc.
2. Implement a Java Program to demonstrate Exception Handling.
3. Implement a Java Program to demonstrate use of collection classes.
4. Implement a Java Program to demonstrate Thread synchronization & thread communication
5. Implement a Java Program to demonstrate Client Server communication
6. Implement a Java Program to demonstrate the use of JDBC
7. Implement a Java Program to demonstrate Servlets
8. Implement a Java Program to demonstrate Java Server Pages (JSP)
9. Implement a Java Program to demonstrate RMI
10. Implement a Java Program to demonstrate Simple Java Beans
11. Implement a Java Program to demonstrate EJBs

Semester- III

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Course Code: IT-301

Title: Software Engineering

1. Introduction: **[2]**
What is Software Engineering.

2. Software Development Life-cycle: **[6]**
Requirements analysis, software design, coding, testing, maintenance, etc.

3. Software Requirements Specification: **[6]**
Waterfall model, prototyping, interactive enhancement, spiral model. Role of Management in software development. Role of metrics and measurement.

4. Software Requirement Specification: **[6]**
Problem analysis, requirement specification, validation, metrics, monitoring and control.

5. System Design: **[6]**
Problem partitioning, abstraction, top-down and bottom-up design, Structured approach. Functional versus object-oriented approach, design specification and verification metrics, monitoring and control.

6. Coding: **[6]**
Top-down and bottom-up, structured programming, information hiding, programming style, and internal documentation. Verification, Metrics, monitoring and control.

7. Testing: **[6]**
Levels of testing functional testing, structural testing, test plane, test cases specification, reliability assessment.

8. Software Project Management: **[6]**
Cost estimation, Project scheduling, Staffing, Software configuration management, Quality assurance, Project Monitoring, Risk management, etc.

9. Web Engineering: **[6]**

The attribute of Web based application, The WebE Process, Framework for WebE Design and Testing for Web based application.

BOOKS:

1. Software Engineering : A Practitioner's Approach, Roger S Pressman 7th Edition McGraw Hill International Publication.

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2. The Complete Reference : Web Design, Thomas A Powell. McGraw Hill International Publication.

Course Code: IT-302

Title: Current Computing Trends – I

The syllabus of this course (IT-302: Current Computing Trends-I) will be prepared before the beginning of the Third Semester by the committee by considering the market requirement, student's feedback and latest technological trends.

Course Code: IT-303

Title: Current Computing Trends – II (WCF, WF, WPF)

Unit I

Windows Communication Foundation Overview, Windows Communication Foundation Concepts, Understanding Windows Communication Foundation, Addresses, Understanding and Programming WCF Binding, Understanding and Programming WCF Contracts, Clients, Services, Security   **[19]**

Unit II

Introduction to Workflow and Windows Workflow Foundation, Workflow Overview, Conditional Activities, Flow Activities, Rule Based Workflow, Workflow and web services, Interacting with Work Flow, Deploying Workflow Applications.   **[16]**

Unit III

Overview of Windows Presentation Foundation, WPF and .Net Programming, Anatomy of EPF-Enabled Application, Building a Rich UI with Microsoft Expression Blend, Custom Controls, Security.

          [15]

References:

1. Professional WCF Programming .Net Development with Windows Communication Foundation by Scott Klein, by Wiley Publishing Inc. ISBN:978-0-470-08984-2.
2. Foundations of WF, An Introduction to Windows Workflow Foundation by Brian R. Myers., by Apress publication, ISBN:978-1-59059-718-7
3. Professional WPF Programming .Net Development with Windows Presentation Foundation, by Chris Andrade, Shawn Livermore, Mike Meyers, Scott Van Vilet, By Wiley Publishing Inc. ISBN:978-0-470-04180-2

Course Code: IT-304

Title: Advanced Java-II

Unit I - Struts
Introduction, Understanding Scopes, Custom Tags, The MVC Design Pattern, Simple Validation, Processing Business Logic, Basic Struts Tags, Configuring Struts, Tiles, The Validator Framework, Dynamic Forms   [20]

Unit II - Hibernate
Introduction to Hibernate, Hibernate Development Environment, Database Connecting and Schema Generation, Creating Persistent Classes, Working with Collections, Using Persistent Objects, Hibernate Query Language, Hibernate Caching, Hibernate Transactions and Locking, J2EE and Hibernate, Hibernate and XDoclet, Using Velocity, Struts, and Hibernate   [20]

Unit III – Spring
 Jump Start Spring 2 , Writing Beans, Creating Aspect, Hitting the Database, Accessing Enterprise Services, Building the Web Layer   [10]

References:

1. Beginning Apache Struts From Novice to Professional, by Arnold Doray by Apress ISBN: 978-1-59059-604-3
2. Professional Hibernate, by Eric Pugh, Joseph D. Gradecki by Wiley Publishing, Inc., ISBN: 0-7645-7677-1
3. Spring In Action, Craig Walls, Ryan Breidenbach, Manning Publishing Co., ISBN: 1-932394-35-4

Course Code: IT-305

Title: Network Programming

Unit I:

Understanding Network fundamentals What is network? Components of a Network, Types of networks configuration, Reference model, Types of area network, Project model IEEE 802, Network topologies Network infrastructure, Introduction to TCP/IP Architecture of the TCP/IP model**.**   **[10]**

 Unit II:

Client server Programming and Application: The client server model and software design, the socket interface, concurrent processing in client-server software , program interface to protocol algorithms & issues in client Software design, example client software, algorithms & issues in server software design Iterative connectionless server, iterative connection oriented server, single process Concurrent server

concurrent connection oriented server, multiprotocol server , multi-service server concurrency in client external data representation remote procedure call concept, RPCgen concept, network file system (NFS) concepts DNS , TELNET DHCP, Electronic mail (822, SMTP, MIME), discussion on the topic "the feature of TCP/IP". **[25]**

Unit III:

Network Interface Layer: Overview of network interface layer media access control standards, mapping the Physical address to the IP address. Internet Layer: Purpose of the internet layer, classes of lpv4 addresses, basics of routing, IP datagram ICMP, IGMP Transport Layer Types of data transfer connection-less data transfer, connection-oriented data transfer **[15]**

References:
1. Douglas E. Corner, David Stevens, Intranetworking with TCP/IP volume III Client Server Programming and Applications ISBN-81-7808-488-0 PHI.
2. Douglas E. Corner, Internetworking with TCP/IP volume I, Principles protocols & Architecture, (3rd edition), ISBN-81-203-1053-5, PHI.
3. Douglas E. Corner, David Stevens, Internetworking with TCP/IP volume II Design Implementation, and internals, (3rd edition), ISBN-81-203-0927-8, PHI.
4. Scringer LaSalle, Parihar Gupta TCP/IP Bible. (1st edition), Hungry Minds IDG Looks India (P) Ltd.

Course Code: IT-306

Title: Soft Skills Development

1.	Communicative English	[4]
2.	Group Discussions	[4]
3.	How to prepare a good Resume?	[3]
4.	Analytical/Logical Skill Development	[8]
5.	Interview Techniques	[6]

(*If the Resource Person is from the industry then he/she may decide the course content as the requirement*).

No grade will be given for the Soft Skills Development course. However, the completion of the credit for the IT-306 course shall be compulsory.

BOOKS:

1. Cornerstone Developing Soft Skills, Fourth Ed., R. Sherfield, R. Montgomery, P. Moody, Pearson Education, 2010.

Course Code: IT Lab-V

Title: Lab on Current Computing Trends I & II

Laboratory Assignments

Current Computing Trends- I

The syllabus of this Lab Course (Current Computing Trends-I) will be prepared before the beginning of the Third Semester by the committee/intructor by considering the market requirement, student's feedback and latest technological trends.

Current Computing Trends- II (ASP.NET):
1. Create and ASP .NET application using Web server controls apply appropriate validation to it.
2. Create an ASP .NET application using Master Pages and Themes and Skins
3. Create an ASP .NET application to demonstrate binding of GridView, DataList, Repeater, DropDownList, RadioButtonList, CheckBoxList Control using ADO .NET
4. Create an ASP .NET application to demonstrate LINQ to XML, LINQ to Objects, LINQ to SQL
5. Create an ASP .NET application to demonstrate Navigation controls
6. Create an ASP .NET application to demonstrate User and Role management.
7. Create an ASP .NET application to demonstrate User controls
8. Create an ASP .NET application to demonstrate Web parts
9. Create an ASP .NET application to demonstrate various type of Caching (Data Caching, Output Caching, and SQL Server Cache Dependency).
10. Create an ASP .NET application using Ajax
11. Create an ASP .NET application using Web Service.
12. Create a simple WCF application with appropriate client and host it in various environments IIS, Windows Service, Windows Application.
13. Create a Sequential Workflow.
14. Create a Conditional Workflow.
15. Create a State Machine Workflow.
16. Create an application using Windows Presentation Foundation.

Course Code: IT Lab-VI

Title: Lab on Network Programming & Java Programming- II

Laboratory Assignments

Network Programming:
Preferred Platform Linux C/Windows

1. Implement TCP and UDP Client-Server programs for following services:
   Printing the Host ID, local port, also the client should indicate connection status

Echo Service
Day Time Service
Chargen Service
Mathematical Operation on numbers
Checking number for prime, palindrome etc.
Calculating factorial
Calculating Fibonacci series
Case conversion in given string

2. Implement Client-Server programs for demonstrating working of Concurrent Connection Oriented Servers using single process.

3. Implement Client-Server programs for demonstrating working of Concurrent Connection Oriented Servers using multiple processes.

4. Implement Telnet Server program for providing different types of Telnet Services.

5. Demonstrate and implement the file transfer using FTP.

6. Develop the Chat Client and Server program. The Server should be concurrent such as to provide intercommunication between multiple clients.

7. Develop a simple web server capable of accepting request from standard client like IE, Netscape, Opera etc (use standard protocol HTTP).

Java Programming II:

The detailed syllabus of this second part of Practical Course (IT LAB-VI: **Java Programming II**) will be prepared before the beginning of the Third Semester by the Instructors based on the content of IT-304 Theory course.

(Implement the applications on Java Servlets, JSP, using the frameworks Struts, Hibernate, Spring.)

Semester- IV
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IT-401 Full Time Industrial Training

Twelve credits shall be awarded to the Industrial Training/Project course, which will commence in IV Semester and the final work and report will be completed at the end of IV Semester for M.Sc. (Information Technology). The marks and the credits will be allotted at the end of IV for M.Sc. (IT).