

**A.VEERIYA VANDAYAR MEMORIAL SRI PUSHPAM COLLEGE
(AUTONOMOUS),
POONDI, THANJAVUR DIST.**

**Question Pattern for UG and PG Programmes for students to be
admitted during 2014 – 2015 and afterwards.**

Total Marks: 75

**QUESTION PATTERN
SECTION – A
(Question 1 to 10)**

10 x 2 = 20 Marks

1. Short Answer Questions.
2. Two Questions from each units (All are answerable)

**SECTION – B
(Question 11 to 15)**

5 x 5 = 25 Marks

1. 5 Paragraph type questions with "either / or" type choice.
2. One question from each unit of the Syllabus.
3. Answer all the questions.

**SECTION – C
(Question 16 to 20)**

3 x 10 = 30 Marks

1. 5 Essay type questions – any three are answerable.
2. One questions from each unit of the Syllabus.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	14P1ITC1	Core – JAVA PROGRAMMING	6	5

Objective

- ❖ To understand Programming concepts in Java

Unit I

Hrs 18

Object Oriented Fundamentals and Java Evolution: Object oriented programming – encapsulation – inheritance – polymorphism – java genesis – characteristics – java programming techniques – reserved words – identifiers – literals – operators – separators – variables – types – arrays – operator precedence.

Unit II

Hrs 18

Flow Control And Classes: If – else – Break – switch – Return Statements – Looping – While – do while – For – Comma statements – Declaration – Object reference – Instance – variables – new operators – method declaration – method calling – this operators – Constructor – Method over loading – Inheritance – Super class – Dynamic method dispatch – Final – Static – Abstract classes.

Unit III

Hrs 18

Packages and Interfaces: Packages – The package statement – Import statements – Interface statement – implement statement – Constructor – String creation – String concatenation – Character Extraction.

Unit IV

Hrs 18

Exception Handling: Exception Handling Fundamentals – The java Thread model priorities – synchronization – Runnable – The synchronized statements – Dead lock – Thread API Summary.

Unit V

Hrs 18

Abstract Windowing Tools & Applets: Events – listeners – Events handling methods – Inheritance hierarchy control classes – Labels – Layouts – Windows and frames – Menus – dialogs – Mouse events – Adaptor classes – Inner classes. Applets – HTML Applet Tag – Order of Applet Initialization.

Reference:

1. Patrick Naughton, "The JAVA HandBook", Tata McGraw Hill Publishers Company Pvt. Ltd, 1996.
2. Kenny Chu – "The Complete Reference Java", Tata McGraw Hill Publishers company Pvt. Ltd, 1997.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
I	14P1ITC2	Core –OBJECT ORIENTED ANALYSIS AND DESIGN	6	5

Objective

- ❖ To understand concepts in Object Oriented Analysis and Design.

Unit I

Hrs 18

An Overview of Object Oriented Systems Development - Object Basics - Object Oriented Systems Development Life Cycle.

Unit II

Hrs 18

Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Patterns-Frameworks - Unified Approach - Unified Modeling Language - Use case - class diagram - Interactive Diagram - Package Diagram - Collaboration Diagram - State Diagram - Activity Diagram.

Unit III

Hrs 18

Identifying use cases - Object Analysis - Classification – Identifying Object relationships - Attributes and Methods.

Unit IV

Hrs 18

Design axioms - Designing Classes - Access Layer - Object Storage - Object Interoperability.

Unit V

Hrs 18

Designing Interface Objects - Software Quality Assurance– System Usability - Measuring User Satisfaction

BOOKS FOR STUDY:

1. Ali Bahrami, "Object Oriented Systems Development", Tata McGraw-Hill, 1999

REFERENCES:

1. Stephen R. Schach, "Introduction to Object Oriented Analysis and Design", Tata McGraw-Hill, 2003.
2. James Rumbaugh, Ivar Jacobson, Grady Booch "The Unified Modeling Language Reference Manual", Addison Wesley, 1999.
3. Hans-Erik Eriksson, Magnus Penker, Brain Lyons, David Fado, "UML Toolkit", OMG Press Wiley Publishing Inc., 2004.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	14P1ITC3	Core –DATABASE MANAGEMENT SYSTEM	6	5

Objective

- ❖ To know concepts and techniques in DBMS.

Unit I

Hrs 18

Introduction to Database system: Overview-View of Data-Data Models-History of Database system-E-R Model: Basic Concepts-Constraints-Keys-E-R Diagram-Weak Entity Sets-Extended E-R Features-Design of an E-R Data base Schema-Reduction to ER Schema.

Unit II

Hrs 18

Relational Model-Structure of Relational Database-Relational Algebra-Extended ,Additional Algebra Operations-Modification of Database -Tuple Relational calculus-Domain Relational Calculus –SQL:Background-Basic Structure –Set Operations-Aggregate Functions-Nullvalues-Nested Subqueries-View .

Unit III

Hrs 18

Integrity and Security-Advanced SQL:domain integrity-Referential integrity-Assertion-Application Design and Development-Triggers-Encryption and Authentication-Relational Data base design-1NF-2NF-BCNF-3NF-5NF.

Unit IV

Hrs 18

Storage and file Structures:- Overview of Physical storage media-Magnetic disks-RAID-Tertiary Storage-Storage Access-File Organization-organization of records in files-Data Dictionary Storage-Indexing and Hashing:-Basic concepts-Ordered indices-B+ tree index files-B-tree index files.

Unit V

Hrs 18

Transaction Concept-Transaction states-Implementation of Atomicity and Durability-Concurrent Executions-Serializability-Recoverability-Implementations of Isolation-Testing for Serializability. Concurrency Control:-Lock-Based Protocols-Timestamp-Based Protocols-Validation-Based Protocols-Multiple Granularity-Deadlock Handling.

References:

1."Database System concepts", Abraham Silber Schatz, Henk F.Korth, S.Sudarsan, Fifth Edition, 2006, Tata McGraw Hill.

General References:

1. Fred Mc Fadden, Jeffery A Hoffer, Mary B.prescott, "Modern Database Management", 5 Edition, Addison Wesley, 2000.
2. Elmasri, Navathe, "Fundamentals of Database System", Third Edition, Addison wesley, 2000.
3. Jeffrey D.Ulman, Jenifer widomj, "A First Course in Database System", pearson Education Asia, 2001
4. Bipin c Desai, "An Introduction to Database System", Galgotia publications Pvt Limited, 2001.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
I	14P1ITCP1	Core –JAVA PROGRAMMING LAB	3	3

Objective

* To apply Core concepts in java

Application:

1. Determine the order of number generated randomly using random class.
2. Implementation of point class for image manipulation.
3. Usage of calendar class and manipulation.
4. String manipulation using char Array.
5. Database creation for storing e-mail addresses and manipulation.
6. Usage of vector classes.
7. Implementing thread based applications and exception handling (synchronization and a synchronization).

Applets:

1. Working with frames and various controls.
2. Working with dialog and menus.
3. Working with panel and layout.
4. Incorporating graphics (scaling only).

Application for Event Handling:

1. Application using JDBC connectivity.
2. HTML to Servlet application.
3. Servlet to applet communication.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	14P1ITCP2	Object Oriented Analysis and Design Lab	3	3

OBJECTIVES

- Introduction to UML notations and diagrams.
 - Hands on exposure of “Visual Paradigm software for UML” involving analysis and design with UML diagrams.
1. use case, class diagrams in online ticket reservation systems
 2. use case, class diagrams in hotel reservation systems
 3. use case, class diagrams in student information system
 4. use case, class diagrams in sales & marketing system
 5. use case, class diagrams in banking system and inventory tracking system.
 6. Behavioural diagrams for application systems
 7. state chart diagram for application systems
 8. component diagrams for systems
 9. deployment diagrams for systems – Test cases,
 10. integration test cases for systems

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
I	14P1ITEL1A	Elective -I COMPUTER NETWORKS	6	4

Objective

- To know about various layers of computer network architecture.

Unit I

Hrs 15

Introduction To Networks And Communication Media: Uses - Network Hardware - Network software - Reference Models - Example Network - Network standardization. Basis for data communication - Transmission media - Wireless Transmission- Telephone system - Satellite Communication.

Unit II

Hrs 20

The Data Link Layer: Data Link Layer design issues - Error Detection and Correction Methods - Elementary Data Link protocols - sliding Window protocols - Verification Methods Channel Allocation- Multiple Access protocols- IEEE 802 Standards.

Unit III

Hrs 15

The Network Layer: Network Layer design issues - Routing algorithms- Congestion Control algorithms - Internetworking - Network Layer in Internet.

Unit IV

Hrs 20

The Application Layer: Application Layer design issues- Domain Names System - Electronic Mail - Word Wide Web - Multimedia - Other Application- Network Security- Basic Cryptography-DES-RSA.

Unit V

Hrs 20

Network Security: Introduction – Cryptography – Symmetric key algorithm – Public key algorithms – communication security

Reference:

- Andrews S.Tanenbaum, "Computer Networks", prentice Hall of India private Limited,(4Edition),2003 – Unit I to V

General Reference:

- Leon Garcia and Widjaja, "Communication Networks - Fundamental Concepts and key architecture", Tata McGraw Hill, 2001.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
I	14P1ITEL1B	Elective – I TCP/IP	6	4

Objective

- ❖ To know about protocol design for network.

Unit I

Hrs 18

Introduction: Inter Networking concepts - Applications level - Network level interconnection - Internet Architecture - Inter Connection through IP Routers, Internet Addresses - Mapping Internet addresses to physical addresses (ARP)- Determining an Internet addresses at startup (RARP)

Unit II

Hrs 18

Internet protocol: Datagram Delivery - Routing IP datagram's error and control messages (ICMP) - classless and subnet addresses extensions - User Datagram protocols - (UDP)

Unit III

Hrs 18

Routing protocols: Routing cores - peers - routing algorithms - Autonomous System - Exterior Gateway protocol - Internet Multicasting - Multicast Routing protocols - Internet Group Management protocol (IGMP)

Unit IV

Hrs 18

TCP / IP over ATM: ATM hardware - ATM cell transport - Adaptation Layer - IP address binding in ATM network - Logical IP subnet - ATMARP. **Socket Interface:** UNIX I/O - Networks I/O - Creating sockets - Connecting sockets - obtaining information about hosts, Networks, protocols, services.

Unit V

Hrs 18

Application protocols: Domain Name System - File transfer & access (FTP, TFTP, NFS)-electronic mail (SMTP, MIME)-Network management (SNMP)-Internet Security.

Reference:

1. Douglas E. Comer, "Internetworking with TCP/IP principles, protocols, and Architectures", prentice Hall of India private Ltd., 4 Edition, 2002.

General Reference:

1. Behrouz A. Forouzan, "TCP /IP Protocols Suite", Tata Mc Graw - Hill,2000.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
I	14P1ITEL1C	Elective - I OPEN SOURCE TECHNOLOGY	6	4

Objective

- ❖ To know about the techniques and concepts of Open source technology.

Unit I

Hrs 18

Introduction: shell programming: shell - pipes and redirection - shell as a programming language - shell Syntax.

Unit II

Hrs 18

Working with Files: File structure - Library functions - Low - level File Access - The standard I/O Library - File & Directory Maintenance.

Unit III

Hrs 18

Reading from & Writing to the Terminal - Terminal Structure - Terminal output - Debugging: Types of error - General debugging Techniques.

Unit IV

Hrs 18

Process management: Process structure - Starting new process - Signals - Threads - Thread attributes - Canceling a Thread.

Unit V

Hrs 18

Internet programming: CGI: From elements - Sending information to the WWW server - Returning HTML to the client.

Reference:

1. Beginning LINUX programming - Neil Mathew & Richard Stones - Shroff Publications & Distributors Pvt Ltd., 1999.Chapters: Only relevant topics from chapters 1-3, 5,9,10-11& 20.

General Reference:

1. Professional LINUX Microprogramming - Richard Stones& Neil Mathew, 2001
2. WWW.advacedlinuxprogramming. com
3. WWW tdlp.Com4.WWW.stk.org

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	14P2ITC4	Core – INTERNET AND WEB TECHNOLOGY	5	5

Objective

- * To understand HTML, ASP, Servlets and PHP.

Unit I

Hrs 15

HTML: Introduction-SGML-Outline of an HTML Document-Head Section-Body section-HTML Forms. DHTML: Introduction-CSS-DHTML Document Objects Model and collections-Event Handling-Filters and Transitions – Data Binding.

Unit II

Hrs 15

JAVASCRIPT: Introduction-Language Elements objects of Java script-Other objects. VBSCRIPT: Introduction-Embedding VBScript code in an HTML Document-Comments-Variables-Operators-Procedures-Conditional Statements-Looping Constructs-object and VBScript-Cookies.

Unit-III

Hrs 15

ASP: Introduction-Advantages of using Asp-First ASP Script-Processing of Asp Scripts with Forms-Variables and Constructs-Subroutines-Include/Virtual-ASP Cookies-Asp Objects-Connecting to Data with ASP.

Unit-IV

Hrs 15

SERVLETS: Introduction-Advantages of Servlets over CGI-Installing Servlets-The Servlet Life cycle-Servlet API-A Simple Servlet-Handling HTTP GET Requests-Handling HTTP POST Requests-Cookies-Session Tracking-Multi tier Applications using Database Connecting-Servlet chaining.

JSP: Introduction-Advantages of JSP-Developing First JSP-Component of JSP-Reading Request Information-Retrieving the Data Posted from a HTML File to a JSP File-JSP Sessions-Cookies-Disabling sessions.

UNIT V

Hrs 15

Exploring PHP- PHP Decision Making- Functions-Arrays-Database Basics- Using MySQL-Getting PHP to talk and MySQL.

Working with Forms-Practical PHP-Modifying MySQL-Objects and PHP Data-Cookies-Sessions.

Text Books:

1. N.P Gopalan,J.Akilandeswari, "Web Technology" A Developer's Perspective, Prentice Hall of India Private Limited, New Delhi, 2008.
2. K. Meena , R. Sivakumar , A.B. Karthick Anand Babu "Web programming using PHP and MySQL" - Himalaya Publishing House – 2011(for Unit-V).

References Books:

1. Chuekmvsiano and Bill Kennedy, 'HTML the Definite Guide', O'Reily Publications 2002.
2. Joseph Schmulter, 'Dynamic HTML', Bpb Publications 2000.
3. Scott Mitchell and James Alknsn, 'Active Server Pages 3.0 in 21 Days', SAMS Techmedia.
4. Jason Huntel with William Crawford, 'JAVA Servlet Programming', O'Reily Publications.
5. Steven Holzner, "The Complete Reference PHP", Tata McGraw Hill, Edition 2008.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	14P2ITC5	Core – Dot Net framework and C# Programming	6	5

Objective

- * To understand Dot Net framework and c# programming

Unit I

Hrs 18

Introduction to Dot Net : Introduction to Dot net, Common Type System, Common Language Specification, Common Language Runtime – Understanding Assemblies- Introduction to Visual Basic .net Windows and Console applications development environment – Elements of C#.net foundation , lexical analysis, option, imports and namespace directives – **C#.net operators** : Arithmetic , Relational, logical, bit wise and specialized operators – Sample Programs

Unit II

Hrs 18

Console Applications in C#.net: Software Design and Flow of Controls (In Console Applications) Conditional statements and sample programs:-if, if-else, switch case and nested if – Iterative statements and sample programs:- while, do while, for and foreach. **C# .net Collections and Streams (in Console Applications) Arrays :** Single dimension, Multidimension, Jagged Array – Array List- Stack – Queue – Hash table – Files and Directories – Streams Readers & Writers - Strings and String Builder.

Unit III

Hrs 18

Data Base Programming in C#.net : Introduction to ADO .net objects for OLEDB and SQLDB– Connection , Command , Adapters , Data set and Data table - sample data base application for console environment -Introduction to data and crystal reports –Threads and Synchronization – Exception handling and classes .

Unit IV

Hrs 18

Basic ASP .net Controls (Code behind C# .net) Features of ASP .net - ASP .Net namespaces – Global .aspx – ASP Configuration file- Sample coding for ASP Controls :- List Box, Combo box, Bulleted list – Tables – Panels – Place holder – text box – button. Validation Controls: - Requiredfield validator, Range Validator, Compare Validator, Custom Validator - Ad Rotator.

Unit V

Hrs 18

ASP .net Database and Web Services (Code behind C# .net) Introduction to ADO .net OLEDB and SQLDB objects – Data source controls: MS Access and SQL data source - Data Controls: Grid view, form view, List view. Introduction to Web Services – SOAP , WSDL , Configuring ASP.net Web services – deploying web service in to web application.

References:

1. C# and the Dot net plat form – Andrew Troelsen.
2. C# programming "E.BALAGURUSAMY"
3. C# Dot Net Funds – Yashavant kanetkar's – BPB Publications, 2002.
4. C# 4.0. The Complete reference, Herbert schildt, Tata McGraw Hill, 2010.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
II	14P2ITC6	MOBILE TECHNOLOGIES	5	5

Unit – 1 Overview

Hrs 15

Introduction: Evolution of Mobile Radio Communications, Present Day Mobile Communication, Fundamental Techniques, How a Mobile Call is Actually Made?, Future Trends, Modern Wireless Communication Systems: 1G: First Generation Networks, 2G: Second Generation Networks, 3G: Third Generation Networks, Wireless Transmission Protocols, Conclusion: Beyond 3G Networks, The Cellular Engineering Fundamentals: What is a Cell?, Frequency Reuse, Channel Assignment Strategies, Handoff Process, Interference & System Capacity, Enhancing Capacity And Cell Coverage, Trunked Radio System

Unit – 2 Mobile Devices & System

Hrs 15

Mobile devices and system: Mobile phones-Digital music players-handheld music players-handheld pocket computer-handheld device :Operating system-Smart system-Limitations of mobile devices.

Unit-3 Mobile Operating System

Hrs 15

Mobile Operating System: Operating system- Process, Task, Thread, ISR and IST, Palm OS, Windows CE, Symbian OS , Linux for mobile devices.

Unit – 4 Android Computing Platforms

Hrs 15

Introducing the Android Computing Platform- Setting Up Development Environment - Understanding Android Resources - Understanding Content Providers- Understanding Intents - Building User Interfaces and Using Controls.

Unit – 5 Android Designs

Hrs 15

Working with Menus- Fragments for Tablets and More- Working with Dialogs - Exploring ActionBar-Advanced Debugging and Analysis-Responding to Configuration Changes.

Text Book:

Unit – 1

Dr. Abhijit Mitra, Lecture Notes on Mobile Communication, IITG.

Unit – 2&3

Mobile Computing-Raj Kamal Oxford University Press.

Unit – 4& 5

S. Komatineni, D. MacLean, "Pro Android 2", Apress (2012).

Reference book:

Mobile Computing by Asoke k Talukder, Roopa R yavagal Technology, applications and services creation@ 2005, Tata Mc Graw-Hill Publishing Company Limited, First reprint 2006.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
II	14P2ITCP3	C# AND WEB TECHNOLOGY LAB	4	3

Objective

- To understand Programming techniques in c#.

Console Applications

1. C# .net program for Ascending Order and Descending Order.
2. C# .net program for Matrix Multiplication.
3. C# .net program for Stack and Queue collections.
4. C# .net program to perform various string operations.
5. C# .net program to insert, select, delete and update student name , register number and five subject mark list with total and average in MS Access data base.

Web Applications

6. C# .net program to display browser capabilities.
7. C# .net program to perform Range validation, Required Field Validation, Compare Validation and Custom Validation.
8. C# .net program to display a MS Access student database in Grid View.
9. C# .net program to display a MS Access employee database in form View.
10. Create a ASP.net web service for arithmetic operations and deploy the same.

PHP Applications

11. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.
12. Write a PHP program that adds products that are selected from a web page to a shopping cart.
13. Write a PHP program to access the data stored in a MYSQL table.
14. Write a PHP program interface to create a database and to insert a table into it.
Write a PHP program using classes to create a table.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	14P2ITCP4	MOBILE TECHNOLOGY LAB	4	3

OBJECTIVES

- Building mobile applications.
- Availing variety of mobile brands and models for testing objectives in same location.
- Pushing the innovation in mobile applications.

Perform the experiments in J2ME / Android SDK framework

1. Form design for mobile applications.
 2. Applications using controls.
 3. Graphical and Multimedia applications.
 4. Data retrieval applications.
 5. Networking applications.
 6. Gaming applications
 7. Micro browser based applications using WAP, WML and WML scripts
 8. Checking the phone number validation using Text box
 9. SlideShow example
 10. TextBox Capturing Program
 11. Ticket List Program
- Program for question & answer with commands Program

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	14P2ITEL2A	Elective - II SELECTED TOPICS IN INFORMATION TECHNOLOGIES	6	4

OBJECTIVES:

- To understand the fundamentals of special topics in Information technologies.
- To understand the fundamentals of E-technologies, parallel computing, windows programming and data communication.

Unit 1 : Electronic Commerce

Hrs 18

Framework, Media Convergence of Applications, Consumer Applications, Organisation Applications. Electronic Payment Systems: Digital Token, Smart Cards, Credit Cards, Risks in Electronic Payment System, Designing Electronic Payment Systems.

Unit 2 : Electronic Data Interchange(EDI)

Hrs 18

Concepts, Applications, (Legal, Security and Privacy) issues, EDI and Electronic Commerce, Standardization and EDI, EDI Software Implementation. EDI Envelope for Message Transport, Internet-Based EDI.

Unit 3 : Parallel Computing

Hrs 18

Flynn's classification, SIMD and MIMD operations, Shared Memory vs. message passing multiprocessors, Distributed shared memory, Hybrid multiprocessors **Message Passing Architectures:** Message passing paradigms, Grid architecture, Workstation clusters, User level software

Unit 4 : Windows Programming

Hrs 18

Windows Programming Fundamentals – MFC – Windows – Graphics – Menus – Mouse and keyboard – Bitmaps – Palettes – Device-Independent Bitmaps - Controls – Modal and Modeless Dialog – Property – Data I/O – Sound – Timer - Memory management – SDI – MDI – MFC for Advanced windows user Interface – status bar and Toolbars – Tree view – List view – Threads

Unit 5 : Data Communication

Hrs 18

Discrete messages and information content – Concept of amount of information – Average information – Entropy – Information rate – Source coding to increase average information per bit – Shannon-fano coding – Huffman coding – Lempel-Ziv (LZ) coding – Shannon's theorem – Channel capacity – Bandwidth – S/N trade-off – Mutual information and channel capacity – Rate distortion theory – Lossy source coding.

Text Books:

1. Dave Chaffey, "E-Business and E-Commerce Management", Third Edition, 2009, Pearson Education
2. John Hennessy and David Patterson, *Computer Architecture: A Quantitative Approach*, Morgan Kauffman Publisher.
3. Richard C. Leinecker and Tom Archer, "Visual C++ 6 Programming Bible", Wiley DreamTech Press, 2006.
4. Herbert Taub and Donald L Schilling., "Principles of Communication Systems", 3rd Edition, TMH, 2008.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	14P2ITEL2B	Elective - II ONTOLOGICAL ENGINEERING	6	4

Objective

- ❖ To understand various ontological Engineering.

Unit1: Theoretical Foundation of Ontologies

Hrs 18

From Ontologies towards Ontologies Engineering-What is Ontologies - Main components of an Ontologies-Types of Ontologies-Ontologies Commitments-Principles for the Design of Ontologies.

Unit II: The most outstanding Ontologies

Hrs 18

Knowledge Representation Ontology - Top level Ontologies - Linguistic Ontologies - Domain Ontologies.

Unit III: Methodologies and methods for Building Ontology

Hrs 18

Ontologies Development Process - Ontology Methodology Evolution-Ontology Development methods and Methodologies - Method for Re-Engineering Ontologies - Ontologies learning Methods - Ontology Merging Methods and methodologies - Co4: a Protocol for Cooperative Construction of Ontologies - Methods for Evaluating Ontologies.

Unit IV: Languages for Building Ontologies

Hrs 18

Ontology Language Evolution - Selection of ontology Language-Traditional Ontology Language-Ontology Mark up Languages.

Unit V: Ontology Tools

Hrs 18

Ontology Tools Evolution - Ontology Development Tools and Tools Suites - Ontology Merge Tools - Ontology - based Annotation Tools.

Text Books:

1. Asuncion Gomez-perez, Mariano Fernandez-Lopez and Oscar Corcho. "Ontological Engineering", Springer 2nd Printing, 2011.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
II	14P2ITEL2C	Elective - II UBIQUITOUS COMPUTING	6	4

Objectives

- To understand the advances in pervasive computing.

Unit – 1

Hrs 18

An Introduction to Ubiquitous Computing: Founding Contributions to Ubiquitous Computing - Ubiquitous Computing in U.S. Universities - Ubiquitous Computing in European Laboratories and Universities - Modern Directions in Ubiquitous Computing - The Research Community Embraces Ubiquitous Computing - The Future of Ubiquitous Computing

Unit - 2

Hrs 18

Ubiquitous Computing Systems: Ubicomp Systems Topics and Challenges - Creating Ubicomp Systems-Implementing Ubicomp Systems-Evaluating and Documenting Ubicomp Systems.

Unit – 3

Hrs 18

Privacy in Ubiquitous Computing : Understanding Privacy - Technical Solutions for Ubicomp Privacy - Address Privacy. Ubiquitous Computing Field Studies : Three Common Types of Field Studies - Study Design - Participants- Data Analysis - Steps to a Successful Study

Unit – 4

Hrs 18

Ethnography in Ubiquitous Computing - From Ethnography to Design - Design-Oriented Ethnography in Practice. From GUI to UUI: Interfaces for Ubiquitous Computing : Interaction Design-Classes of User Interface-Input Technologies.

Unit – 5

Hrs 18

Location in Ubiquitous Computing : Characterizing Location Technologies - Location Systems. Context-Aware Computing : Context-Aware Applications - Designing and Implementing Context-Aware Applications - Issues to Consider when Building Context-Aware Applications- Challenges in Writing Academic Papers on Context Awareness

Reference:

Ubiquitous Computing Fundamentals - Edited by John Krumm Microsoft Corporation Redmond, Washington, U.S.A.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
I	14P3ITC7	CORE- DATA MINING AND DATA WAREHOUSING	6	5

Objective

- To know about the architecture and application areas of Data ware housing and Mining.

UNIT I

Hrs 18

Introduction – data mining –data mining functionalities – classification of data mining systems – data mining task primitives- integration of a Data mining system with a database or data warehouse system – Descriptive Data Summarization -Data processing - Data cleaning – data integration and transformation - data reduction - data discretization and concept of hierarchy generation.

UNIT II

Hrs 18

Data ware housing and OLAP Technology - A Multidimensional Data Model - data warehouse architecture - Data Warehouse implementation- from data warehousing of data mining - efficient method for a data Cube computation

UNIT III

Hrs 18

Classification and Prediction - what is classification? what is Prediction? -Issue regarding classification and Prediction - classification by decision Tree Induction - Bayesian Classification.

UNIT IV

Hrs 18

Cluster analysis - Types of Cluster Analysis Partitioning Methods- Hierarchical methods -Density based methods.

UNIT V

Hrs 18

Applications and Trends in data mining data mining Application, Social Impacts of Data mining -Trends in data mining - Data mining system Products and research Prototypes

References:

1. "Data Mining concepts and techniques", Jiawei Han and Micheline Kamber, Second Edition, Morgan Kaufman Publishers - 2006.
2. "Data Ware housing in the Real World", Sam Anahory and Dennis Murray, Addison Wesley, Pearson Education Asia Pvt Ltd, 2000.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	14P3ITC8	Core- CLOUD BASED WEB SERVICES	4	4

Objective

- To understand various services of web

UNIT I

Hrs 12

Introduction to Web Services – XML Fundamentals - Client/Server, CORBA, JAVA RMI, Micro Soft DCOM, MOM - Components of Webservices – SOAP – WSDL – UDDI – SOAP Sever.

UNIT II

Hrs 12

Cloud components - Cloud architecture - Cloud delivery model – SPI framework , SPI vs. traditional IT Model - Cloud deployment model - Virtualization and Cloud Computing – Web services through Cloud.

UNIT III

Hrs 12

Web Services Interoperability – Overview of .NET and J2EE. Calling a Web Service by Using a Proxy - Creating a Simple web service - Creating and Calling a Web Service by Using Visual Studio .NET.

UNIT IV

Hrs 12

The J2EE Web Service APIs - SOA support in J2EE – SOAP web service example in java using eclipse - RESTful webservices - Building webservices with JAX-WS – Building RESTful webservices with JAX-WS.

UNIT V

Hrs 12

Web Services Security – XML security frame work, XML encryption, XML digital signature, guidelines for signing XML documents. XML Serialization in the .NET Framework.

Text book : Compiled and edited by T.S.Baskaran Dept of Computer science.

REFERENCE BOOKS

- Cloud computing a practical approach - Anthony T.Velte , Toby J. Velte Robert Elsenpeter TATA McGraw- Hill , New Delhi - 2010
- Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online - Michael Miller - Que 2008
- Developing Java Web Services, R. Nagappan, R. Skoczylas, R.P. Sriganesh, Wiley India, rp – 2008.
- Developing Enterprise Web Services, S. Chatterjee, J. Webber, Pearson Education, 2008.
- XML, Web Services, and the Data Revolution, F.P.Coyle, Pearson Education.
- Building Web Services with Java, 2nd Edition, S. Graham and others, Pearson Edn., 2008.
- Java Web Services, D.A. Chappell & T. Jewell, O'Reilly,SPD.
- J2EE Web Services, Richard Monson-Haefel, Pearson Education.
- Java Web Services Programming, R.Mogha,V.V.Preetham, Wiley India Pvt.Ltd.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
III	14P3ITC9	MANAGEMENT INFORMATION SYSTEM	5	5

Objective

- ❖ To know about various information systems required to design MIS.
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Unit I

Hrs 15

Introduction to Information System: why Study Information System - Why Business Need Information technology - Fundamentals of Information System - Overview of Information Systems.

Unit II

Hrs 15

Solving Business problems with Information System: System Approach To problem Solving - Developing Information System Solution - Database Management: Managing Data Resources Technical Foundations of Data Base Management.

Unit III

Hrs 15

Information System for Strategic Advantage: - Fundamentals Of Strategic Advantage - Strategic Application and Issues In It; Managing IT: Enterprise and Management.

Unit IV

Hrs 15

Business Applications of Information Technology: The Internet And Electronic Commerce - Fundamentals of Electronic Commerce - Information System for Business Operations: Business Information System - Transaction processing System.

Unit V

Hrs 15

Information System for Managerial Decision Support: Decision Support Systems - Artificial Intelligence Technology In Business - Managing IT - planning for business Change with IT - Implementing Business change with IT - Security & Control Issues in I/S -Ethical And Societal Challenges of Information Technology.

Reference:

1. "Management Information System", James A.O' Brein, Fourth Edition, Galgotia publications, 1999.

General Reference:

1. "Management Information System", Gordon B. Davis Margre the H.Olson, Mc Graw Hill, 3rd Reprint 2000.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No.of Credits
III	14P3ITC10	Core- ADVANCED SOFTWARE ENGINEERING	6	5

Objective

* To Understand advances in Development software

UNIT I

Hrs 18

A Generic view of Process: Layered Technology-Process Framework-Capability Maturity Model Integration-Process Patterns-Process Assessment-Personal and Team Process Models-Process Technology-Product and Process. **Process Models:** Waterfall Models-Incremental Process Model-Evolutionary Process Model-Specialized Process Model-Unified Process.

UNIT II

Hrs 18

Requirement Engineering: Tasks-Initiating Requirement Engineering Process-Eliciting Requirements-Developing Use case-Building Analysis Model-Negotiating Requirements-Validating Requirements. **Building Analysis Model:** Requirement Analysis –Analysis Modeling Approaches-Data Modeling Concepts-Object Oriented Analysis-Scenario Based Modeling-Flow Oriented- Class Based –Behavioral Model.

UNIT III

Hrs18

Design Engineering: Context of Software Engineering –Design Process and Design Quality-Design Concepts-Design model-Pattern Based Design. **Architectural Design:** Software Architecture-Data Design-Architectural Styles and Pattern-Architectural Design-Alternate Architectural Design-Mapping Data Flow. **User Interface Design:** Golden Rules-User Interface Analysis and Design-Interface Analysis-Interface Design- Design Evaluation.

UNIT IV

Hrs 18

Testing Strategies: Strategic Approach-Strategic Issues-Strategic for Conventional Software-Strategic for Object Oriented Software-Validation Testing-System Testing-Art of Debugging. **Testing Tactics:** Testing fundamentals-Black box Testing-White Box Testing-Basis Path Testing-Control Structure Testing-Object Oriented Testing-Testing Methods Applicable-Interclass Test Case Design-Testing for Specialized Environments-Testing Patterns.

UNIT V

Hrs 18

Project Management: Management Spectrum – People –Product-Process-Project-W5HH Principle-Critical Practices. **Quality Management:** Quality Concepts-Software quality Assurance-Software Reviews-Technical Reviews –Statistical SQA-Software Reliability-ISO 9000 Quality Standards-SQA Plan. **Change Management:** Software Configuration management-SCM Repository-SCM Process-Configuration Management for Web Engineering.

References:

1. Software Engineering (Sixth Edition) by ROGER S. PRESSMAN, McGraw-Hill International Edition, 2005.
2. Richard E.Fairley, "Software Engineering Concepts", McGraw-Hill Book Company - 1985.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
III	14P3ITCP5	WEB SERVICES LAB	3	3

1. Development of a *Hello World* Web service with C# on Microsoft Visual Studio
2. Create a web service for temperature conversion with appropriate client program.
3. Development of a Java Web service for squaring an integer
4. Create a web service for currency conversion (at five currencies) with appropriate client program.
5. Development of a Java client application for consuming the Java Web service
6. Development of a .NET Web client application to consume the .NET Web service
7. Development of a Java client application for consuming the .NET Web service

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
IV	14P4ITEL3A	Elective - III OPEN SOURCE PRODUCT LAB	6	4

Students have to apply the concepts studied throughout the semesters using various Open Source tools like Data Mining, HCI, Image Processing, Ontologies, Parallel Computing and Cloud Computing.

Semester	Subject code	Title of the course	Hours of Teaching / Week	No. of Credits
IV	14P4ITEL3B	Elective - III SOFTWARE COMMUNICATION AND DOCUMENTATION	6	4

Objective

- ❖ To know about various Software Communication and Documentation concepts.

Unit I BASIC CONCEPTS

Hrs 18

Importance of communication and documentation; Different types of communications; Spoken communication; written communication; Different types of documentation.

Unit II SPOKEN INDIVIDUAL SPOKEN COMMUNICATION

Hrs 18

Elements of good individual communication – getting over nervousness – organizing one self – characteristics of effective communication – augmenting spoken words by actions and other means – other aspects of spoken communication like speeches; presentation; use of visual aids.

Unit III GROUP COMMUNICATION

Hrs 18

Meeting – Effective participation – effective management of meetings – preparing minutes – “Virtual” meetings – audio conference – video conference – use of collaboration tools.

Unit IV DIFFERENT TYPES OF WRITTEN COMMUNICATION

Hrs 18

Principles of effective written communication – differences between written communication and spoken communication – resume writing – email; effective email techniques – proposals – contracts – user guides – external technical documentation for software – internal software technical documentation – users guides – letters and different types of letters – legal issue.

Unit V TECHNOLOGY AND STANDARDS

Hrs 18

Use of various tools and technologies – need for standardization – role of processes and standards in documentation – on-line help – Impact of internet on documentation – common challenges in the harnessing of technology ; course summary.

Text books

1. Huckin, et al, Technical Writing and Professional Communication, McGraw Hill, 1991.
2. Ron Ludlow and Fergus Panton, The Essence of Effective Communication, PHI (P) Ltd., New Delhi, 1995.

References

1. W.R.Gordin and Edward W.Mammen: The Art of Speaking Made Simple, Rupa&Co., 1982.
2. Sushil Bahl: Business Communication Today, Response Books, New Delhi, 1996.
3. Eyre, Effective Communication Made Simple, W.H. Allen, London, 1979.
4. Gloria Wilson and Garry Bitter, Learning Media Design (Text and CD Rom), PHI (P) Ltd., New Delhi, 1998.
5. Simmon Collin – Multimedia Made Simple Asian Books (P) New Delhi, 1996.
Bennet – Illustrated World of DTP Dreamland Publications, New Delhi, 1998.

Semester	Subject code	Title of the course	Hours of Teaching/Week	No. of Credits
IV	14P4ITEL3C	Elective - III SEMANTIC WEB	6	4

Objective

* To know about the Semantic Web Applications.

UNIT – I

Hrs 18

RDF and RDF Schema: Introduction – XML Essential-RDF-RDF Scheme-A Summary of RDF /RDF Scheme vocabulary.

UNIT - II

Hrs 18

OWL: Introduction-Requirements for Web Ontology Description Languages-Header Information, versioning and Annotation Properties-Properties-Classes Individuals Data types- A Summary of the OWL vocabulary.

UNIT - III

Hrs 18

Rule Languages: Introduction-Usage Scenarios for Rule Language-Data log-Rule ML-SWRL-TRIPLE-**Semantic Web services**-Introduction-Web service Essential-OWLs Service Ontology-An OWLs Example.

UNIT - IV

Hrs 18

Ontology Sources: Introduction – Metadata Upper Ontologies – Other Ontologies of Interest – Ontology Libraries. **Semantic Web Software Tools:** Introduction – Metadata and Ontology Editors - Reasoners – Other tools.

UNIT - V

Hrs 18

Applications: Software Agents – Introduction – Agent Forms – Agent Architecture – Agent in the Semantic Web Context – **Semantic Desktop:** Introduction – Semantic desktop meta data – Semantic Desktop Ontologies - Semantic Desktop Architecture - Semantic Desktop Related Applications.

Ontology Applications In Art: Introduction – Ontologies for the Description of Works of Art – Meta data Schemas for the Description of Works of Art- Semantic Annotation of Art Images.

Text Books:

1. "Semantic Web: Concepts, Technologies and applications" K.K. Breitman, M.A. Casanova and W. Truszkowski Springes-verlag London Limited, 20907, India
Reprint by Rakmo press(p) Ltd, New Delhi 2010.

Semester	Subject code	Title of the course	Hours of Teaching/ Week	No. of Credits
IV	14P4ITRP	Project	3 months	8

Main Project

Objective

- ❖ To master technical and Software development Skills.

Students have to undergo Industrial Software Development projects using recent technologies.