Semester-III						
Core subjects	**Course Code**	**Title of the Paper**	**External credit**	**Internal credit**	**Total Credits**	**Contact Hrs**
Core subjects	M.Sc. IT-301	Software Engineering	3	1	4	
	M.Sc. IT-302	Computer Networks	3	1	4	40hrs
	M.Sc. IT-303	VB.Net	3	1	4	40hrs
	M.Sc. IT-304	RDBMS through Oracle 10g	3	1	4	40hrs
Core Electives	M.Sc. IT-305	**Elective-III**	3	1	4	40hrs
		1: Digital Image Processing				
		2: Cloud Computing				
		3: Data Mining				
	M.Sc. IT-306	Lab-4 (VB.NET)	2	0	2	60hrs
	M.Sc. IT-307	Lab-5(RDBMS)	2	0	2	60hrs
	M.Sc. IT-308	Seminar	0	1	1	40hrs
	Total Credits		**20**	**5**	**25**	360hrs

Semester-IV						
Core subjects	**Course Code**	**Title of the Paper**	**External credit**	**Internal credit**	**Total Credits**	**Contact Hrs**
Core subjects	M.Sc. IT-401	Java Programming	3	1	4	
	M.Sc. IT-402	Software Testing	3	1	4	40hrs
	M.Sc. IT-403	Web Development & PHP Programming	3	1	4	40hrs
	M.Sc. IT-404	Project Work	3	1	4	40hrs
Core Electives	M.Sc. IT-405	**Elective-IV**	3	1	4	40hrs
		1: Mobile Communication				
		2: Internet Programming and Tools				
		3: Computer System Security				
	M.Sc. IT-406	Lab-6 (Java Programming)	2	0	2	60hrs
	M.Sc. IT-407	Lab-7(web & PHP Programming)	2	0	2	60hrs
	M.Sc. IT-408	Open Electives	0	1	1	40hrs
	Total Credits		**19**	**5**	**25**	360hrs

M.Sc. IT-301   **Software Engineering**   **(4-Credits)**

Unit-I The Product:
The Evolving Role Of Software, Software: Software Characteristics, Software Applications
Software Crisis & Horizon, Software Myths

Unit-II Process Of Software:
Software Engineering, Software Process, Software Process Model, Linear Sequential Model
Prototyping Model, Evolutionary Process Model, Spiral Model.

Unit-III Management Concepts:
Management Spectrum, The People: The Product, The Process, The Project
People:,Layers, Leaders & Software Team

Unit-IV Software Process & Project Metrics:
Measures, Metrics & Indication, Metrics In The Process & Project Domains, Software Measurement,
Metrics For Software Quality.

Unit-V Software Project Planning and Risk Analysis & Management
Observation Estimation, Project Planning Objectives, Software Scope, Resources
Software Project Estimation. Software Risks, Risk Identification, Risk Projection

Unit-VI Quality Assurances and Software Testing Strategies
Quality Concepts, Software Quality Assurance, Formal Technical Reviews
Software Testing Fundamentals, White Box Testing, Black Box Testing
A Strategic Approach To Software Testing, Unit Testing, Integration Testing
Top-Down Integration, Bottom Up Integration

Reference Books:
1. Software Engineering (A Practitioner's Approach) By Rogers Pressman (Fifth Edition)
2. Software Engineering (A Practitioner's Approach) By Rogers Pressman (Fourth Edition)

M.Sc. IT-302   **Computer Networks**   **(4-Credits)**

Unit-I Introduction to Computer Networks
Computer Networks, goals and applications,Network Hardware broadcast and point-to-point, topologies – star, bus, mesh, ring etc,Network Types LAN, MAN, WAN, Wireless Networks, Home Networks, Internetworks, Protocols and Standards – Definition of Protocol, Defacto andDejure standard Peer –to-peer and Server – based LAN, Network Software Protocol Hierarchies -layers, protocols, peers, interfaces network architecture, protocol stack design issues of the layers –addressing, error control, flow control, multiplexing and demultiplexing ,routingConnection-oriented and connectionless service Service Primitives – listen, connect, receive, send, disconnect and Berkley Socket The relationships of services to protocol

Unit-II Network Models
OSI Reference Model, Functionality of each layer, TCP/IP Reference Model
Introduction to IP, TCP, and UDP TCP/IP Protocol Suite Comparison of OSI and TCP/IP model
Addressing Physical, Logical and Port addresses

Unit-III The Physical Layer:
Basic Concepts Signals, Types – Analog and Digital Signals, Bit rate, bit length, baseband transmission, Transmission Impairnments – attenuation, distortion and noiseData Rate Limits – Nyquist's bit rate formula for noiseless channel and Shannon's lawPerformance of the Network Bandwidth, Throughput, Latency(Delay), Bandwidth –DelayProduct, Jitter, Line Coding Characteristics, Line Coding Schemes – Unipolar, NRZ, RZ, Manchester and Differential Manchester, Transmission Modes-Parallel TransmissionSerial Transmission – Asynchrounous and Synchrouous, Multiplexing FDM and TDMSwitching Circuit Switching, Message Switching and Packet Switching, ISDN Services, Evolution, Architecture

Unit-IV The Data Link Layer:
Design Issues Services to Network Layer, Flow
Control, Error Control Framing Character Count, Byte Stuffing, Bit Stuffing and Physical Layer Coding Violations Error Control Hamming Code and CRC, Elementary Data Link Layer Protocols, Utopia, A Simplex Stop-And-Wait, A Simplex protocol for noisy channel, Sliding Window Protocols Piggybacking-Need,Advantages/Disadvantages, 1-bit sliding window protocols, Pipelining –Go-Back N and Selective Repeat Data Link Layer ProtocolsHDLC – frame format, all frame types PPP – Use, Frame Format, Use of PPP in the Internet

Unit-VThe Medium Access Su
Random Access Protocols, ALOHA – pure and slotted, CSMA – 1-persistent, p-persistent and
non-persistent CSMA/CD CSMA/CA, Controlled Access Reservation, Polling and Token Passing,
Channelization FDMA, TDMA and CDMA-Analogy, Idea,Chips, Data
Representation, Encoding and Decoding, Signal Level, Sequence Generation

Unit-VIWired LANS
IEEE Standards Data Link Layer, Physical Layer 1, Standard Ethernet MAC Sublayer – Frame Format,
Frame, Length, Addressing, Access Method, Physical Layer – Encoding and
Decoding, 10Base5, 10Base2, 10Base-T, 10Base-F, Changes In The Standard – Bridged
Ethernet, Switched Ethernet, Full Duplex Ethernet Fast Ethernet – Goals, MAC Sublayer,
Topology, Implementation Gigabit Ethernet – goals, MAC Sublayer, Topology, Implementation
Ten-Gigabit Ethernet – goals, MAC Sublayer, Physical Layer

Reference Books:
1. Computer Networks by Andrew Tanenbaum, Pearson Education.
2. Data Communication and Networking by Behrouz Forouzan, TATA McGraw Hill.

M.Sc. IT-303   **Visual Basic.Net**   **(4-Credits)**

Unit-I Getting Started With VB.Net
The integrated Development Environment, The Start Page, Project types, The IDE Components, Building Console Application, Variables, Constants, Arrays, Flow Control Statements

Unit-II Writing And using procedure and forms
Subroutine Function, Arguments passing Mechanisms, Event handler Arguments, Passing an unknown number of Arguments, Overloading function,
The Appearance of the Form, Properties of the form, Anchoring& Docking, The Form Events
Loading &Showing Forms, Controlling one Form from within another, Forms vs. Dialog Boxes
Designing Menus,   The Menu Editor, The Menu item Object Properties,   Manipulating menus Run Times, Iterating a menu Item, Building Dynamic Form at Run Time, Creating Event handler At Run Time

Unit-III Basic and More Windows Controls
The Text Box. Control, Basic Properties, Text manipulation properties, Text selection properties
Text Selection Method, Undoing Edits, Capturing keystrokes, The ListBox, CheckedListBox, &ComboBox Control, Basic properties, The Item Collection, Searching, The Scrollbar &Trackbar Control, The Common Dialog Control, Color Dialog Box, The font Dialog Box
The Open &save As Dialog Box, The Prim Dialog Box, The Rich Text Control
The Rich textbox Properties, Methods, Advanced Edition Feature, Cutting & Pasting, Searching in Rich Textbox, Formatting URL, Print Documents, PrintDialog, PageSetupDialog, PrintPreviewDialog, Controls printer & Page Properties, ImageList Control , The TreeView Control
 Adding new Items at Design Time, Adding New Item at Run time, Assigning images to Node
 Scanning the Tree View Control, TheListView Control, The Column Collection, The ListItem Objects, The Item Collection, The Sub Item Collection

Unit-IV Building Custom Class &Windows Control
Building &using Custom class, Properties in custom class, Inheritance, Polymorphism
MyBase&MyClass Keywords, Building& using Custom Control, designing Irregular Shaped Control, Deigning Owner Drawn Menus.

Unit-V Handling Strings, Charters& Dates, Files & Folders
The Char & String Class, The DateTime Class, Directory, File, Directory Info, fileInfo& Path Classes, File Stream, StreamReader, Stream Writer Objects, Sending Data to a File
The File System watcher Components
Displaying linage, Exchanging Images through the clipboard, Drawing with GDI+The Basic Drawing Objects, Drawing Shapes, Drawing Methods

Unit-VI Error Handling, Debugging Building and Database Application with ADO.NET
Types of Error, Exception & Structured Exception handling, Debugging, Tilt Multiple Documents Interface, MDl Application, Building MDl Application, Built In capabilities of MDl Application
Accessing Child Forms, The ARCHITECTURE of ADO.NET, Creating Dataset, DataGrid Control.
Data binding, DataAdapterObject,The Command &DataReader Objects,
The Structure of Dataset, The DataFormWizard,Transactions

References

Reference Books
1. Mastering Visual Basic.Net
By EvangelosPatroutsos (BPB Publication)
2. Visual Basic. Net Programming
By Billy Hollis, Rockford Thotlog (Wrox Publication)
3. Visual Basic.Net Programming Black Book
By Steven Holzner
4. Beginning VB.Net (2nd Edition)

M.Sc. IT-304   **RDBMS through Oracle 10g**   **(4-Credits)**

Unit-I Introduction and Basic Concepts DBMS

Structure of DBMS, Advantages & Disadvantages Users of DBMS Database Models Hierarchical Data Model, Network Data Model, Relational Data Model, E R Data Model

Unit-II SQL Statements &Working with tables

DDL, DML, Procedural DML, Non Procedural DML, DQL, DCL, Transaction Control Commands Data types in SQL Creating & Managing Tables Manipulating Data Retrieving data using SELEC T Command WHERE Clause DISTINCT Clause Using Column Aliases Working with Views Creating View on Tables Creating View on Views Updating Views Altering Views.

Unit-III Sorting & grouping Data in SQL

Using Order By Clause, Using Group By &Having clause, Substitution Variables, Using &, && Using DEFINE Using VERIFY

Unit-IVSQL Functionsand Operators

Single Row Functions Character Functions Case Manipulation Character Manipulation Number Functions Date FunctionsConversionFunctions GeneralFunctions Multiple Row Functions)

Using Comparison Operators BETWEEN IN LIKE IS NULL 5.2 Logical Operators AND OR NOT

Unit-VJoining Tables&Working with Sub queries

What is Join? Natural Join/Inner Join/Equijoin Joining With 'USING' Clause Joining With 'ON' Clause Self Join Cross Join/ Cartesian Product Outer Join Left Outer Join Right Outer Join Full Outer Join What is Sub query? Single Row Sub query, Multiple Row Sub query

Unit-VI Security& PL / SQL

Creating User Privileges System Level Privileges Object Level Privileges Granting Privileges Revoking Privileges Roles Study of default roles Creating roles Granting and Revoking roles

An Introduction to PL/SQL, PL/SQL Overview, Declaration section, Executable Commands section, Condition logic, Loops, Exception Handlings, Triggers Syntax, Types of triggers, Enabling and Disabling Triggers Replacing and Dropping Triggers Working Cursor % TYPE Variable % TYPE Variable

References
1. Oracle Database 10g SQL (Osborne ORACLE Press Series)by Jason price, McGrawHill, 007-222981-0.
2. Oracle Database 10g PL/SQL Programming by Scott Urman , Ron HARDMAN, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07-059779-0.
3. Oracle Database 10g The Complete Reference By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07-059425-8, ISBN-10: 0-07-059425-2

1. Database systems , By KORTH
2. Database systems By Nawathe
3. Postgresql , O'Reilly publications
4. Database systems , by Raghuramakrishnan

Elective-305 (1)

M.Sc. IT-305   **Digital Image Processing**   **(4-Credits)**

Unit-I Digital Image Processing Systems:

Fundamental steps in DIP. Components of an Image Processing System, Elements of Visual Perception, Image sensing and acquisition, Image sampling and quantizationDigital Image Representation, Data Classes & Image types and Converting between Data Classes and Image types

Unit-II Intensity transformation & Spatial filtering

Intensity Transformation function, Histogram processing & Function plotting, Spatial filtering

Unit-III Frequency Domain Processing

2D –discrete Fourier transform, Filtering in frequency domain, Obtaining Frequency Domain Filters from spatial filters

Unit-IV Image Restoration

A Model of the Image Degradation /Restoration Process, Noise Models, Restoration in presence of Noise only –spatial filtering, Periodic Noise Reduction by Frequency domain filtering

Unit-V Color Image Processing

Color Image Representation, Converting to other Color Space

Unit-VI Introduction to Wavelets

Fast wavelet transform, Working with Wavelet Decomposition structures
Inverse Fast Wavelet transform

Concept & terminologies, Graph Representation, Traversals – BFS &DFS Applications – AOV network – topological sort AOE network – critical path, Shortest path with implementation

References:
1. R.C. Gonsales R. E. Woods, Digital Image Processing, Second Edition, Pearson Education.
2. Anil K. Jain, Fundamentals of Image Processing, PHI
3. R.C. Gonsales R. E. Woods, Digital Image Processing using MATLAB, Second Edition, Pearson Education.

Elective-305 (2)
M.Sc. IT-305   **Cloud Computing**   **(4-Credits)**

Unit-I Cloud Computing Fundamental: Cloud Computing definition, private, public andhybrid cloud. Cloud types; IaaS, PaaS, SaaS. Benefits and challenges of cloudcomputing, public vs private clouds, role of virtualization in enabling the cloud;Business Agility: Benefits and challenges to Cloud architecture. Applicationavailability, performance, security and disaster recovery; next generation CloudApplications

Unit-II Cloud Applications :Technologies and the processes required when deploying web services; Deploying a web service from inside and outside a cloud architecture, advantages and disadvantages

Unit-III Cloud Services Management: Reliability, availability and security of services
deployed from the cloud. Performance and scalability of services, tools andtechnologies used to manage cloud services deployment; Cloud Economics : CloudComputing infrastructures available for implementing cloud based services.Economics of choosing a Cloud platform for an organization, based on applicationrequirements, economic constraints and business needs (e.g Amazon, Microsoft andGoogle, Salesforce.com, Ubuntu and Redhat)

Unit-IV**Application Development:** Service creation environments to develop cloud based applications. Development environments for service development; Amazon, Azure, Google App

Unit-V Best Practice Cloud IT Model : Analysis of Case Studies when deciding to adopt cloud computing architecture. How to decide if the cloud is right for your requirements. Cloud based service, applications and development platform deployment so as to improve the total cost of ownership (TCO)

Unit-VI Virtualized Data Center Architecture : Cloud infrastructures; public, private, hybrid.
Service provider interfaces; Saas, Paas, Iaas.VDC environments; concept, planningand design, business continuity and disaster recovery principles.Managing VDC andcloud environments and infrastructures.

Reference Books: -

1. **Gautam Shroff, Enterprise Cloud Computing Technology Architecture Applications [ISBN: 978-0521137355]**
2. **Toby Velte, Anthony Velte, Robert Elsenpeter, Cloud Computing, A Practical Approach. [ISBN: 0071626948]**
3. **Dimitris N. Chorafas, Cloud Computing Strategies [ISBN: 1439834539]**

Elective-305 (3)
M.Sc. IT-305   **Data Mining**   **(4-Credits)**

Unit-I Introduction to Data Ware house
Introduction to Data Warehouse, evolution, main components, characteristics, benefits, limitations of data warehouse

Unit-IIRelated Concepts
OLTP vs Data Warehouse, understanding Multidimensional Data Model, Data Warehouse Architectures, Data Marts, OLAP, Data warehouse life cycle, understanding Data Cube Technology..

Unit-IIIFundamentals of Data Mining
Fundamentals of Data Mining, evolution, data mining vs KDD, data mining issues, brief review of methods in data mining.

Unit-IV Data Mining Techniques
Understanding related concepts in data mining including OLTP, OLAP, Fuzzy sets & Fuzzy logic, Information retrieval , Statistics , DSS, Machine learning , Pattern matching

Unit-V Classification
Introduction, Statistical-Based Algorithms, Distance –Based Algorithms

Unit-VI Clustering
Introduction, Similarity and Distance Measures, Outliers, Hierarchical Algorithms, Partition Algorithms, Minimum Spanning Tree, Squared Error Clustering Algorithm, K-Means clustering, Clustering Large Database
.

References:
1. Data Mining Introductiory& Advanced Topics , Margaret h Dunham, Pearson Eduction
2. Data Mining Techniques , Arun Pujari, University Press
3. Data Warehousing in the real world , Sam Aanhory& Dennis Murray , Pearson Education
4. Insight into Data Mining , K.P.Soman, Diwakar, Ajay , PHI
5. Data Warehousing Fundamentals, PulrajPonnaiah, Wiley Publications.

M.Sc. IT-401   **Java Programming**   **(4-credits)**

Unit-I Introduction
Introduction to Java - Features of Java - Object oriented concepts - Data types - Variables - Arrays - Operators - Control statements, Classes - Objects - Constructors - Overloading method - Access control - Static and final methods - Inner Classes - Inheritance - Overriding methods - Using super abstract class-- String class- String objects - String buffer - Char Array

Unit-IIPackages and Interfaces &Exception Handling
Packages , Access protection , Importing packages, InterfacesException-Handling fundamentals, Exception types, uncaught exceptions, using try and catch, Multiple catch clauses, Nested try statements, throw, throws, finally, Java's Built in Exceptions

Unit-III Applets
Applet basics, Applet architecture, applet skeleton, simple applet display methods, Requesting repainting, Using the status window, the Html APPLET Tag, get Document Base and get Code Base

Unit-IVInput/Output&Networking
Networking Basics, Java and the Net, Inet Address, TCP/IP client sockets, url connection, TCP/IP server sockets, Datagram

Unit-V Multithreaded programming
The Java Thread Model, Thread priorities, synchronization, messaging, the thread class and run able interface, creating a thread, creating multiple threads, thread priorities, suspending resuming and stopping threads

Unit-VI.Using Awt, Layout managers and menus
Control fundamentals ,labels, Using Buttons ,Applying check boxes, checkbox group, choice controls, Using Lists, Managing scrollbars, Using a Text field, Using a Text area ,Understanding Layout Managers

Text Books:
1. Naughton and H.Schildt - "Java 2 - The complete reference" - Fourth edition.-2002
2. S.Horstmann, Gary Cornell - "Core Java 2 Volume I - Fundamentals" - Addison Wesley – 2001 Arnold and J.Gosling–
3. "The java programming language" - Second edition Art Gittleman – "Ultimate Java Programming" –Wiley Publications-2002

M.Sc. IT-402   **Software Testing**   **(4-credits)**

Unit-I Introduction to Software Testing
Quality, Quality Culture, Customer View, Characteristic of Software, SDLC Life cycle Definition of Software testing, Principles of Software testing Economics of testing, Testing policy Structure d approach to testing. Testing Process, Test objects Test Methods, Black Box testing, White box testing Configuration Management

Unit-II Defect Management
Defect, Software Verification and Validation Defect Techniques for Finding defect, Static technique Dynamic technique, Categories of testing, Defect Management Process Defect Management Risks, Retesting, Defect Life Cycle Defect Tracking Tools, Severity, Priority Defect Reporting, Defect Density.

Unit-III Levels of Testing &Writing and Tracking Test Cases
'V' Model, Stub, Driver, Integration Testing Bottom-Up Testing, Top-down testing Sub-System testing System testing, Execution Testing, Usability Testing Compatibility testing, Operation testing, Acceptance Testing Alpha Testing, Beta Testing. Tegression testing Error-handling testing Manual-Support testing, Smoke testing, Ad-hoc testing Parallel Testing, Stress testing, Load testing.Test plan, Test plan Benefits, Test Plan Template, Test Scope Test Objectives, Assumptions, Risk, Risk Analysis Risk management, Test Schedule and Planned Resources Test case planning overview, Test Design, Test Cases, Test Procedures Building Test Data, Equivalence Partitioning, Boundary Value analysis Test case Organization and Tracking

Unit-IV Automated Testing and Test Tools
Benefits of Automation, Introduction to Winrunner7.01 Recording and Playback, GUI Map File and GUI map per Test Creating Checkpoints, Virtual Object wizard, Programmed macros Recording Tests, Synchronizing Test, checking bitmaps Creating Data Driven Tests, Reading Text, Creating Batch Tests

Unit-V Test Director Software
Server and Client System configuration, Applications of Test Director 6.2 Creating Users in the project, Assigning Rights 6.3 Writing Test Cases in Test Director, Automation of test cases 6.4 Bug reporting, Customization of Fields

Unit-VI Quick Test Professional
Introduction to QTP, Record and Play back, Active Screen Running and analyzing Tests, Creating Checkpoints Parameterizing Tests, Creating Output Values Working with regular Expression, Dividing Tests into Multiple Actions

References
1. Software Engineering by Roger S. Pressman, McGraw Hill International Pub.

2. Software Testing in the Real World by Edward Kit, Addition – Wesley Pub.
3. Software Testing by Ron Patton, BPB Publication 4. The Art of Software Testing by G. J. Myers, Wiley-InterScience Pub.

M.Sc. IT-403   Web Development & PHP Programming   (4-Credits)

Unit-I Introduction to web techniques
HTTP basics, Introduction to Web server and Web browser Introduction to PHP What does PHP do? Lexical structure Language basics

Unit-II Function and String 10
Defining and calling a function Default parameters Variable parameters, Missing parameters Variable function, Anonymous function Types of strings in PHP Printing functions Encoding and escaping Comparing strings Manipulating and searching strings Regular expressions

Unit-III Arrays 6
Indexed Vs Associative arrays Identifying elements of an array Storing data in arrays Multidimensional arrays Extracting multiple values Converting between arrays and variables Traversing arrays Sorting Action on entire arrays Using arrays

Unit-IV Introduction to Object Oriented Programming 8
Classes Objects Introspection Serialization Inheritance Interfaces Encapsulation

Unit-V Files and directories 6
Working with files and directories Opening and Closing, Getting information about file, Read/write to file, Splitting name and path from file, Rename and delete files Reading and writing characters in file Reading entire file Random access to file data Getting information on file Ownership and permissions 6

Unit-VIWeb Techniques 10
Variables Server information Processing forms Setting response headers Maintaining state, SSL

Reference books:
1. Programming PHP RasmusLerdorf and Kevin Tatroe O'Reilly publication
2. Beginning PHP 5 Wrox publication
3. PHP web sevicesWrox publication
4.AJAX Black Book Kogent solution
5. Mastering PHP BPB Publication
6.PHP cookbook O'Reilly publication
7. Learning PHP and MYSQL O'Reilly publication
8.PHP and MYSQL O'Reilly publication
9.PHP for Beginners SPD publication
10. www.php.net.in
11. www.W3schools.com
12 www.wrox.com

Elective-II   (1)   Mobile Programming   (4-Credits)
M.Sc. IT-405

UNIT I: Introduction
About Mobile Programming &Android, Smartphones future, preparing the Environment-Installing the SDK, Creating Android Emulator, Installing Eclipse, Installing Android Development Tools, Choosing which Android version to use, Android Stack, Android applications structure

UNIT II: Android Architecture
Android Stack, Android applications structure, Creating a project, Working with the, AndroidManifest.xml, Using the log system, Activities

UNIT III: UI Architecture
Application context, Intents, Activity life cycle, Supporting multiple screen sizes

UNIT IV: User InterfaceWidgets
Text controls, Button controls, Toggle buttons, Images, **Notification and Toast-** Parameters on Intents**,** Pending intents**,** Status bar notifications**,** Toast notifications

UNIT V: Menus, Dialogs &Animation
Localization, Options menu, Context menu, Dialogs- Alert dialog, Custom dialog, Dialog as Activity,Animation-View animation, Draw able animation

UNIT VI: Working with data storage
Shared preferences, Preferences activity, Files access, SQLite database

References:

1. Professional Android 4 Application Development,Edition   3,Reto Meier,Wrox John Wiley & Sons, 2012,ISBN   1118237226, 9781118237229.
2. Beginning Android 4 Application Development, Edition   illustrated, Wei-Meng Lee, John Wiley & Sons, 2012, ISBN 1118240677, 9781118240670.
3. Sams Teach Yourself Android Application Development in 24 Hours, Edition illustrated, Lauren Darcey& Shane Conder, Sams Publishing, 2012, ISBN 0672335697, 9780672335693

Elective-II   (2)   Internet Programming and Tools   (4-Credits)
M.Sc. IT-405

UNIT - 1 : BASIC NETWORK AND WEB CONCEPTS
Internet standards - TCP and UDP protocols - URLs - MIME - CGI - Introduction to SGML.

UNIT - 2 : JAVA PROGRAMMING
Java basics - I/O streaming - files - Looking up Internet Address - Socket programming - client/server programs - E-mail client - SMTP - POP3 programs - web page retrieval - protocol handlers - content handlers - applets - image handling - Remote Method Invocation.

UNIT - 3 : SCRIPTING LANGUAGES
HTML - forms - frames - tables - web page design - JavaScript introduction - control structures - functions - arrays - objects - simple web applications.

UNIT - 4 : DYNAMIC HTML
Dynamic HTML - introduction - cascading style sheets - object model and collections - event model - filters and transition - data binding - data control - ActiveX control - handling of multimedia data

UNIT - 5 : SERVER SIDE PROGRAMMING
Servlets - deployment of simple servlets - web server (Java web server / Tomcat / Web logic) - HTTP GET and POST requests - session tracking - cookies - JDBC - simple web applications - multi-tier applications.

REFERENCES

1. R. Krishnamoorthy& S. Prabhu, "Internet and Java Programming", New Age International Publishers, 2004.
2. Thomno A. Powell, "The Complete Reference HTML and XHTML", fourth edition, Tata McGraw Hill, 2003
3. Naughton, "The Complete Reference - Java2", Tata McGraw-Hill, 3rd edition, 1999.
4. Deitel, Deitel and Nieto, "Internet and World Wide Web - How to program", Pearson Education Publishers, 2000.
5. Elliotte Rusty Harold, "Java Network Programming", O'Reilly Publishers, 2002

Elective-II   (3)   Computer system Security   (4-Credits)
M.Sc. IT-405

UNIT I   Introduction

Computer Security:Security Goals, Relation between Security-Confidentiality, Integrity,Availability and Authorization, Vulnerabilities- Principles of Adequate protection. Operatingsecurity, Database security, Program security, Network Security (Notions Only).**Attacks:** Threats, Vulnerabilities and controls. The kind of problems-Interception, Interruption,Modification, Fabrication.

UNIT II Program Security:

Program Security: Secure programs: Fixing Faults, Unexpected Behaviour, Types of Flaws. **Nonmaliciousprogram errors:** Buffer overflows, Incomplete Mediation. Viruses and other**Malicious code:** Why worry about Malicious Code, Kinds of malicious code, How viruses attach,How viruses gain control, Prevention,**Control Example:** The Brain virus, The Internet Worm, Web bugs.

UNIT III   Operating System Security

Protected objects and methods of protection, Memory address protection: Fence, Relocation, Base/Bounds Registers, Tagged Architecture,Segmentation, Paging.**Control of access to general objects:** Directory, Access Control List.**File protection mechanism**: Basics forms of Protection, Single Permissions.**Authentication:** Authentication basics, Password, Authentication Process Challenge-response,Biometrics.**Trusted Operating systems**: Security Policies for Operating Systems,**Models of Security**: Requirement of security systems, Multilevel Security, AccessSecurity, Limitations of Security Systems.*Trusted Operating System Design*: Elements, security features, assurance, system flaws and assurance methods.

UNIT IV   Database Security

Security requirements- Integrity of Database, Confidentiality and Availability,
Reliability and integrity, Sensitive data, Interface, Multilevel database, Proposals for multilevelsecurity

UNIT V Administrating Security:

Security planning: Contents of a security , Planning Team members, commitment to a security
plan, Business continuity Plans.**Risk analysis**: The nature of risk, steps of risk analysis. Arguments for andagainst risk analysis,**Organizational security policies**: Purpose and goals of Organizational Security. Audience,Characteristics of a Good Security Policy.

UNIT-VI Nature of security Policies: Data sensitivity policy, Government Agency IT security policy.**Physical security**: Natural Disaster, Human Vandals, Interception of Sensitive Information**Legal, Privacy, and Ethical Issues in Computer Security:** Protecting programs and data,Information and law, Rights of employees and employers, Software failures, Computer crime,Privacy, Ethical issues in computer society, Case studies of ethics

Text Books:
1. *Security in Computing*, Second Edition, C. P.Pfleeger, and S. L. Pfleeger, Pearson Education.
2. *Computer Security: Art and Science*, Second Edition, Matt Bishop, Pearson Education
3. *Cryptography And Network Security: Principles and practice First Edition,* .Stallings**,**

M.Sc. IT – 408   **Open Electives**   **(1 Credit)**

1. Internet Programming
2. Logical Reasoning and Quantitative Aptitude
3. Language Aptitude