

SRM UNIVERSITY
FACULTY OF SCIENCE AND HUMANITIES
M.Sc. DEGREE COURSE IN INFORMATION TECHNOLOGY

First Semester

Paper Number	Paper Title	Lecture/ Lab Hours/ Week	Exam Duration Hr	Credit
PGIT101	Principles of Programming Languages	4	3	3
PGIT102	Computer Architecture	4	3	3
PGIT103	Database Management System	4	3	3
PGIT104	Programming in Java	4	3	3
PGIT105	Visual Programming	4	3	3
PGIT106	Practical – I: Java Programming Lab.	5	3	3
PGIT107	Practical – II : RDBMS Lab.	5	3	3
	Total Hrs	30		21

Second Semester

Paper Number	Paper Title	Lecture/ Lab Hours/ Week	Exam Duration Hr	Credit
PGIT201	Design and Analysis of Algorithm	4	3	3
PGIT202	Internet Technology	4	3	3
PGIT203	Advanced Java Programming	4	3	3
PGIT204	Software Engineering	4	3	3
PGIT205	Elective – I	4	3	3
PGIT206	Practical – III: Internet Technology Lab.	4	3	3
PGIT207	Practical – IV : Advanced Java Lab	4	3	3
	Total Hrs	30		21

Third Semester

Paper Number	Paper Title	Lecture/ Lab Hours/ Week	Exam Duration Hr	Credit
PGIT301	Object Oriented Analysis & Design	4	3	3
PGIT302	Compute Networks	4	3	3
PGIT303	Network Programming	4	3	3
PGIT304	Elective – II	4	3	3
PGIT305	Elective – III	4	3	3
PGIT306	Practical – V: Networking Programming Lab	5	3	3
PGIT307	Practical – VI : Mini Project Lab	5	3	3
	Total Hrs	30		21

Note: Mini Project should be done based on any one of the Electives chosen

Fourth Semester

Paper Number	Paper Title	Lecture/ Lab Hours/ Week	Exam Duration Hr	Credit
PGIT401	Project Work & Viva – Voce	30	-	12
	Total Hrs	30		12

List of Electives

Elective – I

- a) Artificial Intelligence & Expert System
- b) Operating System
- c) Multimedia System

Elective - II

- a) Management Information System
- b) Web Technology
- c) Software Testing

Elective - III

- a) E-Commerce
- b) Artificial Neural Networks
- c) Data Warehousing & Data Mining

PATTERN OF QUESTION PAPER (THEORY)

Time 3 hours

Max Marks 80

Part - A : (10 X 2 = 20 Marks)

Two questions in each category from each Unit

Part - B (5X 6 = 30 Marks)

Five Questions to be answered from each unit in the **either or pattern**

Part -C (3 x 10 = 30 Marks)

Three Questions are to be answered out of five questions – one question from each

PATTERN OF QUESTION PAPER (PRACTICAL)

Time: 3 Hours

Max: 100 Marks.

One compulsory problem (may contain subdivisions) to be solved within 3 hours.

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M.Sc. DEGREE COURSE IN INFORMATION TECHNOLOGY
SYLLABUS
(w.e.f. 2008-2009)

Paper Code: PGIT101

Title of the Course/ Paper	Principles of Programming Languages		
	First Year & First Semester	Credit: 4	
Objective of the course	This course introduces the basic concepts and principles of programming languages and to Object Oriented Programming which is essential.		
Course outline	<p>Unit I: INTRODUCTION Introduction – Programming domains – Language Evaluation Criterion – Influences of Language design – Language Categories – implementation methods – Evolution of several programming Languages – Describing syntax and semantics: The general problem – Formal methods – Recursive descent parsing – Attribute Grammars – Dynamic semantics.</p> <p>Unit II: DATA TYPES Variables – Concept of binding – Strong typing – Type compatibility – Scope – Scope and lifetime – Data type: Primitive, Character, String, User – Defined, array, associate arrays, records, union, set and pointer type of data.</p> <p>Unit III: EXPRESSIONS, CONTROL STATEMENTS & SUBPROGRAMS Arithmetic expressions – Overloaded operators – Relational and Boolean expressions – Assignment statement. Control structures: Compound statements – Selection statements – Iterative statements – Unconditional branching. Subprograms: Fundamentals – design issues – local referencing environment – Parameter passing methods – Overloaded Subprograms – Design issues for functions – Accessing nonlocal environments – User-defined overloaded operators.</p> <p>Unit IV: OOPS Object oriented programming – Design issues – Overview of Smalltalk – Support for OOP in C++ - Support for OOP in JAVA – Implementation of Object Oriented Constructs. Concurrency : Introduction to subprogram – Level Concurrency – Semaphores – Monitors – Message passing – Statement level concurrency. Exception Handling: Introduction exception handling in C++ and JAVA.</p> <p>Unit V: FUNCTIONAL PROGRAMMING LANGUAGE Functional Programming Language: Mathematical functions – Fundamentals of Functional Programming Languages – LISP – Common LISP. Logic Programming Language: An Overview of Logic Programming – The Origins of Prolog – Application of Logic Programming.</p>		

Recommended Text

- (i) Robert W. Sebesta – “Concepts of Programming Language” – Addison Wesley – 1999.

2. Reference Books

- (i) Pratt T.W. & Zelkowitz M.V. – Programming Languages – Design and implementation” – PHI – 2001.
- (ii) Horowitz. E – “Fundamentals of Programming Language” – Galgotia Publications – 2000.

Paper Code: PGIT102

Title of the Course/ Paper	Computer Architecture		
	First Year & First Semester	Credit: 4	
Objective of the course	This course introduces the concepts of Computer Architecture.		
Course outline	Unit 1: Computer Evolution: Pentium and Power PC Evolution. Computer System: Components – Function – Interconnection Structures – Bus Interconnection – Basic of PCI Bus. Memory: Characteristics – Hierarchy – Cache Memory – Principles – Cache Design – Locality of Reference.		
	Unit-2: Main Memory: Static RAM – Dynamic RAM – Type of ROM – Memory Chip Organization – Types of DRAM. External Memory: Magnetic Disk – Basics of RAID – Optical Memory – Magnetic Tapes,.		
	Unit 3: Input/Output: External Devices I/O Module – Programmed I/O – Interrupt Driven I/O – DMA .- I/O Channels & Processors. Computer Arithmetic : ALU – Integer Representation and Arithmetic – Floating Point Representation and Arithmetic. Instruction Set: Characteristics – Operand Types – Operation Types – Addressing Modes – Instruction Formats – Pentium and Power PC Operands, Operations, Addressing Modes Simple Examples.		
	Unit-4: CPU: Organization of Processors and Registers – Instructional Cycle – Instruction Pipelining – Pentium Processor. RISC: Characteristics – Large Register File – Register Optimization – Architecture – RISC VS CISC Characteristics – Pipelining.		
	Unit-5: Control Unit: Micro – Operations – Control of Processors – Hardwired Implementation – Micro Programmed Control Concepts – Microinstruction Sequencing – General Microinstruction Execution.		

1. Recommended Texts

- (i) W. Stallings, 2003, Computer Organization and Architecture, 6th Edition – PHI, New Delhi.

2. Reference Books

- (i) C. Hamacher, Z.Vranesic, S.Zaky, 2002, Computer Organiation, 5th Edition McGraw Hill.

Paper Code: PGIT103

Title of the Course/ Paper	Database Management Systems		
	First Year & First Semester	Credit: 3	
Objective of the course	This course introduces the concepts of database systems design		
Course outline	Unit I: Advantages and Components of Database Management Systems – Feasibility Study – Class Diagrams – Data Types – Events – Normal Forms – Integrity – Converting Class Diagrams to Normalized Tables – Data Dictionary. Unit II: Query Basics – Computation Using Queries – Subtotals and GROUP BY Command – Queries with Multiple Tables – Sub Queries – joins – DDL & DML – Testing Queries. Unit III: Effective Design of Forms and Reports – Form layout – Creating Forms – General Objects – Reports Procedural Languages – Data on Forms – Programs to Retrieve and save Data – Error Handling. Unit IV: Power of Application Structure – User Interface Features – Transaction – Forms Events – Custom Reports – Distributing Application – Table Operations Data Clustering and Partitioning. Unit V : Database Administration – Development Stages – Application Types – Backup and Security and Privacy – Distributed Databases – Client/Server Databases – web as a client/sever System – Objects – Object Oriented Databases – Integrated Applications.		

1. Recommended Texts

- (i) G.V. Post – Database Management Systems Designing and Building Business Application – MCGraw Hill International edition – 1999.

2. Reference Books

- (i) C.J. Date - An Introduction to Database Systems, 7th Edition – Addison Wesley – 2000.
- (ii) Raghu Ramakrishnan – Database Management Systems – WCD/MCGraw Hill – 1998.

Paper Code: PGIT104

Title of the Course/ Paper	Programming in Java		
	First Year & First Semester	Credit: 4	
Objective of the course	This course is to develop programming skills in Java.		
Course outline	Unit I: Introduction to Java - Features of Java - Object Oriented Concepts - Lexical Issues - Data Types - Variables - Arrays - Operators - Control Statements. Classes - Objects - Constructors - Overloading method - Access Control - Static and fixed methods - Inner Classes - String Class - Inheritance - Overriding methods - Using super-Abstract class.		
	Unit II: Packages - Access Protection - Importing Packages - Interfaces - Exception Handling - Throw and Throws - Thread - Synchronization - Messaging - Runnable Interface - Inter thread Communication - Deadlock - Suspending, Resuming and stopping threads - Multithreading.		
	Unit III: I/O Streams - File Streams - Applets -Events handling - String Objects - String Buffer - Char Array - Java Utilities - Code Documentation.		
	Unit IV: Networks basics - Socket Programming - Proxy Servers - TCP/IP Sockets - Net Address - URL - Datagrams - Working with windows using AWT Classes - AWT Controls - Layout Managers and Menus, jdbc connectivity.		
	Unit V : Servlets - Environment and Role - Architectural Role for servlets - HTML support - Generation - Server side - Installing Servlets- Servlet APT - servlet life cycle - HTML to servlet communication.		

1. Recommended Texts

- (i) C. S. Horstmann, Gary Cornell, 1999, Core Java 2 Vol. I Fundamentals, Pearson Education, Delhi.
- (ii) D.R. Callaway, 1999, Inside Servlets, Pearson Education, Delhi.

2. Reference Books

- (i) P. Naughton and H. Schildt, 1999, Java2 (The Complete Reference), Third Edition, Tata McGraw-Hill, New Delhi.
- (ii) K. Moss, 1999, Java Servlets, Tata McGraw-Hill, New Delhi.
- (iii) H.M.Deital and P.J. Deital, 2005, Java: How to program, 5th Edition, Pearson Education, Delhi.

Paper Code: PGIT105

Title of the Course/ Paper	Visual Programming		
Core	First Year & First Semester	Credit: 3	Sl. No. :4
Objective of the course	This course introduces the basic concepts of Visual Programming.		
Course outline	Unit 1: Customizing a Form - Writing Simple Programs - Toolbox - Creating Controls - Name Property - Command Button - Access Keys - Image Controls - Text Boxes - Labels - Message Boxes - Grid - Editing Tools - Variables - Data Types - String - Numbers.		
	Unit-2: Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures.		
	Unit 3: Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - DoEvents and Sub Main - Error Trapping.		
	Unit-4: VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics.		
	Unit-5 : Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop		

1. Recommended Texts

- (i) Gary Cornell, Visual Basic 6 from the Ground up, Tata McGraw-Hill, 1999.
- (ii) Noel Jerke, Visual Basic 6 (The Complete Reference), Tata McGraw-Hill, 1999.

2. Reference Books

- (i) B. Siler and J. Spotts, Special Editor using Visual Basic 6, PHI, 2001.

Paper Code: PGIT106

Title of the Course/ Paper	Practical –III: Java Programming Lab.		
	First Year & First Semester	Credit: 4	
Objective of the course	This course gives practical training in programming in Java.		
Course outline	APPLICATION 1. Determining the order of numbers 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 & Exception Handling (Synchronization & asynchronization). APPLETS 8. Working with Frames and various controls. 9. Working with Dialogs and Menus. 10. Working with Panel and Layout. 11. Incorporating Graphics (Scaling Only). APPLICATIONS FOR EVENTS HANDLING 13. Application Using jdbc Connectivity 14. HTML to Servlet Applications 15. Servlet to Applet communication		

Paper Code: PGIT107

Title of the Course/ Paper	Practical – II: RDBMS Lab.		
	First Year & First Semester	Credit: 4	
Objective of the course	This course gives training in design and implementation of data bases for the selected problems.		
Course outline	Create database and performing the operations given below using a Menu Driven Program : (a) Insertion, (b) Deletion, (c) Modification, (d) Generating a reports (Simple) for the following System using Visual Basic as a Frontend and Oracle as a Backend : <ol style="list-style-type: none">1. Payroll2. Mark Sheet Processing3. Savings Bank Account for Banking4. Inventory System5. Invoice System6. Library Information System7. Student Information System8. Income Tax Processing System9. Electricity Bill Preparation System10. Telephone Directory Maintenance.		

Paper Code: PGIT201

Title of the Course/ Paper	Design and Analysis of Algorithms		
	First Year & Second Semester	Credit: 4	
Objective of the course	This course gives insight into the design and analysis for selected problems.		
Course outline	<p>Unit 1: Introduction - Definition of Algorithm – pseudocode conventions – recursive algorithms – time and space complexity –big-“oh” notation – practical complexities – randomized algorithms – repeated element – primality testing - Divide and Conquer: General Method - Finding maximum and minimum – merge sort.</p> <p>Unit 2: Divide and conquer contd. – Quicksort, Selection, Strassen's matrix multiplication – Greedy Method: General Method –knapsack problem - Tree vertex splitting - Job sequencing with dead lines – optimal storage on tapes.</p> <p>Unit 3: Dynamic Programming: General Method - multistage graphs – all pairs shortest paths – single source shortest paths - String Editing – 0/1 knapsack. Search techniques for graphs – DFS-BFS-connected components – biconnected components.</p> <p>Unit 4: Back Tracking: General Method – 8-queens - Sum of subsets - Graph Coloring – Hamiltonian cycles. Branch and Bound: General Method - Traveling Salesperson problem.</p> <p>Unit 5 : Lower Bound Theory: Comparison trees - Oracles and advisory arguments - Lower bounds through reduction - Basic Concepts of NP-Hard and NP-Complete problems.</p>		

1. Recommended Texts

- (i) E. Horowitz, S. Sahni and S. Rajasekaran, 1999, Computer Algorithms, Galgotia, New Delhi.

2. Reference Books

- (i) G. Brassard and P. Bratley, 1997, Fundamentals of Algorithms, PHI, New Delhi.
- (ii) A.V. Aho, J.E. Hopcroft, J.D. Ullmann, 1974, The design and analysis of Computer Algorithms, Addison Wesley, Boston.
- (iii) S.E. Goodman and S.T. Hedetniemi, 1977, Introduction to the Design and Analysis of algorithms, Tata McGraw Hill Int. Edn, New Delhi.

3. Website, E-learning resources

<http://www.cise.ufl.edu/~raj/BOOK.html>

Paper Code: PGIT202

Title of the Course/ Paper	Internet Technology		
	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces the design of websites and internet technologies.		
Course outline	<p>Unit 1: Introduction to Javascript – Advantage of Javascript – Javascript Syntax – Datatype – Variable – Array – Operator and Expression – Looping Constructor – Function – Dialog box.</p> <p>Unit 2: Javascript document object model – Introduction – Object in HTML – Event Handling – Window Object – Document object – Browser Object – Form Object – Navigator object – Screen object – Build in Object – User defined object – Cookies</p> <p>Unit 3: Features of C# - C# and .NET framework – Getting started – C# language fundamentals – classes and objects – Inheritance and Polymorphism – Interfaces-Arrays – Indexers and Collections – Strings and Regular Expressions – Handling Exceptions – Delegates and Events.</p> <p>Unit 4: ASP. NET Language Structure – Page Structure – Page event, Properties & Compiler Directives. HTML server controls – Anchor, Tables, Forms, Files. Basic Web server Controls – Lable, Textbox, Button, Image, Links, Check & Radio button, Hyperlink. Data List Web Server Controls – Check box list, Radio button list, Drop down list, List box, Data grid, Repeater.</p> <p>Unit 5: Request and Response Objects, Cookies, Working with Data – OLEDB connection class, command class, transaction class, data adaptor class, data set class. Advanced Issues – Email, Application Issues, Working with IIS and page Directives , Error handling. Security – Authentication , IP Address, Secure by SSL & Client Certificates.</p>		

1. Recommended Texts

- (i) I. Bayross, 200, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Perl CGI, BPB Publications.
- (ii) G.Buczek, 2002, ASP.NET Developers Guide, TMH.
- (iii) Jesse Liberty, 2002, Programming C#”, Second Edition, O’Reilly Press.

2. Reference Books

- (i) J. Jaworski, 1999, Mastering Javascript, BPB Publications.
- (ii) T. A. Powell, 2002, Complete Reference HTML (Third Edition),Tata McGraw-Hill, New Delhi.
- (iii) Richard Anderson, Professional ASP.NET, Wrox Press Ltd.
- (iv) Jeffrey Ritcher, 2002, Applied Microsoft .NET framework Programming, Microsoft Press.
- (v) Kumar Sanjeev and Shibi Panikkar, Magic of ASP.NET with C#, Firewall Media.

Paper Code: PGIT203

Title of the Course/ Paper	Advanced Java Programming		
	First Year & Second Semester	Credit: 4	
Objective of the course	This course gives an insight into advanced features of Java		
Course outline	Unit 1: Servlet overview – the Java web server – your first servlet – servlet chaining – server side includes- Session management – security – HTML forms – using JDBC in servlets – applet to servlet communication.		
	Unit 2: Java Beans :The software component assembly model- The java beans development kit- developing beans – notable beans – using infobus - Glasgow developments - Application Builder tool- JAR files-Introspection-Bound Properties-Persistence-customizers - java beans API.		
	Unit 3: EJB: EJB architecture- EJB requirements – design and implementation – EJB session beans- EJB entity beans-EJB Clients – deployment tips, tricks and traps for building distributed and other systems – implementation and future directions of EJB-Variable in perl- perl control structures and operators – functions and scope		
	Unit 4: RMI – Overview – Developing applications with RMI:Declaring & Implementing remote interfaces-stubs & skeletons,Registering remote objects,writing RMI clients –Pushing data from RMI Servlet – RMI over Inter-ORB Protocol		
	Unit 5: JSP –Introduction JSP-Examining MVC and JSP -JSP scripting elements & directives-Working with variables scopes-Error Pages - using Java Beans in JSP Working with Java Mail-Understanding Protocols in Javamail-Components-Javamail API-Integrating into J2EE-Understanding Java Messaging Services-Transactions.		

1. Recommended Text:

- (i) J. McGovern,R. Adatia,Y. Fain, 2003, J2EE 1.4 Bible, Wiley-dreamtech India Pvt. Ltd, New Delhi
- (ii) H. Schildt, 2002, Java 2 Complete Reference, 5th Edition, Tata McGraw Hill, New Delhi.

2. Reference books:

- (i) K. Moss, 1999, Java Servlets, Second edition, Tata McGraw Hill, New Delhi.
- (ii) D. R.Callaway, 1999, Inside Servlets, Addison Wesley, Boston
- (iii) Joseph O’Neil, 1998, Java Beans from the Ground Up, Tata McGraw Hill, New Delhi.
- (iv) TomValesky, Enterprise JavaBeans, Addison Wesley.
- (v) Cay S Horstmann & Gary Cornell, Core Java Vol II Advanced Features, Addison Wesley.

Paper Code: PGIT204

Title of the Course/ Paper	Software Engineering		
	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces the concepts of Software Planning, analysis, design and testing.		
Course outline	Unit 1: The Product-The Process-Project Management Concepts-Software Projects And Project Metrics		
	Unit 2: Software Project Planning-Risk Analysis And Management-Project Scheduling And Tracking-Software Quality Assurance		
	Unit 3: Software Configuration Management-System Engineering-Analysis Concepts And Principles-Analysis Modeling.		
	Unit 4: Design Concepts and Principles-Architectural Design-User Interface Design.		
	Unit 5: Component level Design-Software Testing Techniques-Software Testing Strategies-Technical Metrics For Software – Ethics in Information Technology.		

1. Recommended Texts

- (i) R. S. Pressman, 2005, Software Engineering A Practitioner's approach, 6th Edition, Tata McGraw-Hill, New Delhi.

2. Reference Books

- (i) I. Sommerville, 2001, Software Engineering, 6th Edition, Addison Wesley, Boston.
- (ii) Rajib Mal, 2005, -Fundamental of Software engineering , 2nd Edition , PHI, New Delhi.
- (iii) N. E. Fenton, S. L. Pfleenger, 2004, Software Metrics, Thomson Asia, Singapore.

3. Website, E-learning resources

- (i) <http://www.mhhe.com/pressman>

Paper Code: PGIT206

Title of the Course/ Paper	Practical – III: Internet Technology Lab.		
	First Year & Second Semester	Credit: 3	
Objective of the course	This course gives training in Web technologies.		

	<ol style="list-style-type: none"> 1. Write a script to create an array of 10 elements and arrange them in the ascending or descending order. 2. Write a function in Javascript that takes a string and looks at it character by character and perform all the String manipulation.. 3. Create a simple calculator which should perform all the mathematical operations. 4. Create a document and add a link to it. Create a new window on that document. When the user moves the mouse over the link , it should load the linked document on it. 5. Create a document that accepts the user's name in a text field form and displays the same the next time when the user visits the site informing him that he has accessed the site for the second time, and so on. 6. Create a Web form for an online library. This form must be able to accept the Membership Id of the person borrowing a book, the name and ID of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the book is to be returned. You can enhance the look of the page by using various ASP.NET controls. 7. Use a calendar control in the page to determine the current date (when the book is borrowed) and calculate the due date, which must be three weeks from the current date. Display the due date to the user. 8. Create an array containing the titles of five new movies. Use this array as a data source for a drop down list control. The page must be capable of displaying the selected movie title to the user when the user clicks on the submit button. 9. Create a virtual directory in IIS. Create a global.asax file and include the "Session_Start" and "Session_End" and, "Application_BeginRequest" and "Application_EndRequest" events. Write a simple ASP.NET page and execute it in the browser. What is the output that you get? 10. Create an ASP.NET application. The application must consist of a form that accepts the user's credentials and validate the same. The user is then allowed to purchase items from the site by filling in a form. The user is finally informed when the purchased goods will be delivered to him/her. <ol style="list-style-type: none"> a. Create a single default error page for any errors occurring in the application. b. Use ASP.NET debugger to debug the application during its development c. Enable tracing for the application. Display the user entered data in the purchase form as trace information at the bottom of the purchase page. d. Switch off tracing for the application. 11. Create the Employee information and perform all the validator controls. 12. Create the simple web services and test the service. 13. Create a ASP.NET application.Send a simple E-Mail to your friends. 14. Create a DataBase application and perform all the operations such as addition, deletion, insertion and updation etc.
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Paper Code: PGIT207

Title of the Course/ Paper	Practical - IV: Advanced Java Lab.		
	First Year & Second Semester	Credit: 3	
Objective of the course	This course gives practical training in Advanced java programming		
Course outline	<ol style="list-style-type: none">1. HTML to Servlet Applications2. Applet to Servlet Communication3. Designing online applications with JSP4. Creating JSP program using JavaBeans5. Working with Enterprise JavaBeans6. Performing Java Database Connectivity.7. Creating Web services with RMI.8. Creating and Sending Email with Java9. Building web applications		

Paper Code: PGIT301

Title of the Course/ Paper	Object Oriented Analysis & Design		
	Second Year & Third Semester	Credit: 4	
Objective of the course	This course introduces the basic concepts of Object Oriented Analysis and Design.		
Course outline	Unit 1: System Development - Object Basics - Development Life Cycle - Methodologies - Patterns - Frameworks - Unified Approach - UML.		
	Unit 2: Use-Case Models - Object Analysis - Object relations - Attributes – Methods - Class and Object responsibilities - Case Studies.		
	Unit 3: Design Processes - Design Axioms - Class Design - Object Storage - Object Interoperability - Case Studies.		
	Unit 4: User Interface Design - View layer Classes - Micro-Level Processes – View Layer Interface - Case Studies.		
	Unit 5: Quality Assurance Tests - Testing Strategies - Object orientation on testing - Test Cases - test Plans - Continuous testing - Debugging Principles - System Usability - Measuring User Satisfaction - Case Studies.		

1. Recommended Texts

- (i) A. Bahrami, 1999, Object Oriented Systems Development, Tata McGraw Hill International Edition.

2. Reference Books

- (i) G. Booch, 1999, Object Oriented Analysis and design, 2nd Edition, Addison Wesley, Boston
- (ii) R.S.Pressman, 2005, Software Engineering, 6th Edition, Tata McGraw Hill, New Delhi.
- (iii) Rumbaugh, Blaha, Premerlani, Eddy, Lorensen, 2003, Object Oriented Modeling And design, Pearson education, Delhi.

Paper Code: PGIT302

Title of the Course/ Paper	Computer Networks		
	Second Year & Third Semester	Credit: 4	
Objective of the course	This course gives an insight into various network models and the general network design issues and related algorithms.		
Course outline	Unit 1: Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP models – Example networks: Internet, ATM, Ethernet and Wireless LANs - Physical layer – Theoretical basis for data communication - guided transmission media		
	Unit 2: Wireless transmission - Communication Satellites – Telephones structure –local loop, trunks and multiplexing, switching. Data link layer: Design issues – error detection and correction.		
	Unit 3: Elementary data link protocols - sliding window protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols.		
	Unit 4: Network layer - design issues - Routing algorithms - Congestion control algorithms – IP protocol – IP Address – Internet Control Protocol.		
	Unit 5 : Transport layer - design issues - Connection management - Addressing, Establishing & Releasing a connection – Simple Transport Protocol – Internet Transport Protocol (TCP) - Network Security: Cryptography.		

1. Recommended Texts

- (i) A. S.Tanenbaum, 2003, Computer Networks, Fourth Edition, - Pearson Education, Inc, (Prentice hall of India Ltd), Delhi.

2. Reference Books

- (i) B. Forouzan, 1998, Introduction to Data Communications in Networking, Tata McGraw Hill, New Delhi.
- (ii) F. Halsall, 1995, Data Communications, Computer Networks and Open Systems, Addison Wessley.
- (iii) D. Bertsekas and R. Gallager, 1992, Data Networks, Prentice hall of India, New Delhi.
- (iv) Lamarca, 2002, Communication Networks, Tata McGraw Hill, New Delhi.

3. Website, E-learning resources

- (i) <http://authors.phptr.com/tanenbaumcn4/>

Paper Code: PGIT303

Title of the Course/ Paper	Network Programming		
	Second Year & Third Semester	Credit: 4	
Objective of the course	This course introduces the basic concepts of Network Programming.		
Course outline	Unit 1: Overview of ActiveX Scripting – Java Scripting- Stand-Alone Scripts- ActiveX Controls- Creating ActiveX Controls.		
	Unit 2: ActiveX Documents- ActiveX Document Architecture- Creating ActiveX Documents.		
	Unit 3: URL Monikers- Hyperlinking- Hyperlink Interface- Working with URL Monikers- Overview of ISAPI- ISAPI Extension- ISAPI Filter.		
	Unit 4: Designing IIS Applications - Building IIS Applications- Building Data Driven DHTML Applications.		
	Unit 5: ActiveX Documents - Technology – Migration Wizard- Modifying Code- Launching and Testing Document- Testing the DLL.		

1. Recommended Texts

- (i) John Paul Muller – Visual C++ 5 from the GroundUp- Tata McGraw Hill Edition – 1998 (For first three units).
- (ii) Noel Jerke – Visual Basic 6 (The Complete Reference) – Tata McGraw Hill Edition –1999(For fourth and fifth units).

Paper Code: PGIT306

Title of the Course/ Paper	Practical IV: Network Programming Lab.		
	Second Year & Third Semester	Credit: 4	
Objective of the course	This course gives practical training in Network programming		
Course outline	<ol style="list-style-type: none"> 1. Creating ActiveX Controls. 2. OLE Server. 3. OLE Container. 4. Working with URL Monikers. 5. Creating an ISAPI Extension. 6. Creating an ISAPI Filter. 7. Building IIS Application. 8. Data- Driven DHTML Application. 9. ActiveX Documents. 		

Paper Code: PGIT307

Title of the Course/ Paper	Practical VI: Mini Project Lab		
	Second Year & Third Semester	Credit: 4	

Paper Code: PGIT401

Title of the Course/ Paper	Project Work & Viva – Voce		
	Second Year & Third Semester	Credit: 12	

Elective – I

Paper Code: PGIT205(A)

Title of the Course/ Paper	Artificial Intelligence & Expert System		
Elective	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces the concepts of machine learning.		
Course outline	Unit 1: Introduction – Evaluation of Artificial Intelligence production Systems – search strategies Hill climbing back tracking graph search (Algorithm A and A”) properties of A” algorithm, monotone restriction specialized production systems – AO* algorithm.		
	Unit 2: Searching game trees: Minimax procedure alphabeta pruning – Introduction to predicate calculus Answer extraction – Introduction to Knowledge based systems – Knowledge Processing techniques – Knowledge inference techniques.		
	Unit 3: Expert System Definition – Various stages in developing expert system – Knowledge representation using sematicness, predicate calculus, frames – scripts – knowledge acquisition techniques – factors to be considered while expert systems.		
	Unit 4: Forward chaining, Backward Chaining – Tools for developing an expert system – Explanation facilities – Meta Knowledge – fuzzy reasoning.		
	Unit 5: Building various expert systems – case study Dendral, Mycin etc. Introduction to various applications of A.I. Natural Language processing – Natural Language understanding – perception – Learning using neuralnets.		

1. Recommended Texts

- (i) Elaine Rich, Artificial Intelligence McGraw Hill International
- (ii) P.H. Winston – Artificial Intelligence, Addison Wesley.
- (iii) Fredric Hayes Roth, Donald A Waterman and Doughlas B. Leant (editors) – Building Expert System – Addison Wesley – 1983.

2. Reference Books

- (i) N.J. Nilson – Spring verlag – Principles of AI – 1983.
- (ii) David W. Rolston – Principles of AI & Expert Systems Development – MCGrawHill.
- (iii) Donald A Waterman – A guide to expert systems.

Paper Code: PGIT205(B)

Title of the Course/ Paper	Operating Systems		
Elective	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces the fundamental concepts of operating Systems with case studied on Unix and Windows.		
Course outline	Unit 1: Introduction – Multiprogramming - Time sharing - Distributed system - Real-Time systems - I/O structure - Dual-mode operation - Hardware protection _ General system architecture - Operating system services - System calls - System programs - System design and implementation. Process Management: Process concept - Concurrent process - Scheduling concepts - CPU scheduling - Scheduling algorithms, Multiple processor Scheduling		
	Unit 2: Process Management: Process Synchronization - Critical section - Synchronization hardware - Semaphores, classical problem of synchronization, Interprocess communication. Deadlocks: Characterization, Prevention, Avoidance, and Detection.		
	Unit 3: Storage management - Swapping, single and multiple partition allocation - paging - segmentation - paged segmentation, virtual memory - demand paging - page replacement and algorithms, thrashing. Secondary storage management - disk structure - free space management - allocation methods – disk scheduling - performance and reliability improvements - storage hierarchy.		
	Unit 4: Files and protection - file system organization - file operations - access methods - consistency semantics - directory structure organization - file protection - implementation issues - security - encryption		
	Unit 5: Case Studies: UNIX and Windows operating systems.		

1. Recommended Texts

- (i) A. Silberschatz P.B. Galvin, Gange, 2002, Operating System Concepts, 6th Edn., Addison-Wesley Publishing Co., Boston.

2. Reference Books

- (i) H.M. Deitel, 1990, An Introduction to Operating Systems, Addison Wesley Publishing Co., Boston
- (ii) D.M. Dhamdhare , 2002, Operating System, Tata McGraw-Hill, New Delhi.
- (iii) A.S. Tanenbaum , Operating Systems: Design and Implementation, Prentice-Hall of India, New Delhi.
- (iv) Nutt, 2005, Operating Systems, 3rd Edition, Pearson Education, Delhi.

Paper Code: PGIT205(C)

Title of the Course/ Paper	Multimedia Systems		
Elective	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces the basic concepts of Multimedia Systems.		
Course outline	<p>Unit 1: Introductory Concepts: Multimedia – Definitions, CD-ROM and the Multimedia Highway, Uses of Multimedia, Introduction to making multimedia – The Stages of project, the requirements to make good multimedia, Multimedia skills and training, Training opportunities in Multimedia. Motivation for multimedia usage, Frequency domain analysis, Application Domain.</p> <p>Unit 2: Multimedia-Hardware and Software: Multimedia Hardware – Macintosh and Windows production Platforms, Hardware peripherals – Connections, Memory and storage devices, Media software – Basic tools, making instant multimedia, Multimedia software and Authoring tools, Production Standards.</p> <p>Unit 3: Multimedia – making it work – multimedia building blocks – Text, Sound, Images, Animation and Video, Digitization of Audio and Video objects, Data Compression: Different algorithms concern to text, audio, video and images etc., Working Exposure on Tools like Dream Weaver, Flash, Photoshop Etc.,</p> <p>Unit 4: Multimedia and the Internet: History, Internet working, Connections, Internet Services, The World Wide Web, Tools for the WWW – Web Servers, Web Browsers, Web page makers and editors, Plug-Ins and Delivery Vehicles, HTML, VRML, Designing for the WWW – Working on the Web, Multimedia Applications – Media Communication, Media Consumption, Media Entertainment, Media games.</p> <p>Unit 5 : Multimedia-looking towards Future: Digital Communication and New Media, Interactive Television, Digital Broadcasting, Digital Radio, Multimedia Conferencing, Assembling and delivering a project-planning and costing, Designing and Producing, content and talent, Delivering, CD-ROM technology.</p>		

1. Recommended Texts

- (i) S. Heath, 1999, Multimedia & Communication Systems, Focal Press, UK.
- (ii) T. Vaughan, 1999, Multimedia: Making it work, 4th Edition, Tata McGraw Hill, New Delhi.
- (iii) K. Andleigh and K. Thakkar, 2000, Multimedia System Design, PHI, New Delhi.

2. Reference Books

- (i) Keyes, “Multimedia Handbook”, TMH, 2000.
- (ii) R. Steinmetz and K. Naharstedt, 2001, Multimedia: Computing, Communications & Applications, Pearson, Delhi.
- (iii) S. Rimmer, 2000, Advanced Multimedia Programming , PHI, New Delhi..

Elective – II

Paper Code: PGIT304(A)

Title of the Course/ Paper	Management Information System		
Elective	Second Year & Third Semester	Credit: 4	
Objective of the course	This course introduces the various concepts Management Information System		
Course outline	Unit 1: Definition of Management Information System – MIS support for planning, Organizing and controlling – Structure of MIS – Information for decision – making.		
	Unit 2: Concept of System – Characteristics of System – Systems classification – Categories of Information Systems – Strategic Information system and competitive advantage.		
	Unit 3: Computers and Information Processing – Classification of Computer – Input Devices – Output Devices – Storage Devices – Batch and online processing. Hardware Software – Database Management Systems.		
	Unit 4: System Analysis and Design – SDLC – Role of System Analyst – Functional Information system – Personnel, Production, Material, Marketing.		
	Unit 5: Decision Support Systems – Definition. Group Decision Support Systems – Business Process Outsourcing – Definition and function.		

1. Recommended Texts

- (i) Management Information System – Dr. S. P. Rajagopalan

2. Reference Books

- (i) “Management Information System”, Prentice – Hall of India – Mudrick & Ross
- (ii) “Management Information System”, - Gordan B. Davis
- (iii) “Information Systems Analysis and Design” – Jame A Senn
- (iv) “Management Information System” – Prentice – Hall of India – Sadagopan
- (v) “Management Information System” – CSV Murthy Himalaya publications.

Paper Code: PGIT304(B)

Title of the Course/ Paper	Web Technology		
Elective	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces for different approaches for creating client side and server side programming		
Course outline	Unit 1: Basic Web Concepts – How the web server works – How scripting languages work – Client / Server Model – Retrieving data from internet – HTML and Scripting Languages – Standard Generalized Markup Language – Protocols and applications.		
	Unit 2: HTML forms – CGI concepts – HTML tags Emulation – Server Browser Communication – Email Generation – CGI Client side Applets – CGI Server Side Applets – Authorization and security.		
	Unit 3: Streaming – Networking Principles – Sockets – Protocol Handlers – Content Handlers – Multicasting – Remote Method Invocation – Activation – Serialization – Marshall Streams.		
	Unit 4: Simple Applications – Online Databases – Monitoring user events – Plug-ins – Database Connectivity – Internet Information Systems – EDI application in business – Internet commerce – Customization of Internet commerce.		
	Unit 5: What is a Markup Language – Well Formed Documents – Valid Documents – Writing DTDs – Styling XML – XML Parsers – W3C Document Object Model – Creating XML documents from a Web Page – Creating XML from a Relational Database – Data Binding.		

1. Recommended Texts

- (i) Chris Bates- “Web Programming” – Wiley dreamtech – 2002.
- (ii) Jason Hunter, William Crawford – “Java Servlet Programming” – O’Reily Publications – 1999.
- (iii) Chris Ullman et al. – “Beginning ASP 3.0” – Wrox Publications – 2000.

2. Reference Books:

- (i) Ravi Kalakota and Andrew B Whinston – “Frontiers of Electronic Commerce” – Addison Wesley – 1996.
- (ii) Eric Ladd, Jim O’Donnel – “Using HTML 4, XML and JAVA” – PHI – 1999.
- (iii) Jeffy Dwight, Micahel Erwin and Robert Niles – “Using CGI” – PHI – 1999.

Paper Code: PGIT304(C)

Title of the Course/ Paper	Software Testing		
Elective	Second Year & Third Semester	Credit: 4	
Objective of the course	This course introduces the basic concepts of software testing		
Course outline	Unit 1: Introduction: Purpose – Productivity and Quality in Software – Testing Vs Debugging – Model for Testing – Bugs – Types of Bugs – Testing and Design Style.		
	Unit 2: Flow/Graphs and Path Testing – Achievable paths – Path instrumentation – Application – Transaction Flow Testing Techniques – Data Flow Testing Strategies		
	Unit 3: Domain Testing: Domains and Paths – Domains and Interface Testing – Linguistic – Metrics – Structural Metric – Path Products and Path Expressions.		
	Unit 4: Syntax Testing – Formats – Test Cases – Logic Based Testing – Decision Tables – Transition Testing – States, State Graph, State Testing.		
	Unit 5: Verification and Validation – Fundamental Tools - Levels of Testing – Testing Approaches – Types of Testing – Test Plan – Software Testing Tools: WinRunner – Silk Test		

1. Recommended Texts

- (i) B. Beizer , 2003, Software Testing Techniques, II Edn., DreamTech India, New Delhi.
- (ii) K.V.KK. Prasad , 2005, Software Testing Tools, DreamTech. India, New Delhi.

2. Reference Books

- (i) I. Burnstein, 2003, Practical Software Testing, Springer International Edn.
- (ii) E. Kit, 1995, Software Testing in the Real World: Improving the Process, Pearson Education, Delhi.
- (iii) R.Rajani, and P.P.Oak, 2004, Software Testing, Tata Mcgraw Hill, New Delhi.

3. Website, E-learning resources

- (i) http://www.amazon.com/gp/reader/0201877562/ref=sib_dp_pt/102-1957971-9723354#reader-link

Elective - III

Paper Code: PGIT305(A)

Title of the Course/ Paper	E-Commerce		
Elective	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces the features of E-Commerce		
Course outline	<p>Unit 1: Overview of electronic commerce: introduction-definition of electronic commerce-potential benefits of electronic commerce-internet and www as enablers of electronic commerce-impact of electronic commerce on business models-electronic commerce security-organization of topics-implications for the accounting. Electronic commerce and the role of independent third parties: introduction-consulting practices and accountants-independence-cpa vision problem- new assurance services identified by the aicpa-impact of Electronic commerce on the traditional assurance function-third party Assurance of web based electronic commerce-implications for the accounting. Regulatory environment: introduction-cryptography issues-privacy issues-web linking-domain name disputes-internet sales tax-electronic agreement and digital signature – Internet service providers and international libel laws-implications for the accounting.</p> <p>Unit 2: Edi electronic commerce and the internet: introduction-traditional Edi system-data transfer and standards-financial Edi-Edi systems and the internet-impact of Edi internet applications on the accounting profession. Risks of insecure system: introduction-overview of risks associated with internet transactions-internet associated risk- intranet associated risk-social engineering-risks associated with business transactions- risks associated with confidentially maintained archival-Master file and reference data- risks associated with virus and malicious-implications of the accounting. Risks management: introduction-control weakness vs control risks – Risk management paradigm – disaster recovery plans- Implications of the accounting.</p> <p>Unit 3: Internet security standards:-introductions- standard setting issues and Committees - security committees and organization - security protocols and languages-messaging protocols –secure electronic payments and protocols-the role of accountants in internet related standard setting process. Cryptography and authentication: introduction-message security issues- Encryption techniques-key management-additional authentication methods-additional non repudiation techniques.</p>		

	<p>Unit-4: Firewalls: introduction – firewall defined – TCP/IP-open system interconnect (OSI)-components of firewall-typical functionality of firewalls-network topology-securing the firewall-factors to consider in firewall design – in-house solutions Vs commercial fire wall software-limitations of security prevention provided by firewall. Introduction-the <i>set</i> protocol – magnetic strip cards-smart cards-electronic check-electronic cash.</p>
	<p>Unit-5 : Intelligent agent: introduction-definition of intelligent agent-capabilities of intelligent agent-level of agent sophistication-agent societies-intelligent agents and electronic commerce-online information Chain - limitations of agents- implications of the accounting. Web based marketing: introduction-the scope of marketing-business marketing and information technology-strategy congruence-the four P’s applied to internet marketing – the fifth “P”personalization- internet marketing techniques-online advertisement mechanisms –web site design issues- Intelligent agent and their impacts on marketing techniques.</p>

1. Recommended Reference Books

- (i) M. Greenstein, T. M. Feinman, 2000, Electronic Commerce, Tata McGraw Hill, New Delhi.
- (ii) Kalakota & Whinston, 2000, Frontiers of Electronic Commerce, 5th Indian Reprint, Pearson Edn., Delhi.

Paper Code: PGIT305(B)

Title of the Course/ Paper	Artificial Neural Networks		
Elective	Second Year & Third Semester	Credit: 4	
Objective of the course	This course introduces the fundamental concepts of Artificial Neural Networks		
Course outline	Unit 1: Introduction to Neural Networks – Basic Concepts of Neural Networks – Inference and Learning – Classification Models – Association Models – Optimization Models – Self-Organization Models.		
	Unit 2: Supervised and Unsupervised Learning – Statistical Learning – AI Learning – Neural Network Learning – Rule Based Neural Networks – Network Training – Network Revision- Issues- Theory of Revision- Decision Tree Based NN – Constraint Based NN		
	Unit 3: Incremental learning – Mathematical Modeling – Application of NN- Knowledge based Approaches.		
	Unit 4: Heuristics- Hierarchical Models – Hybrid Models – Parallel Models – Differentiation Models- Control Networks – Symbolic Methods- NN Methods.		
	Unit 5 : Structures and Sequences – Spatio-temporal NN – Learning Procedures – Knowledge based Approaches.		

1. Recommended Texts

- (i) L. Fu, 1994, Neural Networks in Computer Intelligence, Tata McGraw Hill, New Delhi.

2. Reference Books

- (i) R. J. Schalkoff, 1997, Artificial Neural Networks, Tata McGraw Hill, New Delhi.
Anderson, 2001, An Introduction to Neural Network, PHI, New Delhi.

Paper Code: PGIT305(C)

Title of the Course/ Paper	Data Warehousing and Data Mining		
Elective	First Year & Second Semester	Credit: 4	
Objective of the course	This course introduces the basic concepts of data warehousing and data mining		
Course outline	<p>Unit 1: Introduction: Data Mining tasks – Data Mining versus Knowledge Discovery in Data bases – Relational databases – Data warehouses – Transactional databases – Object oriented databases – Spatial databases – Temporal databases – Text and Multimedia databases – Heterogeneous databases - Mining Issues – Metrics – Social implications of Data mining.</p> <p>Unit 2: Data Preprocessing: Why Preprocess the data – Data cleaning – Data Integration – Data Transformation – Data Reduction – Data Discretization.</p> <p>Unit 3: Data Mining Techniques: Association Rule Mining – The Apriori Algorithm – Multilevel Association Rules – Multidimensional Association Rules – Constraint Based Association Mining.</p> <p>Unit 4: Classification and Prediction: Issues regarding Classification and Prediction – Decision Tree induction – Bayesian Classification – Back Propagation – Classification Methods – Prediction – Classifiers accuracy.</p> <p>Unit 5 : Clustering Techniques: cluster Analysis – Clustering Methods – Hierarchical Methods – Density Based Methods – Outlier Analysis – Introduction to Advanced Topics: Web Mining , Spatial Mining and Temporal Mining.</p>		

1. Recommended Texts

- (i) J. Han and M. Kamber , 2001, Data Mining: Concepts and Techniques, Morgan Kaufmann, .New Delhi.

2. Reference Books

- (i) M. H.Dunham, 2003, Data Mining : Introductory and Advanced Topics , Pearson Education, Delhi.
- (ii) Paulraj Ponnaiah, 2001, Data Warehousing Fundamentals, Wiley Publishers.
- (iii) S.N. Sivananda and S. Sumathi, 2006, Data Mining, Thomsan Learning, Chennai.

3. Website, E-learning resources

- i. <http://www.academicpress.com>
- ii. <http://wswm.mkp.com>