

Objectives of the Diploma/Bachelor's Programme/Master's Programme

- 1. NATURE OF THE PROGRAMME – MSc(IT)**
- 2. CONDITIONS FOR ADMISSION – As per the norms**
- 3. DURATION OF THE PROGRAMME – 2 YEARS**
- 4. PROGRAMME OF STUDY– Attached**
- 5. STRUCTURE OF THE PROGRAMME – Attached**
- 6. EXAMINATIONS - As per the Norms**
- 7. SCHEME OF EXAMINATIONS – As per the norms**
- 8. QUESTION PAPER PATTERN**

Pattern for Theory Paper - Attached

Pattern for Computer Laboratory - Attached

- 9. PASSING MINIMUM – As per the norms**

- 10. GRADING SYSTEM**

Conversion of Percentage of Marks of Grade points and Letter Grade

Formulae for the calculation for GPA AND CGPA

- 11. EARNING OF CREDITS**

- 12. MAXIMUM DURATION FOR THE COMPLETION OF THE PROGRAMME –
Five Years**

- 13. ATTENDANCE – 50 % is Compulsory**

- 14. CLASSIFICATION OF SUCCESSFUL CANDIDATES - Attached**

- 15. COMMENCEMENT OF THE REGULATION – As per the norms**

- 16. FORMAT FOR THE PREPARATION OF RECORD/PROJECT WORK**

**Record of Laboratory work in the case of Mathematical Package
exercise**

Record of Laboratory work in the case of Programming exercise

- 17. LABORATORY WORK AND THE PATTERN OF EVALUATION – Attached**

- 18. DETAILS OF SYLLABI FOR VARIOUS COURSES – Attached**

UNIVERSITY OF MADRAS
M.Sc. DEGREE COURSE IN INFORMATION TECHNOLOGY
REVISED REGULATIONS

(To be offered in the Institute of Distance Education)
(To take effect from the Calendar year 2012 onwards)

1. Eligibility for Admission:

A Candidates who has passed any Bachelor's degree of not less than three years duration having studied Mathematics or Statistics or Business Mathematics or Business Statistics or Mathematical Physics as Main or Allied subject from University of Madras or from any other University accepted as equivalent thereto.

2. Duration of the Course:

The Course duration shall be two years. In order to be eligible for the award of the degree the candidate shall successfully complete the course in a maximum period of five years reckoned from the date of enrolment for the first year of the course.

3. Structure of the Course and Evaluation Pattern:

The duration of University examination for theory and practical subjects shall be 3 hours. The maximum mark for each theory is 100 for University Examination. The maximum mark for each practical is 100 for University Examination. For project work the marks assigned shall be

Project report	210 marks
Viva-voce	90 marks

For the conduct of University Examinations in Practical subjects the University will appoint two external examiners. The evaluation pattern for practical examinations shall be as follows:

Record book : 10 Marks.

Examination: 90 Marks

Project work shall be carried out individually in an R&D section of any Industry or University or in the Institute in which the candidate is studying. The Project Work/Dissertation report shall be submitted through the guide/supervisor to the Director , Institute of Distance Education(IDE) and then to the University. If he/she fails to submit the Project Work/Dissertation within the stipulated date for a particular year, he/she may be permitted with the approval of the Director, IDE to submit the Project Report/Dissertation during the succeeding Years, within the maximum period of **FIVE** years from the date of admission to the first semester. Project/Dissertation evaluation and Viva-Voce shall be conducted by two external examiners.

List of courses, and their Scheme of evaluation are given below:

First Year

S.No.	Course components	Name of Course	Exam	Max Mark
1	Core -1	C++ and Data Structures	3	100
2	Core -2	Computer Architecture	3	100
3	Core -3	Database Management Systems	3	100
4	Core - 4	Operating Systems	3	100
5	Core -5	Programming in Java	3	100
6	Elec-1	Elective -I	3	100
7	Elec-2	Elective – II	3	100
8	Elec-3	Elective – III	3	100
9	Core -6	Practical – I: Data Structures Lab. Using C++	3	100
10	Core -7	Practical – II : RDBMS Lab.	3	100
11	Core-8	Practical – III: Java Programming Lab.	3	100
12	Elec-Lab	Practical – IV: Lab. Based on Elective III	3	100

Second Year

S.No.	Course components	Name of Course	Exam	Max Mark
13	Core – 9	Computer Networks	3	100
14	Core- 10	Design and Analysis of Algorithms	3	100
15	Core- 11	Advanced Java Programming	3	100
16	Extra-Disciplinary	Information Security	3	100
17	Elect. -5	Elective – IV	3	
18	Core –12	Practical – V: Advanced Java Lab.	3	
19	Core -13	Practical – V: Mini Project	3	
20	Core -14	Project & Viva-Voce	-	

List of Electives

Elective – I : Visual Programming OR E-Commerce OR Windows Programming

Elective - II: Software Engineering OR Data Warehousing and Data Mining OR Object Oriented Analysis & Design

Elective - III : Internet Technology OR DOT NET Programming OR Multimedia Systems

4. Passing Requirements:

a) For all subjects the passing requirement is as follows: i) candidate secures not less than 50% of marks in University Examination (U.E.) and not less than 50% in aggregate of the total maximum marks prescribed in each theory & practical, and in Project work minimum 50% each in dissertation and Viva-Voce examination and not less than 50% in aggregate of the total maximum marks prescribed, shall be declared to have passed in the respective subject.

b) A candidate who passes in all subjects and in the project work within the maximum period of five years reckoned from the date of admission to the course shall be declared to have qualified for the degree.

c) The relative overall performance of the candidate shall be determined by the overall percentage of Marks obtained in all subjects evaluated as follows:

$$\text{WAM} = \frac{\text{Sum of marks obtained (MO)}}{\text{Sum of maximum marks(MM)}} = \frac{\sum \text{MO}_i}{\sum \text{MM}_i}$$

where MO_i is the mark obtained in the i^{th} subject & MM_i is the maximum mark prescribed for the i^{th} subject.

This score shall be entered in the transcript given to the candidate on successful completion of the course calculated to two decimal points.

5. Classification of successful candidates

(a) A Candidate who qualifies for the Degree and secures **WAM** of not less than 75% shall be declared to have passed the examination in **FIRST CLASS WITH DISTINCTION** provided he/she has passed the examination in every subject he/she has registered as well as in the project work in the first appearance.

(b) A candidate who qualifies for the degree as per the regulations for passing requirements and secures a weighted average of not less than 60% shall be declared to have passed the examination in **FIRST CLASS**.

(c) All other successful candidates shall be declared to have passed in **SECOND CLASS**.

(d) Only those candidates who have passed all the papers including practical and project work in the

first appearance shall be considered for the purpose of **RANKING**.

6. Procedure in the event of failure

(a) If a candidate fails in a particular subject (other than Project work) he/she may reappear for the University examination in the subject in subsequent examinations and obtain passing marks.

(b) In the event of failure in Project Work, the candidate shall reregister for Project Work and redo the Project Work in a subsequent year and resubmit the dissertation afresh for evaluation. The internal assessment marks shall be freshly allotted in this case.

7. Attendance

A candidate who has attendance of less than 50% for personal contact program overall in a year shall not be permitted to take the University examination. Candidates who have less than 50% has to repeat the year from the next year.

PATTERN OF QUESTION PAPER (THEORY)

Time 3 hours

Max Marks 100

Part - A: (200 words) 6 Out of 8 questions (6 x 5 = 30 Marks)

At least one question from each unit.

Part –B: (500 words) 7 Out of 9 questions (7 x 10 = 70 Marks)

At least one question from each unit.

PATTERN OF QUESTION PAPER (PRACTICAL)

Time: 3 Hours

Max: 100 Marks.

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

UNIVERSITY OF MADRAS
M.Sc. DEGREE COURSE IN INFORMATION TECHNOLOGY
Revised Syllabus
 (To be offered in the Institute of Distance Education)
 (To take effect from the Academic year 2012-13 onwards)

Title of the Course		C++ and Data Structures					
Paper Number							
Category	Core -1	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
		12					12
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of programming in C++ and Data Structures.					

Course Outline

UNIT-I : Introduction to OOP – Overview of C++ - Classes – Friend Functions – Friend Classes – Inline functions – Constructors – Destructors – Static Members – Passing objects to functions – Function returning objects. Arrays – Pointers – this pointer – References – Dynamic memory Allocation – functions Overloading – Default arguments – Overloading Constructors – Pointers to Functions – Ambiguity in function overloading-Operator Overloading

UNIT-II : : Members Operator Function – Friend Operator Function – Overloading some special operators like [] , () , a and comma operator- Inheritance – Types of Inheritance – Protected members – Virtual base Class – Polymorphism – Virtual functions – Pure virtual functions- Class templates and generic classes – Function templates and generic functions – Overloading a function templates – power of templates.

UNIT-III : Exception Handling – Derived class Exception – generic functions – Exception handling Functions – terminate() unexpected() – Uncaught – exception(); Streams – Formations I/O with ios class functions and manipulators – creating own manipulator – overloading << and >> - File I/O – Name spaces conversion functions

UNIT-IV : Abstract data types - asymptotic notations – Arrays- representation of arrays – operations on arrays – ordered lists – polynomials. Linked lists: Singly linked list- circular linked lists - doubly linked lists – general lists – stacks -queues - circular queues – Evaluation of expressions

UNIT-V: Trees – Binary Trees – Binary Tree Traversals – Binary Tree Representations – Binary Search Trees – Threaded Binary Trees – Application of Trees (Sets) – Representation of Graphs – Graph Implementation – Graph Traversals- Application of Graph Traversals- Minimum Cost Spanning Trees – Shortest Path Problems .

Recommended Text

- (i) E.Horowitz, S.Sahni and Mehta, 1999, Fundamentals of Data Structures in C++, Galgotia.
- (ii) Herbert Schildt, 1999, C++ - The complete Reference, Third Edition, Tata McGraw –Hill.

Reference Books

- (i) Gregory L.Heileman, 1996, Data Structures , Algorithms and Object Oriented Programming – Mc-Graw Hill International Editions.
- (ii) A.V.Aho, J.D. Ullman, J.E. Hopcraft: Data Structures and Algorithms- Adisson Wesley Pub.

Website and e-Learning Source	http://www.brpreiss.com/books/opus4/html/book.html http://newdata.box.sk/bx/c/htm/ch01.htm
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Title of the Course		Computer Architecture					
Paper Number							
Category	Core -2	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
		12					12
Pre-requisite							
Learning Objectives of the Course		This course introduces the concepts of Computer Architecture.					
Course Outline							
<p>UNIT-I : : : Data representation - Data types - complements, fixed point and floating point representation other binary codes - micro operations: Register transfer language, Register transfer, Bus and Memory transfer, Arithmetic, logic, and shift micro operations, Arithmetic logic shift unit - micro programmed control - control memory - Address sequencing - micro program example - design of control unit.</p> <p>UNIT-II : : Central processing unit: General register and stack organizations, instruction formats - Addressing modes, Data transfer and manipulation - program control, RISC - Pipelining - Arithmetic and instruction, RISC pipeline - Vector processing and Array processors.</p> <p>UNIT-III : Computer Arithmetic - Addition and subtraction, Multiplication and division, floating point and decimal Arithmetic operations</p> <p>UNIT-IV Input-output organization - peripheral devices, I/O interface, Asynchronous data transfer, modes of transfer, priority interrupt, direct memory access, I/O processor, serial communications.</p> <p>UNIT-V: : Memory organization - Memory hierarchy - main memory - Auxiliary memory - associative, cache and virtual memory, memory management hardware - multi processors: Interconnection structures, Inter processor arbitration.</p>							

Recommended Text	
(i) M.M. Mano, 1993, Computer System architecture. PHI (Third Edition).	
Reference Books	
(i) V. C. Hamacher, G.Vranesic, S. G.Zaky-Computer Organiation, McGraw Hill.	
(ii) J. P.Hayes, 1988, Computer architecture, McGraw Hill, ISE.	
(iii) H. K, Briggs. F.A, 1988, Computer Architecture and Parallel Processing, McGraw-Hill ISE.	
(iv) William Stallings, 2003, Computer Organization & Architecture, 6 th dition,PHI, New Delhi.	
Website and e-Learning Source	http://www.cs.iastate.edu/~prabhu/Tutorial/title.html

Title of the Course		Database Management Systems					
Paper Number							
Category	Core-3	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the concepts of database systems design					

Course Outline

UNIT-I : Introduction to Database Systems – Relational Model – Structure – Relational Algebra – Null Values – SQL – Set Operation – Views – Advanced SQL – Embedded SQL – Recursive Queries – The Tuple Relational Calculus – Domain Relational Calculus.

UNIT-II : E-R Model – Constraints – E-R- Diagrams Weak Entity Sets – Reduction to Relational Schemes – Relational Database Design – Features of Relational Design – Automatic Domains and First Normal Form – Decomposition using Functional Dependencies – Multivalued Dependencies – More Normal Forms – Web Interface – Object – Based Databases – Structured Types and inheritance in SQL – Table inheritance – Persistent.

UNIT-III Storage and File Structure – RAID – File Organisation – Indexing and Hashing – B Tree – B Tree Index files - Static and Dynamic Hashing – Query Processing – Sorting & Join Operators – Query Optimization – Choice of Evaluation Plans.

UNIT-IV Transaction Management – Implementation of Atomicity and Durability – Serializability – Recoverability – Concurrency Control – Dead Lock Handling – Recovery System – Buffer Management

UNIT-V : Database – System Architecture – Client Server – Architectures – Parallel System – Network Types – Distributed Database – Homogeneous and Hetrogeneous Database – Directory System – Case Study – Oracle – MSSQL Server.

Recommended Text

- (i) A. Silberschatz, H.F. Korth and S. Sudharshan, 2006, Database System Concepts, 5th Edition, Tata McGraw Hill, New Delhi.

Reference Books

- (i) J. D. Ullman, 1988, Principles of Database Systems, Galgotia Publishers, New Delhi
- (ii) C.J. Date, 1985, An Introduction to Database Systems, Third Edition, Narosa, New Delhi.
- (iii) Elmasri and Navathe, 1999, Fundamentals of Database Systems, Third Edition, Pearson Education, Delhi.
- (iv) C. Ritchie, 2004, Relational Database Principals, 2nd Edition, Thomson, Singapore.

Website and e-Learning Source	http://www.cse.iitb.ac.in/dbms/Data/Papers-Local/DBConceptsBook/slide-dir/
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Title of the Course		Operating Systems					
Paper Number							
Category	Core-4	First Year		Credits		Course Code	
Personal Contact Programme Hours per year	Lecture			Lab Practice		Total	
	12					12	
Pre-requisite							

Learning Objectives of the Course	This course introduces the fundamental concepts of operating Systems with case studied on Unix and Windows
<p>Course Outline</p> <p>UNIT-I : : 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</p> <p>UNIT-II : : Process Management: Process Synchronization - Critical section - Synchronization hardware - Semaphores, classical problem of synchronization, Interprocess communication. Deadlocks: Characterization, Prevention, Avoidance, and Detection.</p> <p>UNIT-III 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.</p> <p>UNIT-IV : Files and protection - file system organization - file operations - access methods - consistency semantics - directory structure organization - file protection - implementation issues - security - encryption</p> <p>UNIT-V: Case Studies: UNIX and Windows operating systems</p>	
<p>Recommended Text</p> <p>(i) A. Silberschatz P.B. Galvin, Gange, 2002, Operating System Concepts, 6th Edn., Addison-Wesley Publishing Co., Boston.</p>	
<p>Reference Books</p> <p>(i) H.M. Deitel, 1990, An Introduction to Operating Systems, Addison Wesley Publishing Co., Boston</p> <p>(ii) D.M. Dhamdhare , 2002, Operating System, Tata McGraw-Hill, New Delhi.</p> <p>(iii) A.S. Tanenbaum , Operating Systems: Design and Implementation, Prentice-Hall of India, New Delhi.</p> <p>(iv) Nutt, 2005, Operating Systems, 3rd Edition, Pearson Education, Delhi.</p>	
Website and e-Learning Source	http://www.iu.hio.no/~mark/os/os.html

Title of the Course		Programming in Java					
Paper Number							
Category	Core-5	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course is to develop programming skills in Java.					
Course Outline							
<p>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.</p> <p>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.</p> <p>UNIT-III : I/O Streams - File Streams - Applets –Events handling - String Objects - String Buffer - Char Array - Java Utilities - Code Documentation.</p> <p>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.</p> <p>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</p>							

Recommended Text							
(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.							
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, 5 th Edition, Pearson Education, Delhi.							
Website and e-Learning Source		http://math.hws.edu/javanotes/					
Title of the Course		Practical – I : Data Structure Lab. Using C++					
Paper Number							
Category	Core -6	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
		12					12
Pre-requisite							
Learning Objectives of the Course		This course gives training to program data structure implementation					

Course Outline

For the implementation of the following problems, the students are advised to use all possible object oriented features. The implementation based on structured concepts will not accepted.

1. Implementation of Arrays (Single and Multi-Dimensional)
2. Polynomial Object and necessary overloaded operators.
3. Singly Linked Lists.
4. Circular Linked Lists.
5. Doubly Linked Lists.
6. General Lists.
7. Implementation of Stack (using Arrays and Pointers)
8. Implementation of Queue (Using Arrays and Pointers)
9. Implementation of Circular Queue (using Arrays and Pointers)
10. Evaluation of Expressions.
11. Binary Tree implementations and Traversals.
12. Binary Search Trees.

Recommended Text**Reference Books****Website and e-Learning Source**

Title of the Course		Practical – II: RDBMS Lab					
Paper Number							
Category	Core-7	First Year		Credits		Course Code	
Personal Contact		Lecture			Lab Practice	Total	

Programme Hours per year			
Pre-requisite			
Learning Objectives of the Course	This course gives training in design and implementation of data bases for the selected problems		
Course Outline			
<p>Students are advised to use the concepts like Data Normalization, Link between table by means of foreign keys and other relevant data base concepts for developing databases for the following problems. The implementation of each problem should have necessary input screen Menu-driven query processing and pleasing reports. The choice or RDBMS is left to the students. Necessary validations must be done after developing database.</p> <ol style="list-style-type: none"> 1. Building Simple Applications. 2. Working with Intrinsic Controls and ActiveX Controls. 3. Application with multiple forms. 4. Application with Dialogs. 5. Application with Menus. 6. Application using Data Controls. 7. Application using Common Dialogs. 8. Drag and Drop Events. 9. Creating ActiveX Controls 10. Library Management System 11. Students Marksheet Processing 12. Bank Transactions. 13. Personal information system 14. Question Database and conducting Quiz. 			
Recommended Text			
Reference Books			
Website and e-Learning Source			

Title of the Course		Practical –III: Java Programming Lab.					
Paper Number							
Category	Core-8	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course gives practical training in programming in Java.					
Course Outline							
APPLICATION							
<ol style="list-style-type: none"> 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							
<ol style="list-style-type: none"> 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							
<ol style="list-style-type: none"> 13. Application Using jdbc Connectivity 14. HTML to Servlet Applications 15. Servlet to Applet communication 							
Recommended Text							

Reference Books	
Website and e-Learning Source	

Title of the Course		Visual Programming					
Paper Number							
Category	Elective-I	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of Visual Programming.					

Course Outline

UNIT-I : 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-II : : Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures

UNIT-III : Lists - Arrays - Sorting and Searching - Records - Control Arrays - Combo Boxes - Grid Control - Projects with Multiple forms - DoEvents and Sub Main - Error Trapping

UNIT-IV : VB Objects - Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization - Working with Graphics

UNIT-V : Monitoring Mouse activity - File Handling - File System Controls - File System Objects - COM/OLE - automation - DLL Servers - OLE Drag and Drop – Accessing windows API – Visual basic and Databases – Visual basic and the Internet.

Recommended Text

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

Reference Books

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

Website and e-Learning Source		http://www.vbtutor.net/vb6/vbtutor.html					
Title of the Course		E-Commerce					
Paper Number							
Category	Elective-I	First Year		Credits		Course Code	
Personal Contact		Lecture			Lab Practice		Total

Programme Hours per year			
Pre-requisite			
Learning Objectives of the Course	This course introduces the features of E-Commerce		

Course Outline

UNIT-I: 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.

UNIT-II : 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.

UNIT-III: 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.

UNIT-IV: 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 *set* protocol – magnetic strip cards-smart cards-electronic check-electronic cash.

UNIT-V : 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.

Recommended Text

- (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.

Reference Books**Website and
e-Learning Source**

<http://www.scribd.com/doc/18637925/Lesson-1-Introduction-to-Ecommerce>
<https://www2.bc.edu/~gallaugh/ecnotes.html>

Title of the Course		Windows Programming					
Paper Number							
Category	Elective-I	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of Windows Programming.					
Course Outline							
<p>UNIT-I : : Introduction to C# - Variables, Operators, and Expression – methods and Applying Scope- Decision Statements- Compound Assignment and iteration Statements- Managing Errors and Exceptions.</p> <p>UNIT-II : : Creating and Managing Classes and Objects – Values and References – Value Types with Enumerations and Structures – Arrays and Collections – Parameter Arrays – Working with Inheritance – Interfaces and Abstract Classes – Garbage Collection and Resource Management.</p> <p>UNIT-III : : Creating Components – Implementing properties to Access Fields – Using Indexers – Interrupting Program Flow and handling Events – Generics – Enumerating Collections – querying In-memory Data by Using Query Expressions – Operator Overloading</p> <p>UNIT-IV : : Introduction to Windows Presentation Foundation – Menus and Dialog Boxes – Performing Validation</p> <p>UNIT-V: : Managing Data – Querying a Database by using ADO.NET –Querying a Database by using DLINQ Displaying and Editing Data by using Data Binding</p>							

Recommended Text	
(i) J. Sharp, 2009, Microsoft Visual C# 2008 Step by Step, PHI Learning Private Limited	
Reference Books	
(i) P. Sestoft and H. I. Hansen, 2004, C# precisely, 2009, PHI Learning Private Limited.	
(ii) B. Ramakrishna Rao, 2006, Programming with C#: Concepts and Practice, PHI Learning Private Limited	
Website and e-Learning Source	http://www.cs.uakron.edu/~xiao/windows/wp-notes.html http://tiki-lounge.com/~raf/win32notes.html

Title of the Course		Software Engineering					
Paper Number							
Category	Elective-II	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the concepts of Software Planning, analysis, design and testing.					

Course Outline

UNIT-I : The Product-The Process-Project Management Concepts-Software Projects And Project Metrics

UNIT-II : Software Project Planning-Risk Analysis And Management-Project Scheduling And Tracking-Software Quality Assurance

UNIT-III :Software Configuration Management-System Engineering-Analysis Concepts And Principles-Analysis Modeling.

UNIT-IV : Design Concepts and Principles-Architectural Design-User Interface Design.

UNIT-V: Component level Design-Software Testing Techniques-Software Testing Strategies-Technical Metrics For Software – Ethics in Information Technology

Recommended Text

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

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.

Website and e-Learning Source

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

Title of the Course	Data Warehousing and Data Mining
Paper Number	

Category	Elective-II	First Year		Credits		Course Code	
Personal Contact Programme Hours per year	Lecture			Lab Practice		Total	
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of data warehousing and data mining					
Course Outline							
<p>UNIT-I : 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-II : Data Preprocessing: Why Preprocess the data – Data cleaning – Data Integration – Data Transformation – Data Reduction – Data Discretization.</p>							
<p>UNIT-III : Data Mining Techniques: Association Rule Mining – The Apriori Algorithm – Multilevel Association Rules – Multidimensional Association Rules – Constraint Based Association Mining</p>							
<p>UNIT-IV : Classification and Prediction: Issues regarding Classification and Prediction – Decision Tree induction – Bayesian Classification – Back Propagation – Classification Methods – Prediction – Classifiers accuracy</p>							
<p>UNIT-V: 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>							
Recommended Text							
(i) J. Han and M. Kamber , 2001, Data Mining: Concepts and Techniques, Morgan Kaufmann, .New Delhi.							

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.
Website and e-Learning Source	i. http://www.academicpress.com ii. http://www.mkp.com

Title of the Course		Object Oriented Analysis & Design					
Paper Number							
Category	Elective-II	First Year		Credits		Course Code	
Personal Contact Programme Hours per year	Lecture			Lab Practice		Total	
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of Object Oriented Analysis and Design.					

Course Outline							
UNIT-I : System Development - Object Basics - Development Life Cycle - Methodologies - Patterns - Frameworks - Unified Approach – UML.							
UNIT-II : Use-Case Models - Object Analysis - Object relations - Attributes - Methods - Class and Object responsibilities - Case Studies.							
UNIT-III . : Design Processes - Design Axioms - Class Design - Object Storage - Object Interoperability - Case Studies.							
UNIT-IV : User Interface Design - View layer Classes - Micro-Level Processes - View Layer Interface - Case Studies.							
UNIT-V : Quality Assurance Tests - Testing Strategies - Object orientation on testing - Test Cases - test Plans - Continuous testing - Debugging Principles - System Usability - Measuring User Satisfaction - Case Studies.							
Recommended Text							
(i) A. Bahrami, 1999, Object Oriented Systems Development, Tata McGraw Hill International Edition.							
Reference Books							
(i) G. Booch, 1999, Object Oriented Analysis and design, 2 nd Edition, Addison Wesley, Boston							
(ii) R.S.Pressman, 2005, Software Engineering, 6 th Edition, Tata McGraw Hill, New Delhi.							
(iii) Rumbaugh, Blaha, Premerlani , Eddy, Lorensen, 2003, Object Oriented Modeling And design , Pearson education, Delhi.							
Website and e-Learning Source		http://www.sts.tu-harburg.de/teaching/ws-98.99/OOA+D/entry.html http://www.lifeglass.org/PVAMU/COMP3113/index.html					
Title of the Course		Internet Technology					
Paper Number							
Category	Elective-III	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total

Pre-requisite	
Learning Objectives of the Course	This course introduces the design of websites and internet technologies.
Course Outline	
<p>UNIT-I : Introduction to Javascript – Advantage of Javascript – Javascript Syntax – Datatype – Variable – Array – Operator and Expression – Looping Constructor – Function – Dialog box.</p> <p>UNIT-II : 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-III : 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-IV : ASP. NET Language Structure – Page Structure – Page event, Properties & Compiler Directives. HTML server controls – Anchor, Tables, Forms, Files. Basic Web server Controls – Label, 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-V: : 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>	
Recommended Text	
<p>(i) I. Bayross, 200, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Perl CGI, BPB Publications.</p> <p>(ii) G.Buczek, 2002, ASP.NET Developers Guide, TMH.</p> <p>Jesse Liberty, 2002, Programming C#”, Second Edition, O’Reilly Press</p>	

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.

**Website and
e-Learning Source**

<http://www.cs.rutgers.edu/~badri/352dir/notes.html>

Title of the Course	Practical – IV: Internet Technology Lab.
Paper Number	

Category	Elective-III	First Year		Credits		Course Code	
Personal Contact Programme Hours per year	Lecture			Lab Practice		Total	
Pre-requisite							
Learning Objectives of the Course		This course gives training in Web technologies.					
Course Outline							
<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. 							
<ol style="list-style-type: none"> 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"> Create a single default error page for any errors occurring in the application. Use ASP.NET debugger to debug the application during its development Enable tracing for the application. Display the user entered data in the purchase form as trace information at the bottom of the purchase page. 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.
Recommended Text	
Reference Books	
Website and e-Learning Source	

Title of the Course		DOT NET Programming					
Paper Number							
Category	Elective-III	First Year		Credits		Course Code	
Personal Contact Programme Hours per year	Lecture			Lab Practice		Total	
Pre-requisite							
Learning Objectives of the Course		This course introduces the concepts of Windows Programming.					

Course Outline

UNIT-I : Exploring Visual Studio IDE – Toolbox Control, user control creation – menus, Toolbars and Dialog boxes. Programming fundamentals - Variables, formulas and .NET Framework- Decision Structures – Loops and Timers.

UNIT-II : Debugging Visual Basic programs – Structured Error Handling – Modules and Procedures – Arrays – Collections and System. Collections Namespace. Exploring Text Files and String Processing. Managing windows forms and controls – Inheriting forms and creating base classes.

UNIT-III : Database – Introduction to ADO.NET – Bound Controls, SQL Statements, LINQ, Filtering data. Data Representation using the DataGridView control

UNIT-IV Web Application Basics – ASP.NET Application Fundamentals – The Page Rendering Model – Custom Rendering Controls – Composite Controls – Control potpourri – Web Parts – Configuration – Data Binding – Web site navigation – personalization.

UNIT-V: Caching and State management – Session State – Application Data Caching – Caching Output – Diagnostics and Debugging –The HTTP Application class and HTTP Modules – Custom Handlers. ASP.NET Web services- windows communication foundation, Ajax, ASP.NET and WPF Content.

Recommended Text

- (i) M. Halvorson, 2009, Microsoft Visual Basic 2008 Step by Step, Prentice Hall of India.
- (ii) G. Shepherd, 2009, Microsoft ASP.NET 3.5 step by step, Prentice Hall of India

Reference Books

- (i) B. Evjen, S. Hanselman, D. Rader, 2008, Beginning ASP.NET 3.5 in C# and VB, Wrox Publications.
- (ii) M. MacDonald, 2007, Beginning ASP.NET in VB 2008 from Novice to professional, second edition, Aprèss Publications.

Website and e-Learning Source

<http://docserve.wordpress.com/2011/04/18/complete-dot-net-notes/>

Title of the Course		DOT NET Programming Lab.					
Paper Number							
Category	Elective-III	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course gives practical training in DOT NET programming					

Course Outline

- (1) Write a VB.NET Desktop application and demonstrate the following (a) Link Label control that opens a web browser in your Visual basic applications (b) Dialog box controls, toolbars and menus.
- 2) Write a VB.NET desktop application to demonstrate error handling and debugging options.
- (3) Write a VB.NET desktop application to demonstrate .NET framework classes with mathematical methods.
- (4) Write a suitable VB.NET Desktop application and demonstrate the following: (a) Input Box (b) List Box (c) Masked Textbox
- (5) Write a VB.NET desktop application to demonstrate how to use a Timer control to create a logon program with a password time-out feature
- (6) Write a VB.NET desktop application to demonstrate how to create and manipulate large integer arrays. And Demonstrates the Array. sort and Array. Reverse methods and how to use a Progress Bar control to give the user visual feedback during long sorts.
- (7) Write a VB.NET desktop application to demonstrate a simple note-taking utility that demonstrate the how to manage Open. Copy, save As, Insert Date, Sort Text, and Exit commands in a program.
- (8) Write a VB.NET desktop application to demonstrate how controls are added to a windows form at run time by using program code (not the designer).
- (9) Write a VB.NET desktop application to demonstrate the graphics methods in the system.Drawing namespace, including DrawEclipse, Fill Rectangle, and DrawCurve.
- (10) Write a VB.NET desktop application to demonstrate how to create new classes, properties, and method.
- (11) Write a VB.NET desktop application to demonstrate how ADO.NET is used to establish a connection to a MSAccess database and show how the DataGridView control is used to display multiple tables of data on a form. Also demonstrate how navigation bars, datasets, and table adapters are interconnected and bound to objects on a form.
- (12) Create a web application and demonstrate rendering control tags and server-side controls and user controls.
- (13) Create a web application and demonstrate control validation, the TreeView, and the MultiView/View Controls.
- (14) Create a web applications and demonstrate databinding to several different controls, including the GridView. Also illustrate loading and saving data sets as XML and XML schema.
- (15) Create a web application and demonstrate session state within a web application.

Recommended Text

Reference Books	
Website and e-Learning Source	

Title of the Course		Multimedia Systems					
Paper Number							
Category	Elective-III	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of Multimedia Systems.					

Course Outline

UNIT-I : 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.

UNIT-II : 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.

UNIT-III : 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.,

UNIT-IV 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.

UNIT-V: 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.

Recommended Text

- (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.

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..

Website and e-Learning Source	http://www.cikon.de/Text_EN/Multimed.html
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Title of the Course		Multimedia Systems Lab.					
Paper Number							
Category	Elective-III	First Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course gives practical training in various multimedia software					

Course Outline

List of Practicals in Flash :

1. To Move an object, to move an object in the path
2. Text flip, Text color change,
3. Creating a link using texts and objects, change the color of the object.
4. Shape Tweening and Using shape hints, Motion tweening, hybrid tweening.
5. Character Animation, Object Animation, Drawing Images
6. An application to show the masking effect.
7. Slide show presentation.

List of Practicals in Photoshop:

1. To create a greeting card, Create background picture
2. Text effects, photo effects
3. Color , Buttons
4. Editing Images
5. Designing web page

List of practicals in Dream weaver

1. Text Management
2. Tables – Layers
3. Creating menubar
4. Creating Pages and sites
5. Animation in images

Recommended Text

Reference Books	
Website and e-Learning Source	

Title of the Course		Computer Networks					
Paper Number							
Category	Core-9	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course gives an insight into various network models and the general network design issues and related algorithms.					

Course Outline

UNIT-I : 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-II : Wireless transmission - Communication Satellites – Telephones structure –local loop, trunks and multiplexing, switching. Data link layer: Design issues – error detection and correction.

UNIT-III Elementary data link protocols - sliding window protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols.

UNIT-IV Network layer - design issues - Routing algorithms - Congestion control algorithms – IP protocol – IP Address – Internet Control Protocol.

UNIT-V: Transport layer - design issues - Connection management - Addressing, Establishing & Releasing a connection – Simple Transport Protocol – Internet Transport Protocol (TCP) - Network Security: Cryptography.

Recommended Text

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

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.

Website and e-Learning Source

- (i) <http://authors.phptr.com/tanenbaumcn4/>
- (ii) <http://www.cse.iitk.ac.in/users/dheeraj/cs425/>
- (iii) <http://www.scribd.com/doc/16629327/Computer-Networks-Lecture-Notes>

Title of the Course	Design and Analysis of Algorithms
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Paper Number							
Category	Core -10	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice	Total	
Pre-requisite							
Learning Objectives of the Course		This course gives insight into the design and analysis for selected problems.					
Course Outline							
<p>UNIT-I : 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-II : : 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-III 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-IV Back Tracking: General Method – 8-queens - Sum of subsets - Graph Coloring – Hamiltonian cycles. Branch and Bound: General Method - Traveling Salesperson problem.</p>							
<p>UNIT-V: Lower Bound Theory: Comparison trees - Oracles and advisory arguments - Lower bounds through reduction - Basic Concepts of NP-Hard and NP-Complete problems.</p>							
Recommended Text							
(i) E. Horowitz, S. Sahni and S. Rajasekaran, 1999, Computer Algorithms, Galgotia, New Delhi.							

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.

Website and e-Learning Source		(i) http://www.cise.ufl.edu/~raj/BOOK.html					
Title of the Course		Advanced Java Programming					
Paper Number							
Category	Core - 11	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course gives an insight into advanced features of Java					

Course Outline

UNIT-I : 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-II : 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-III 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-IV 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-V : 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.

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.

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.

Website and e-Learning Source

<http://www.ecst.csuchico.edu/~amk/foocsci611/notes/>

Title of the Course		Information Security					
Paper Number							
Category	Extra - Disciplinary	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course studies on some basics of Information Security					
Course Outline							
<p>UNIT-I : Introduction: Security- Attacks- Computer criminals- Method of defense Program Security: Secure programs- Non-malicious program errors- Viruses and other malicious code- Targeted malicious code- Controls against program threats.</p>							
<p>UNIT-II : Operating System Security: Protected objects and methods of protection- Memory address protection- Control of access to general objects- File protection mechanism- Authentication: Authentication basics- Password- Challenge-response- Biometrics.</p>							
<p>UNIT-III Database Security: Security requirements- Reliability and integrity- Sensitive data- Interface- Multilevel database- Proposals for multilevel security.</p>							
<p>UNIT-IV : Security in Networks: Threats in networks- Network security control- Firewalls- Intrusion detection systems- Secure e-mail- Networks and cryptography- Example protocols: PEM- SSL- Ipv6.</p>							
<p>UNIT-V : Administrating Security: Security planning- Risk analysis- Organizational security policies- Physical security - 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.</p>							
Recommended Text							
<ol style="list-style-type: none"> 1. C. P. Pfleeger, and S. L. Pfleeger, Security in Computing, Pearson Education, 4th Edition, 2003 2. Matt Bishop, Computer Security: Art and Science, Pearson Education, 2003. 							

Reference Books

1. Stallings, Cryptography And Network Security: Principles and practice, 4th Edition, 2006
2. Kaufman, Perlman, Speciner, Network Security, Prentice Hall, 2nd Edition, 2003
3. Eric Maiwald, Network Security : A Beginner's Guide, TMH, 1999
4. Macro Pistoia, Java Network Security, Pearson Education, 2nd Edition, 1999
5. Whitman, Mattord, Principles of information security, Thomson, 2nd Edition, 2005

Website and e-Learning Source

<http://cyber-security-notes.blogspot.com/>
http://www.securityhelp.ru/cissp/Overley_Updated.pdf

Title of the Course		Practical - V: Advanced Java Lab.					
Paper Number							
Category	Core -12	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course gives practical training in Advanced java programming					
Course Outline							
<ol style="list-style-type: none"> 1. HTML to Servlet Applications 2. Applet to Servlet Communication 3. Designing online applications with JSP 4. Creating JSP program using Java Beans 5. Working with Enterprise Java Beans 6. Performing Java Database Connectivity. 7. Creating Web services with RMI. 8. Creating and Sending Email with Java 9. Building web applications 							

Recommended Text	
Reference Books	
Website and e-Learning Source	

Title of the Course		Practical – V: Mini Project					
Paper Number							
Category	Core - 13	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year	Lecture			Lab Practice		Total	
Pre-requisite							
Learning Objectives of the Course		This course gives practical training in design and implementation of a mini-project problem.					
Course Outline:							
Each student will develop and implement individually application software using any emerging latest technologies.							

Recommended Text	
Reference Books	
Website and e-Learning Source	

Title of the Course		Project & Viva-Voce					
Paper Number							
Category	Core - 14	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year	Lecture			Lab Practice		Total	
Pre-requisite							
Learning Objectives of the Course		This course is to train the student in executing a project and preparing the report of work done.					
Course Outline							
The project work is to be carried out either in a software industry or in an academic institution for the entire semester and the report of work done is to be submitted to the University.							
Recommended Text							
Reference Books							

Website and e-Learning Source	
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Title of the Course		Mobile Computing					
Paper Number							
Category	Elective	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of mobile computing					

Course Outline

UNIT-I: Introduction - Mobile and Wireless Devices – Simplified Reference Model – Need for Mobile Computing –Wireless Transmissions –Multiplexing – Spread Spectrum and Cellular Systems- Medium Access Control – Comparisons.

UNIT-II : Telecommunication Systems – GSM – Architecture – Sessions –Protocols – Hand Over and Security – UMTS and IMT – 2000 – Satellite Systems

UNIT-III Wireless Lan - IEEE S02.11 – Hiper LAN – Bluetooth – Security and Link Management.

UNIT-IV : Mobile network layer - Mobile IP – Goals – Packet Delivery – Strategies – Registration – Tunneling and Reverse Tunneling – Adhoc Networks – Routing Strategies.

UNIT-V: Mobile transport layer - Congestion Control – Implication of TCP Improvement – Mobility – Indirect – Snooping – Mobile – Transaction oriented TCP - TCP over wireless – Performance

Recommended Text

- (i) J. Schiller, 2003, Mobile Communications, 2nd edition, Pearson Education, Delhi.

Reference Books

- (i) Hansmann, Merk, Nicklous, Stober, 2004, Principles of Mobile Computing, 2nd Edition, Springer (India).
- (ii) Pahlavan, Krishnamurthy, 2003, Principle of wireless Networks: A unified Approach, Pearson Education, Delhi.
- (iii) Martyn Mallick, 2004, Mobile and Wireless Design Essentials, Wiley Dreamtech India Pvt. Ltd., New Delhi.
- (iv) W.Stallings, 2004, Wireless Communications and Networks, 2nd Edition, Pearson Education, Delhi.

Website and e-Learning Source

<http://www.sharemca.com/mca-notes-semester-5.php>

Title of the Course	Artificial Intelligence
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Paper Number							
Category	Elective	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the concepts of machine learning.					
Course Outline							
<p>UNIT-I : Introduction - Intelligent Agents- Problem Solving - by Searching - Informed Search and Exploration - Constraint Satisfaction Problems - Adversarial Search</p> <p>UNIT-II : Knowledge and Reasoning - Logical Agents - First-Order Logic - Inference in First-Order Logic - Knowledge Representation</p> <p>UNIT-III: Planning – Planning and Acting in the Real World - Uncertain knowledge and reasoning - Uncertainty - Probabilistic Reasoning - Probabilistic Reasoning Over Time - Making Simple Decisions - Making Complex Decisions</p> <p>UNIT-IV : Learning - Learning from Observations - Knowledge in Learning - Statistical Learning Methods - Reinforcement Learning</p> <p>UNIT-V: Communicating, Perceiving, and Acting - Communication - Probabilistic Language Processing - Perception – Robotics</p>							
Recommended Text							
(i) Stuart Russell and Peter Norvig, 2003, Artificial Intelligence: A Modern Approach, 2nd Edition, Prentice Hall of India, New Delhi.							
Reference Books							
(i) Elaine Rich and Kevin Knight, 1991, Artificial Intelligence, 2 nd Edition, Tata McGraw-Hill, New Delhi.							
(ii) Herbert A. Simon, 1998, The Sciences of the Artificial Intelligence, 3 rd Edition, MIT Press.							
(iii) N.J. Nilson, 1983, Principles of AI, Springer Verlag.							

Website and e-Learning Source	(i) http://aima.eecs.berkeley.edu/slides-pdf/ (ii) http://www.cs.gsu.edu/~cscyqz/courses/ai/aiLectures.html (iii) http://www.eecs.qmul.ac.uk/~mmh/AINotes/ (iv) http://artificialintelligence-notes.blogspot.com/
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Title of the Course		Computer Graphics					
Paper Number							
Category	Elective	Second Year		Credits		Course Code	
Personal Contact Programme Hours per year		Lecture			Lab Practice		Total
Pre-requisite							
Learning Objectives of the Course		This course introduces the basic concepts of Computer Graphics which shall be useful for virtual modeling.					
Course Outline							
<p>UNIT-I : Introduction to computer Graphics – Video display devices – Raster Scan Systems – Random Scan Systems - Interactive input devices – Hard Copy devices - Graphics software – Output primitives – line drawing algorithms – initializing lines – line function – Circle Generating algorithms – Ellipse Generating algorithms - Attributes of output primitives – line attributes – Color and Grayscale style</p> <p>UNIT-II : : Area fill attributes – Character attributes inquiry function – Two dimensional transformation – Basic transformation – Matrix representation and Homogeneous co-ordinates - Composite transformation – Matrix representation – other transformations – two dimensional viewing – window – to- viewport co-ordinate transformation.</p> <p>UNIT-III : Clipping algorithms – Point clipping -line clipping - polygon clipping – Curve clipping - text clipping – Exterior clipping- Interactive input methods – Physical input devices – logical classification of input devices – Input functions - Interactive picture construction methods – Three dimensional concepts – Three dimensional display methods – parallel projection – perspective projection – Depth cueing – Visible line and surface identification.</p> <p>UNIT-IV : Three dimensional transformation – Three dimensional viewing – Projection – Viewing transformation – Implementation of viewing operations – Hidden surface and Hidden line removal – backface removals.</p> <p>UNIT-V: Three dimensional object representation – Spline representation - Bezier curves and surfaces – B-Spline curves and surfaces.</p>							

Recommended Text

D. Hearn and M.P. Baker, 2006 – Computer Graphics 2nd Edition, Pearson Education

Reference Books

- 1) W.M. Neumann and R. F. Sproull, Principles of Interactive Computer Graphics, Tata McGraw-Hill, New Delhi.
 - 2) S. Harrington, 1989, Fundamentals of Computer Graphics, Tata McGraw-Hill, New Delhi.
 - 3)D. F. Rogers, J. A. Adams, 2002, Mathematical elements for Computer Graphics, 2nd Edition, Tata McGraw-Hill, New Delhi.
 - 4) D. F. Rogers, 2001, Procedural elements for Computer Graphics, 2nd Edition, Tata McGraw-Hill, New Delhi.
- Foley, Van Dam, Feiner, Hughes, 2000, Computer Graphics, Addison Wesley, Boston

Website and e-Learning Source

<http://forum.jntuworld.com/showthread.php?3846-Computer-Graphics-Notes-All-8-Units>
<http://www.cs.kent.edu/~farrell/cg05/lectures/index.html>