AFFILIATED INSTITUTIONS
ANNA UNIVERSITY, CHENNAI
REGULATIONS 2003
CURRICULUM AND SYLLABUS

M.Sc. INFORMATION TECHNOLOGY (2 YEARS)

SEMMER I

<table>
<thead>
<tr>
<th>S.NO.</th>
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SEMMER II

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### SEMESTER III

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|       |              | PRACTICAL |    |    |    |    |
| 7     | BIT 037      | Web Technology Laboratory | 0  | 0  | 3  | 2  |
| 8     | BIT 038      | Software Laboratory | 0  | 0  | 3  | 2  |
|       |              | TOTAL     | 28 |

### SEMESTER IV

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### LIST OF ELECTIVES

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</table>
UNIT I   LOGIC

UNIT II   COMBINATORICS

UNIT III   ALGEBRAIC STRUCTURES
Semigroups and Monoids (Definitions and examples only) – Groups – subgroups – homomorphisms – cosets and Lagrange’s Theorem – Normal Subgroups – Rings and Fields (Definitions and Examples).

UNIT IV   ORDER RELATIONS AND STRUCTURES

UNIT V   GRAPHS

TEXT BOOKS

REFERENCE
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I 12
Fundamentals of Computer Design – RISC vs CISC – Performance related issues –
Performance Parameters – Measuring Performance. Instruction Set Architecture –
Design Issues.

UNIT II 12
Instruction Pipelining – Hazards and Remedies – Instruction Set Design & Pipelining.
Instruction Level Parallelism – Concepts.

UNIT III 12
Dynamic Scheduling – Dynamic Hardware Branch Prediction – Super scalar, VLIW and
Vector Processors – Performance issues.

UNIT IV 12
Multiprocessor Architectures – Centralized Shared Memory Architectures, Distributed
Shared Memory Architectures – Synchronization – Memory Organisation and Cache
Coherence Issues.

UNIT V 12
Interconnection Networks – Examples – Internetworking. Case Studies of Typical
Architectures.

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
Prentice Hall of India, Delhi, 1999.
UNIT I

UNIT II
Internet Multicasting – Mobile IP – Bootstrap And Auto configuration (BOOTP, DHCP).

UNIT III
The Domain Name System (DNS) – Applications : Remote Login (TELNET, Rlogin) – File Transfer and Access (FTP, TFTP, NFS).

UNIT IV

UNIT V

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I  C++ PROGRAMMING
Introduction to C++ - Tokens, expressions and control structures – Functions in C++ - Classes and Objects – Constructors – Destructors – Operator Overloading and Type conversions.

UNIT II  INHERITANCE, POLYMORPHISM AND FILES

UNIT III  TEMPLATES AND EXCEPTION HANDLING
Templates – Function templates – class Templates – Overloading of Template Functions – Member function Templates – Exception handling – basics – Exception handling mechanism – Throwing mechanism catching mechanism – Rethrowing an exception – specifying exceptions.

UNIT IV  INTRODUCTION TO JAVA

UNIT V  INTERFACES, PACKAGES AND THREADS

TEXT BOOKS

REFERENCES
# ADVANCED DATABASE MANAGEMENT SYSTEMS

## UNIT I

## UNIT II

## UNIT III

## UNIT IV

## UNIT V

---

**TEXT BOOK**

**REFERENCES**
1. Create a complex number class with all possible operators
2. Create a vector class
3. Create a string class
4. Create a time class
5. Create a data class
6. Create a matrix class
7. Create an employee class with derived classes
8. Create Lists

TOTAL : 45 PERIODS
1. Library Information Processing
2. Students Mark sheet processing
3. Telephone Directory maintenance
4. Gas booking and delivering system
5. Electricity Bill Processing
7. Pay roll processing
8. Personal Information System
9. Question Database and Conducting quiz.

TOTAL : 45 PERIODS
UNIT I  INTRODUCTION  12

UNIT II  TELECOMMUNICATION SYSTEMS  12

UNIT III  WIRELESS LAN  12

UNIT IV  MOBILE IP  12

UNIT V  WIRELESS APPLICATION PROTOCOL  12

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCE
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV
Database Connectivity – Min Database Applications – Embedding Controls in View – Creating user defined DLL’s – Dialog Based Applications – Dynamic Data Transfer Functions – Data Base Management with ODBC – Communicating with other applications – Object Linking and Embedding.

UNIT V

TEXT BOOKS

REFERENCES
UNIT I  OBJECT BASIS  12
Object Oriented Philosophy – Object – Object State, behaviors and methods. Encapsulation and information hiding Class Relationship among classes polymorphism, aggregation, object containment, meta classes.

UNIT II  OBJECT ORIENTED METHODOLOGIES  12
Rumbaugh object Model, Booch methodology Jacobson methodology, patterns, frame works and unified approach.

UNIT III  OBJECT ORIENTED ANALYSIS  12

UNIT IV  OBJECT ORIENTED DESIGN  12

UNIT V  UML AND PROGRAMMING  12
Introduction to unified modeling language – UML diagrams – class diagrams and use case diagrams – State and dynamic models. Case study to inventory, sales and banking.

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III
Project initiation – Project Planning and tracking – what, cost, when and how – organisational processes – assigning resources – project tracking – project closure – when and how.

UNIT IV

UNIT V
Project Management in testing phase – in the maintenance phase – Impact on internet on project Management.

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCE
1. Building Simple Applications.
2. Working with Intrinsic Control and ActiveX Controls.
3. Application with multiple forms.
4. Application with Dialogs.
5. Application with Menus.
6. Application with Data Controls.
8. Drag and Drop Events.
9. Database Management.
10. Creating ActiveX Controls.

TOTAL: 45 PERIODS
1. Familiarization of features of any one of the standard UML case tool.
2. Capturing key functional requirements as Use cases and class diagram for online ticket / hotel reservation systems, student information system, sales and marketing system, banking system and inventory tracking system.
3. Interacting diagrams, state chart diagrams etc for systems in 2.
4. Implementation using any one of object oriented languages like Java, C++ for systems in 2.
5. Component diagrams, deployment diagrams for system in 2.
6. Unit test case, integration test case for systems in 2.

TOTAL : 45 PERIODS
UNIT I

UNIT II

UNIT III

UNIT IV
O.S. support for continuous media applications – limitations in workstation O.S. – New OS support – experiments using real time mach – middle ware system services architecture – media stream protocol.

UNIT V

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I  
INTRODUCTION  12  
Objects – distributed objects – Historical perspective on Distributed objects and computing methodologies.

UNIT II  
CORBA  12  

UNIT III  
DEVELOPMENT OF A CORBA APPLICATION  12  

UNIT IV  
DCOM  12  
Model and services – Objects and Object hierarchies – Location transparency – Configuration information – interface definition language (MIDL) – Applications.

UNIT V  
CURRENT ISSUES  12  

TOTAL: 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III


UNIT IV

UNIT V


TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

TOTAL : 60 PERIODS

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V
Online Applications and Emerging technologies - Online Shopping – Online databases – Monitoring user events – Need for .NET - Overview of .NET Framework – Web services.

TEXT BOOK

REFERENCES
1. Write a program in HTML to display different styles of heading text.
2. Write a program to display the processes to be followed for a patient when he enters for a complete checkup. Use ordered lists and unordered lists.
3. Write a program to display a traditional Newspaper with the use of table tags.
4. With the help of “IMAGE” tags write a program to display the image along with some contents.
5. Use “Anchor” tag to write a program for displaying various Menus.
6. Use mapping technique, to map a particular part of image and move the control corresponding to that area. For eg. In an image, if there are bat, ball, stamp etc. When you click stump control should move to a file call St.htm.
7. Create frames that has details above various cities.
8. Create a form to display the kinds of food available in a Restaurant. (Use checkboxes wherever necessary)
9. Write a program to “reload” a page automatically once in 5 seconds.
10. Write a program using CSS to set the background colour, font, paragraph.
11. Write a program to change the font color using class and reflect the change in h1.
12. Write a program for a) Using external CSS, to import classes for h1 (use link and import)
13. Write a program to link images using style sheets.
14. Write a program to align a text in various styles sheets.
15. Write a program to align a text in various styles.

TOTAL : 45 PERIODS
2. Using any of the CASE tools, Practice requirement analysis and specification for different firms.
3. Case study of cost estimation models.
4. Practice object oriented design principles for implementation.
5. Practice function oriented design.
6. Practice creating software documentation for all the phases of software development life cycle with respect to any real time application.
7. Simulate a tools for path testing principles.
8. Simulate a tools for testing based on control structures.
9. Simulate a tools that reflects black box testing concepts

TOTAL : 45 PERIODS
The project will be of one semester duration. The students will be sent to different organizations involved in science communication activities as per interest and specialization of students, mostly located in the place of the study. They will have to carry out a research project related to the area of interest and submit a research project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examination.
UNIT I  DISCRETE TIME SIGNALS AND SYSTEMS  9
Discrete time signals – Operation on sequences – sampling of continuous time
signals – aliasing – Discrete time systems – Time domain characterization of discrete
time systems – state space representation – Discrete random signals – Mean, variance,
covariance and power spectral density.

UNIT II  FREQUENCY DOMAIN ANALYSIS  9
Discrete Time Fourier Transform (DTFT) – Discrete Fourier Transform (DFT) –
Computation of DFT using FFT algorithms – DIT – FFT and DIF FFT – Linear
convolution using FFT – Z-Transform and inverse Z-Transform – Frequency response of
discrete time systems.

UNIT III  DIGITAL FILTERS  9
Butterworth, Chebyshev, Elliptic approximations for filters – design of IIR low pass and
high pass filters using impulse invariance and bilinear Z-transform – Principles of
frequency transform – FIR digital filters – design of ideal low pass and high pass FIR
digital filters – design of ideal low pass and high pass FIR filter design using Hamming,
Hanning and Blackmann windows – Linear phase condition.

UNIT IV  DIGITAL FILTER STRUCTURES  9
Block diagram representation – signal Flow graph representation – Basic FIR Digital
filter Structures – transversal and poly phase – Direct form I, Direct form II, cascade and
parallel structures for IIR filters.

UNIT V  ALGORITHM IMPLEMENTATION AND FINITE WORD LENGTH
EFFECTS  9
Number representation – Fixed point and Floating point – Quantization error analysis
– overflow error – truncation error – coefficient quantisation error – Limit cycle
oscillations – Dynamic range scaling – Round off errors in FFT algorithms.

TOTAL : 45 PERIODS

TEXT BOOK
Ltd., New Delhi, 1998.

REFERENCE
1. Discrete-Time Signal Processing – Alan V. Oppenheim, Ronald W. Schafer, Prentice
Hall of India, New Delhi, 1992.
UNIT I

UNIT II
Digital image sampling and quantization – 2D sampling theory – Image reconstruction from samples, Band limited images, sampling theorem, Nuquist rate, Abasing and filled over frequencies – Image quantization – Optimum mean square quantizer.

UNIT III
Image enhancement – point operations – contrast structuring, clipping and thresholding etc – Histogram modeling – Spairal operations – special averaging and low pass filtering, Directorial smoothing, median filtering, Replication, Linear interpolation, Magnification and interpolation (Zooming) – false color and pseudo color.

UNIT IV

UNIT V
Image data compression – Pirel coding – PCM, Entrophy coding, Runlength, Bitplane extraction – Predictive techniques – Delta modulation line by line DCPM etc – Interface – Coding of two tone images.

TOTAL : 45 PERIODS

TEXT BOOK

REFERENCES
UNIT I

UNIT II
Decision Making, Branching and Looping – if, if...else, switch, ...? : operators, while, do, for, foreach and jump in loops, Methods in C# - declaring methods, the main method, invoking methods, nesting methods, method parameters, pass by value and pass by reference, output parameters, Variable argument lists – Overloading methods.

UNIT III
Arrays – Creating an array, Variable size arrays, Array list class – Manipulating Strings – Structures, Nested Structures – Enumerations, Initialization, base types and type conversion.

UNIT IV
Classes and Objects – Definition, Creating objects, Constructors and destructors, Nesting, Overloaded constructors, Inheritance and Polymorphism – classical, multilevel, hierarchical inheritances, Subclass, Subclass constructors, Overriding methods, Abstract Classes and Methods, Interfaces, Interfaces and Inheritance – Operator Overloading.

UNIT V
Delegates – Declaration Methods, Initialization and Invocation, Multicast delegates, I/O operations – Console Input/Output, Formatting, Errors and Exceptions, Type of Errors – Exceptions – Exception for debugging.

TOTAL : 45 PERIODS

TEXT BOOK

REFERENCES
UNIT I

UNIT II

UNIT III

UNIT IV
Backtracking – General Method – 8 Queens Problem – Graph Coloring Branch and Bound – Method – 0/1 Knapsack Problem

UNIT V

TOTAL : 45 PERIODS

TEXT BOOK

REFERENCES
UNIT I CONVENTIONAL ENCRYPTION 9

UNIT II NUMBER THEORY AND PUBLIC KEY CRYPTOGRAPHY 9

UNIT III MESSAGE AUTHORIZATION AND HASH FUNCTIONS 9

UNIT IV DIGITAL SIGNATURE AND AUTHENTICATION PROTOCOLS 9
Digital Signature – Authentication Protocols – Digital Signature Standard.

UNIT V NETWORK SECURITY 9

TOTAL : 45 PERIODS

TEXT BOOK

REFERENCES
UNIT I  
Basic concepts of Client / Server – Upsizing Down sizing – Right sizing – Characteristics 
Client/Servers – Web Servers – Middleware. 
Client / Server building blocks – Operating System services – Base services – External 
services – server scalability – Remote procedure calls – Multiservers.

UNIT II 
SQL Database servers – server architecture – Multithread architecture – Hybrid 
Processing – Transaction models – Chained and nested transactions – Transaction 
processing monitors – Transaction Management Standards.

UNIT III 
Database Connectivity solutions : ODBC – The need for Database connectivity – Design 
overview of ODBC – Architecture – components – Applications – Driver Managers – 
Drivers – Data sources – ODBC 2.5 and ODBC 3.0.

UNIT IV 
DLL and OLE Applications – Visual C++ components – frame work / MFC class Library – 
basic event handling – SDI – Appwizard – ClassWizard – Model and Models dialogues – 
other controls – Examples.

UNIT V 
Multiple Document Interface – Data Management with Microsoft ODBC – OLE client – 
OLE server – Client / Server Data Exchange format – Dynamic Data Exchange.

TOTAL : 45 PERIODS

TEXT BOOKS

REFERENCES
1. Bvar, B.H., Implementing Client / Server Computing : A Strategic Prospective, 
UNIT I HIGH SPEED NETWORKS 9
Fast Ethernet technology, FDDI, SONET and SDh standards, Performance of HIGH speed LAN- throughput, delay and reliability. Wave length division multiplexed LAN-routing and switching MDM networks, Gigabit LAN.

UNIT II ISDN and STANDARDS 9
Overview of ISDN – user interface, architecture and standards. Packet switched call over ISDN, B and D channels, link access procedure (LAPD) ISDN layered architecture, signaling. Limitations of Narrowband ISDN (N-ISDN) and evolution of broad band ISDN (B-ISDN).

UNIT III ASYNCHRONOUS TRANSFER MODE NETWORKS 9
ATM protocol architecture, ATM adaption layer, fast packet switching techniques and VP/VC encapsulation. ATM cells, ATM cell header interpretation, source characteristics.

UNIT IV ATM TRAFFIC MANAGEMENT 9
Traffic management issues in ATM-resource management, connection management, policing and reactive control principles. Discrete time queue analysis and application to CAC, leaky bucket and ECN/ICN.

UNIT V ATM SIGNALING AND DATA COMMUNICATION OVER ATM 9
ATM signaling fundamentals and meta-signaling. TCP/IP over ATM-challengers and proposal LAN emulation over ATM. Performance of Data Communication over ATM.

TOTAL : 45 PERIODS

TEXT BOOK

REFERENCES
UNIT I  ORBIT DYNAMICS
Kepler’s Law, Newton’s Law, Orbit Parameters, Orbital perturbation, Station keeping, Geo stationary and non-Geo stationary orbits. Frequency allocation, frequency co-ordination and regulatory services, Sun transit outages, Limits of visibility, Launching vehicles and propulsion.

UNIT II  SPACE SEGMENT
Space craft configuration, Communication payload and supporting sub systems, Satellite up link – down link, Link power budget, C/No, G/T, Noise temperature, System noise, Propagation factors, Rain and Ice effects, Polarization.

UNIT III  SATELLITE ACCESS

UNIT IV  EARTH SEGMENT
Transmitter, Receivers, Antennas, Terrestrial interface, TVRO, MATV, CATV, Test equipments, Measurements on G/T, c/No. EIRP, Antenna Gain.

UNIT V  SATELLITE APPLICATIONS
INTELSAT series, INSAT, VSAT, Facsimile system, Weather Service, Remote sensing, Mobile Satellite Service : GSM, GPSM, INMARSAT, SARSAT, LEO, MEO, Satellite navigation System, Direct Broadcast Satellites (DBS), Direct to Home broadcast (DTH, Digital Audio Broadcast (DAB), Business TV(BTV), GRAMSAT, Specialized services – E-mail, Video conferencing, Internet.

TOTAL : 45 PERIODS

TEXT BOOKS

REFERENCES