ANNA UNIVERSITY OF TECHNOLOGY
COIMBATORE

DIRECTORATE OF ONLINE AND DISTANCE EDUCATION

M. Sc.
(Academic Year: 2010-2011)

SYLLABUS
WITH CURRICULAM & REGULATIONS
(SEMESTER - I to IV)
This regulation is applicable to all candidates admitted into M.Sc. Programmes from the academic year 2010 – 2011 and onwards.

1. PRELIMINARY DEFINITIONS AND NOMENCLATURE

In this Regulation, unless the context otherwise requires:

i) “Programme” means M.Sc. programme.

ii) “Branch” means specialization or discipline of M.Sc. programme.

iii) “Course” means a theory or practical subject that is normally studied.

iv) “University” means ANNA UNIVERSITY OF TECHNOLOGY COIMBATORE.

2. PROGRAMMES OFFERED

1. Computer Science
2. Computer Technology

3. ADMISSION

1. Candidates seeking admission to the first semester of the four semesters M.Sc. Degree Programme:
   
   • Should possess B.Sc. (Computer Science / Physics / Information Technology / Software Engineering / Applied Science / Computer Technology / Computer System Maintenance and Networking Electronics) / BCA or Equivalent from a recognized University
   
   • Should have passed the Higher Secondary Examination of (10+2) curriculum (Academic stream) prescribed by the Government of Tamil Nadu or authority accepted by the Syndicate of Anna University Coimbatore as equivalent thereto.

2. The eligibility criteria shall be prescribed by the Syndicate of the University from time to time.
4. STRUCTURE OF PROGRAMME
   1. Every Programme shall have a curriculum comprising of theory courses, practical
      courses and a project work with well defined syllabi.
   2. The medium of instruction, examinations and project report shall be in English.

5. DURATION AND PATTERN
   A student is normally expected to complete the M.Sc. Programme in 4 semesters (two
   academic years) but in any case not more than 8 semesters (four academic years) from
   the admission.

6. INTERACTIVE LEARNING PROGRAMME
   1. Interactive Learning Programmes are arranged on Saturdays and Sundays or on
      Public Holidays. Attendance in Three ILPs is compulsory to appear for University
      Examination. University will arrange Tele Conference / Case Studies in different
      centres after due notification.
   2. Those who did not attend the required number of ILPs can get permission from the
      Director and submit Additional Term Paper (ATP) / Mini Project Work (MPW) and
      appear for the examinations.

7. SYSTEM OF EXAMINATION
   1. Performance in each course (other than project work) of study shall be evaluated
      as follows:

      | S. No. | Mode of Examination          | Percentage of Marks |
      |--------|-----------------------------|---------------------|
      | 1      | Terminal Examination        | 80%                 |
      | 2      | Continuous Assessment       | 20%                 |
                      (Assignments)                    |
      |        | Total                       | 100%                |

   2. Each theory and practical course shall be evaluated for a maximum of 100 marks
      and the project work shall be evaluated for a maximum of 300 marks.
   3. The University examinations of 3 hours duration shall ordinarily be conducted
      between December & January and between May & June.
8. REQUIREMENTS FOR APPEARING FOR UNIVERSITY EXAMINATION

A candidate shall normally be permitted to appear for the University examination of the current semester if he/she satisfied the following condition requirement:

- Student is expected to attend all ILP classes and secure 100% attendance. However, in order to allow for certain unavoidable reasons, the student is expected to attend at least 50% of the ILP classes (Three pair of Saturday and Sunday).

  Note: - A candidate who could secure lesser than 50% of attendance shall be given exemption with the permission from the Director and he/she shall be permitted to appear for the examinations by submitting Additional Term Paper (ATP) / Mini Project Work (MPW).

- Registration is mandatory for current semester examinations as well as arrears examinations. Student is expected to register for examination for all courses of that semester.

9. PASSING REQUIREMENTS

1. A candidate, who secures not less than 50% of total marks prescribed for all the courses with a minimum of 50% of marks in continuous assessment and 50% of marks in university examination, shall be declared to have passed the Examination. If a candidate fails to secure a pass / absent in a particular course, it is mandatory that he/she register and reappear for the examination in that course during the next semester when examination is conducted in that course; he/she should continue the same till he/she secures a pass. However, the continuous assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.

2. In case the candidate fails to submit the assignments within the stipulated date prescribed by the university, He / She will be considered to have failed in the internal assessment thereby foregoing the continuous assessment marks of 20. However the candidate can pass the external terminal examination by securing minimum of 62.5 marks out of 100.

3. A candidate who opts for project work shall be declared to have passed in the Project work and Viva–voce examination, if he/she secures an overall minimum of 50% marks. If a candidate fails to secure a pass / absent in the Project work and Viva-voce examination may be permitted to resubmit a project and appear for the viva – voce for the second time if so recommended by the examiners. No candidate shall be permitted to submit the project work and appear for the Viva – Voce on more than two occasions.
Note: - If a student indulges in malpractice in any of the University examinations, he/she shall be liable for punitive action as prescribed by the University from time to time.

10. ELIGIBILITY FOR THE AWARD OF DEGREE

A student shall be declared to the eligible for the award of the M.Sc. Degree provided the student has

- Successfully completed the course requirements and passed all the prescribed examinations in all the 4 semesters within a maximum period 4 years reckoned from the commencement of the first semester to which the candidates was admitted.
- The award of Degree must have been approved by the Syndicate of the University.

11. CLASSIFICATION OF THE DEGREE AWARDED

1. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the four semesters in his/her first appearance within four consecutive semesters and securing an aggregate of not less than 75% of total marks shall be declared to have passed the examination in Distinction.

2. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the four semesters within a maximum period of four consecutive semesters reckoned from the commencement study in the first semester and securing an aggregate of not less than 60% of total marks shall be declared to have passed the examination in First Class.

3. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the four semesters not within a maximum period of four consecutive semesters reckoned from the commencement study in the first semester and / or securing an aggregate of less than 60% of total marks shall be declared to have passed the examination in Second Class.

4. All other candidates shall be declared as failed candidates.
# 12. GRADING SYSTEM

<table>
<thead>
<tr>
<th>Marks</th>
<th>Grade</th>
<th>Grade Legend</th>
<th>Grade Points</th>
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<tbody>
<tr>
<td>95% - 100%</td>
<td>O</td>
<td>Outstanding</td>
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<td>90% - 94%</td>
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<td>Excellent</td>
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<td>-</td>
<td>RAX</td>
<td>Reappearance in External</td>
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<td>-</td>
<td>RAB</td>
<td>Reappearance Both</td>
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# M.Sc. - CURRICULUM

## M.Sc. - COMPUTER SCIENCE

### Branch Code - 260

#### Semester I

<table>
<thead>
<tr>
<th>Course Code</th>
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<td>111004</td>
<td>COMPUTER ARCHITECTURE AND ORGANIZATION</td>
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<td>3</td>
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<td>111005</td>
<td>OPERATING SYSTEMS</td>
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<td>DIGITAL PRINCIPLES AND DESIGN</td>
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Total Cumulative Credits: 21

#### Semester II

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<td>112004</td>
<td>SYSTEM ANALYSIS AND DESIGN</td>
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<td>112005</td>
<td>DATA BASE MANAGEMENT SYSTEMS</td>
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<td>122003</td>
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<td>122005</td>
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<td>112008</td>
<td>OOPS LAB</td>
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<td>112009</td>
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Total Cumulative Credits: 42

#### Semester III

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<td>113003</td>
<td>SOFTWARE ENGINEERING</td>
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<td>113004</td>
<td>DESIGN AND ANALYSIS OF ALGORITHMS</td>
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<td>123001</td>
<td>SYSTEMS PROGRAMMING AND COMPILER DESIGN</td>
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Total Cumulative Credits: 63

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<td>CRYPTOGRAPHY AND NETWORK SECURITY</td>
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<td>124001</td>
<td>ARTIFICIAL INTELLIGENCE</td>
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<td>124005</td>
<td>DATA WAREHOUSING AND DATA MINING</td>
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Total Cumulative Credits: 81
## M.Sc.- INFORMATION TECHNOLOGY

### Branch Code - 262

#### Semester I

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<tr>
<td>111003</td>
<td>DATA STRUCTURES AND C</td>
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<td>111004</td>
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Total Cumulative Credits: 21

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<tbody>
<tr>
<td>112003</td>
<td>OBJECT ORIENTED PROGRAMMING WITH C++</td>
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<tr>
<td>112005</td>
<td>DATA BASE MANAGEMENT SYSTEMS</td>
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<td>122001</td>
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<td>122002</td>
<td>EMBEDDED SYSTEMS</td>
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<td>122005</td>
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<td>112008</td>
<td>OOPS LAB</td>
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<td>112009</td>
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Total Cumulative Credits: 42

#### Semester III

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Total Cumulative Credits: 63

#### Semester IV

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<th>Course Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>114001</td>
<td>CRYPTOGRAPHY AND NETWORK SECURITY</td>
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<td>124003</td>
<td>TCP AND IP</td>
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<td>DATA WAREHOUSING AND DATA MINING</td>
<td>100</td>
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<tr>
<td>124004</td>
<td>PROJECT WORK AND VIVA VOCE</td>
<td>300</td>
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</table>

Total Cumulative Credits: 81
OBJECTIVE  To emphasize the basic programming concepts, how they work together which would be learning through meaningful examples and programming exercises.

MODULE 1:
The role of Programming Languages Toward Higher-Level Languages- Programming Paradigms-Languages Implement Bridging the Gap. Languages Description Syntactic Structure Expression Notations-Abstract Syntax Trees- Lexical syntax-Context-Free Grammars-Grammars for Expressions

MODULE 2:

MODULE 3:
Types of Data Representation- The Role of Types-Basic Types - Arrays Sequences of Elements-Records Named Fields –Unions and Variant Records-Sets-Pointers Efficiency and Dynamic Allocation-Types and Error Checking.

MODULE 4:
Groups of Data and Operations Class Declarations in C++ - Dynamic Allocation in C++ - Templates Parameterized Types. Object-Oriented Programming What is an Object? Object-Oriented Thinking-Inheritance-Object-Oriented Programming in C++ -Derived Classes and Information Hiding.

MODULE 5:
Functional Programming with Lists Scheme, a Dialect of Lisp-The Structure of List - List Manipulation -A Motivating Example Differentiation-Simplification of Expressions

MODULE 6:

Text Books:

References:
1. Ellis Horowitz, Fundamentals of Programming Languages, Galgotia Publications Pvt. Ltd.
**OBJECTIVE:** To introduce the students those aspects of data structures this required in subsequent computer science courses which are infinitively kept in a modular manner.

**MODULE 1:**
Algorithm concept, Complexity – Big O- Notation, time space trade-off. Array- Row/Column major representation, sparse matrix, shifting.Linked List- Singly, circular, doubly, doubly & circular Stack- Push, Pop

**MODULE 2:**
Stack representation using array & linked list. Queue – insert, delete, representation using array & linked list, circular queue (operations), deque (operations), priority queue (operations)

**MODULE 3:**
Garbage collection-different techniques. Tree- definition – traversal algorithms (pre, post, in). - Threaded tree (One Way & Two Way), heap tree, Avl tree-balancing, B-tree, Trie

**MODULE 4:**
Sorting with complexity analysis – bubble, merge, quick, selection, insertion, shell, tournament, radix, heap .Search- Linear & Binary (Complexity Analysis). Recursion Technique- overview including tail recursion

**MODULE 5:**

**MODULE 6:**

**Text Books:**
Jean-Paul Trembly and Paul Sorenson, “An Introduction to Data structures with applications”

**References:**
1. Ajay Agarwal, Data Structure Using C, Cyber Tech
2. Radhakrishnan & Shrinivasan, Data Structure Using C, ISTE/EXCEL
3. Radhaganesan, C and Data Structures, Scitech
4. Tannenbaum, Data Structure Using C & C++, PHI
OBJECTIVE: To understand the core concepts of hardware and software design for computer systems and also the necessary hardware interfaces for the software.

MODULE 1:
Data and Number Representation-Binary-Complement Representation, BCD-ASCII, Conversion of Numbers from one Number System to the other, (r-1)’s & r’s Complement representation, Binary Arithmetic.

MODULE 2:
Structure of a Digital Machine (VON-Neumann architecture), Logic gates, Basic Logic Operations, Truth Tables, Boolean Expression, Simplification

MODULE 3:
Combination Circuits, Adders, Multiplexer, Sequential Circuits, Registers. ROM, PROM, EPROM and dynamic RAM, Digital Components, Bus Structure- Address bus, Data bus & DMA controller.

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
Morris Mano, “Computer System Architecture”, PHI,3rd Ed

References:
1. Hamacher, Computer Organization, MGH
2. Carter, Schaum Outline Series, Computer Architecture, TMH
3. Buad, System Architecture, VIKAS
OBJECTIVE: Intended to acquaint the student with the design principles and implementation issues of contemporary operating systems both Windows and UNIX.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:
Background - Swapping - Contiguous Memory Allocation - Paging - Segmentation - Segmentation with Paging-Virtual Memory Demand Paging-Page Replacement-Thrashing

MODULE 5:

MODULE 6:

Text Books:
William Stallings, Operating Systems, PHI

References:
1. Galvin & Silverschatz, Operating Systems, John Wiley
2. Milenkovic, Operating Systems, TMH
3. Tannenbaum, Modern Operating System, 2nd Ed, PHI
4. Dhamdhere, Systems Programming & Operating Systems, TMH
5. Donovan, Systems Programming, TMH
OBJECTIVE: To imbibe a through exposure to digital electronics fundamentals, concepts and other advancements in this science to guide the student into the future of computer field.

MODULE 1:
Analog & Digital signals, AND, OR, NOT, NAND, NOR & XOR gates, Boolean algebra, Standard representation of Logical functions, K-map representation and simplification of logical functions, Don’t care conditions, X-OR & X-NOR simplification of K-maps.

MODULE 2:
Combinational circuits Multiplexers, Demultiplexers, Decoders & Encoders, Adders & Subtractors, Code Converters, comparators

MODULE 3:
Flip Flops S-R, J-K, D & T Flip-flops, excitation table of a flip-flop, race around condition

MODULE 4:
Sequential circuits Shift registers, Ripple counter, Design of Synchronous counters and sequence detectors.

MODULE 5:
A/D and D/A converters, Bipolar-Transistor Characteristics, RTL and DTL circuits, TTL, ECL and C-MOS Logic families.

MODULE 6:
Logic Implementations using ROM, PAL & PLA., Semiconductor Memories Memory Organization & Operation, Classification and Characteristics of Memories, RAM, ROM and content addressable memory.

Text Books:
Malvino and Leach, “Digital principles and applications”, TMH

Reference Books:
1. R.P. Jain, “Modern Digital Electronics”, TMH, 2nd Ed,
3. R. J. Tocci, “Digital Systems”, PHI,
111008 - PROGRAMMING LAB

Implementation of C programs using

1. Input/output statements.
2. Control Statements.
3. Functions (Recursive and Non recursive).
4. Arrays.
5. Pointers.
7. Unions.
8. File Handling.

111009 - DATA STRUCTURES LAB

Write a program using C language for

1. Implementation of Singly, Doubly and Circular linked list.
2. Implementation of Stack using Array and Linked list.
3. Implementation of Applications of Stack.
4. Implementation of Queue using Array and Linked list.
5. Implementation of Circular Queue.
7. Implementation of Binary Tree Traversals.
10. Implementation of AVL Rotations.
OBJECTIVE: To present the concept of object oriented programming and discuss the important elements of C++ and Java.

MODULE 1:
Principles of Object Oriented Programming (OOP) - Object oriented programming paradigm - basic concepts of object oriented programming - benefits of OOP - Beginning with C++ - Applications of C++ - C++ statements - class, structure of C++ program - Expressions and Control Structures - Operators in C++ - scope resolution operator - member de-referencing operators - memory management operators - manipulators - type cast operator - Expressions and implicit conversions - operator overloading - operator precedence - control structures.

MODULE 2:
Functions in C++ - The main function - function prototyping - call by reference - return by reference - inline functions - default arguments - const argument - function overloading - friend and virtual functions - Classes and Objects - Specifying a class - defining member functions - C++ program with class - making an outside function inline - nesting of member functions - private member functions - arrays within a class - memory allocation for objects.

MODULE 3:
Static data members - static member functions - Arrays of objects - objects as a function argument - friendly functions - returning objects - const member functions - pointers to members - Constructors and Destructors - Constructors - parameterized constructors - multiple constructors in a class - constructors with default arguments - dynamic initialization of objects - copy constructor - dynamic constructors - constructing two-dimensional arrays - destructors.

MODULE 4:
Inheritance: Extending Classes: Defining derived classes - single inheritance - making a private member - inheritable - multi level inheritance - multiple inheritance - hierarchical inheritance - and hybrid inheritance - Virtual base classes - abstract classes - constructors in derived classes - member classes - nesting of classes.

MODULE 5:
Pointers - Virtual Functions and Polymorphism: Pointers to objects - pointers to derived classes - virtual functions - and pure virtual functions - Introduction to Java: Byte code - features of Java - data types - variables and arrays - operators - control statements.

MODULE 6:
OOP using Java Inheritance - Packages and Interfaces - Exception Handling in Java - multiple threads and Applets

Text Books:
OBJECTIVE: To provide the fundamental concepts about key systems modeling that apply to both the traditional structured approach and the newer object oriented approach.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
112005 - DATABASE MANAGEMENT SYSTEMS

OBJECTIVE: To provide a Strong foundation in database technology and an introduction to the current trends in this field.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:

References:
122001 - DIGITAL SIGNAL PROCESSING

OBJECTIVE: To review signals and systems, study DFT and FFT, discuss the design of IIR & FIR filters and study typical applications of digital signal processing.

MODULE 1:
Digital Signal Processor: Harvard architecture and modified Harvard architecture. Introduction to fixed point and floating point DSP processors, architectural features, Computational units, bus architecture and memory architecture, data addressing, address generation unit, programme control, programme sequencer, pipelining, interrupts, features of external interfacing, on-chip peripherals, hardware timers, host interface port, clock generator, SPORT.

MODULE 2:
Programming of DSP Processor Addressing modes, Instruction set, Programming tools such as DSP Assembler, IDE environments like CCS for DSP chip or visual DSP for Analog DSP chips, programming using DSP processor.

MODULE 3:

MODULE 4:
Discrete Fourier transform Frequency domain sampling, Discrete Fourier transform (DFT): DFT pair, properties of DFT, frequency response analysis of signals using the DFT, linear filtering based on DFT, Fast Fourier tran(FFT): Introduction, Radix -2 decimation in time FFT algorithm, Radix-2 decimation in frequency algorithm, inverse of FFT.

MODULE 5:

MODULE 6:
DSP Application - Introduction to digital signal processors chips, case study of different DSP applications. Application of filters to analog & digital signal processor, FET spectrum analyzer.

Text books:

References:
122002 - EMBEDDED SYSTEMS

OBJECTIVE: To give sufficient background for undertaking embedded systems design.

MODULE 1:
Introduction to embedded systems: Classification - Characteristics and requirements
Introduction: Embedded systems and its applications - Embedded Operating system - Design
parameters of an embedded system and its significance - design life cycle - tools introduction -
hardware and software partitioning and co-design.

MODULE 2:
Hardware Fundamentals for the embedded developers Digital circuit parameters - Open
collector outputs Tristate outputs I/O sinking and Sourcing - PLD’s - Watchdog Timers - Hardware
design and development - Custom Single Purpose Processors: Optimizing program – FSMD - Data
path & FSM.

MODULE 3:
General purpose processors and ASIP’s (Application Specific Instruction set Programming):
Software and operation of general purpose processors - Programmers View Development
Environment –A SIPs Microcontrollers - DSP Chips - Introduction to Microcontrollers and
Micoprocesors - Embedded versus external memory devices - CISC and RISC processors - Harvard
and Von Neummann Architectures.

MODULE 4:
8051 Microcontrollers - Assembly language – architecture – registers - Addressing modes -
Instruction set - I/O ports and memory organization Interrupts Timer/counter and serial
communication - Embedded Control and Control Hierarchy, Communication strategies for embedded
systems: Encoding and Flow control.

MODULE 5:
Fault-Tolerance Formal Verification - RTOS-Tasks – states – Data - Semaphores and shared
data - Operating system services - Message queues - Mailboxes.

MODULE 6:
Communication basics - Microprocessor Interfacing I/O Addressing - Direct memory access –
Arbitration - multilevel bus architecture - Serial protocols - Parallel protocols and wireless protocols -
Real world Interfacing: LCD - Stepping Motor – ADC – DAC – LED - Push Buttons - Key board -
Latch Interconnection - PPI.

Text Books:
Steve heath, embedded systems design 2nd Edition, Elsevier

References:
122003 - DIGITAL IMAGE PROCESSING

OBJECTIVE: To introduce the student to various image processing techniques.

MODULE 1:

MODULE 2:
- Image Enhancement in Frequency Domain Fourier Transform and the Frequency Domain - Basis of Filtering in Frequency Domain - Filters – Low-pass - High-pass - Correspondence Between Filtering in Spatial and Frequency Domain - Smoothing Frequency Domain Filters – Gaussian Lowpass Filters - Sharpening Frequency Domain Filters – Gaussian Highpass Filters - Homomorphic Filtering.

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:
- Feature Extraction Representation - Topological Attributes - Geometric Attributes – Description Boundary -based Description – Region - based Description - Relationship - Object Recognition Deterministic Methods – Clustering - Statistical Classification - Syntactic Recognition - Tree Search - Graph Matching

Text Books:

References:
OBJECTIVE: To enable the students to learn the fundamental concepts of Multimedia systems and various I/O technologies.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:

References:
112008 - OOPS LAB

1. Programs using Constructor and Destructor.
2. Creation of classes and use of different types of functions.
3. Count the number of objects created for a class using static member function.
4. Write programs using function overloading and operator overloading.
5. Programs using inheritance.
6. Program using friend functions.
7. Program using virtual function.
8. Write a program using exception handling mechanism.
9. Programs using files.
10. Programs using function templates.

112009 - DBMS LAB

1. Execute a single line and group functions for a table.
2. Execute DCL and TCL Commands.
3. Create and manipulate various DB objects for a table.
4. Create views, partitions and locks for a particular DB.
5. Write PL/SQL procedure for an application using exception handling.
6. Write PL/SQL procedure for an application using cursors.
7. Write a DBMS program to prepare reports for an application using functions.
8. Write a PL/SQL block for transaction operations of a typical application using triggers.
9. Write a PL/SQL block for transaction operations of a typical application using package.
10. Design and develop an application using any front end and back end tool (make use of ER diagram and DFD). Typical Applications – Banking, Electricity Billing, Library Operation, Pay roll, Insurance, Inventory, etc.
113001 - DATA COMMUNICATION AND NETWORKS

OBJECTIVE: To provide a unified overview about the broad field of data and computer communications.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
113002 - E-COMMERCE

OBJECTIVE: To learn the advancements of electronic commerce which has become a compelling necessity in the present day communication based commerce which is happening in the digital space.

MODULE 1:

MODULE 2:
Network infrastructure for E-Commerce: Internet and Intranet based E-Commerce issues problems and prospects, Network Infrastructure, Network Access Equipments, Broadband telecommunication (ATM, ISDN, and FRAME RELAY).

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:
Electronic Payments - Overview, The SET protocol, Payment Gateway, certificate, digital Tokens, Smart card, credit and magnetic strip card, E-Checks, Credit / Debit Card based EPS, online Banking. DEI Application in Business, E-Commerce Law, Forms of Agreement, Gove. Policies and Agenda

Text Books:

References:
OBJECTIVE: To assimilate the needs of software usages flawlessly over a long period of time and be more adaptive to changing Technological Environments.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To create analytical skills, to enable students to design algorithms for various applications, and to analyze the algorithms.

MODULE 1:
Notion of Algorithm - Fundamentals of Algorithmic Problem Solving – Important Problem Types – Analysis Frame Work – Asymptotic Notations and Basic Efficiency Classes – Mathematical Analysis of Recursive and Non-Recursive Algorithms – Algorithm Visualization

MODULE 2:

MODULE 3:
Decrease and Conquer – Insertion Sort – Depth First Search and Breadth First Search - Transform and Conquer – Presorting – AVL Trees – Heaps and Heap sort

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
123001 - SYSTEMS PROGRAMMING AND COMPILER DESIGN

OBJECTIVE: To provide the foundation about system software tools and its design aspects.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:

References:
123002 - WEB TECHNOLOGY

OBJECTIVE: Providing lucid explanation about the Idea of Inputs Output Streams on Both Client and Server side programming and Transaction Filtering.

MODULE 1:

MODULE 2:

MODULE 3:
Java Programming - Classes - Constructors – Objects and Creation - Inherits - Interfacing methods - Abstract - Class - Data Encapsulation – Multiple Threads.

MODULE 4:

MODULE 5:
CGI - Server Browser, Interaction, CGI Script - Server side and Client Side Applets – Servlets - Servlets -API Handling GET and POST Request –Cookies - Session Tracking.

MODULE 6:

Text books:
123004 - HIGH SPEED NETWORKS

OBJECTIVE: To understand the technology that dominates the field of high speed networking

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To provide an in depth understanding in the field of mobile computing and mobile communication technology and application.

MODULE 1:
Wireless - mobile computing – networks - middleware and gateways - developing mobile computing applications - mobile computing architecture - mobile computing thro internet, through telephony - developing IVR application – voice XML – TAPI

MODULE 2:
Emerging technologies – Bluetooth – RFID – WiMAX - mobile IP and IPv6 - java card - GSM principles and architecture - call routing - GSM address and identifiers - network aspects - GSM frequency allocation - mobile computing over sms - value added services.

MODULE 3:

MODULE 4:
Wireless LAN- architecture-mobility-mobile adhoc networks and sensor networks-IEEE 802.11 standards-Wi-Fi vs. 3G

MODULE 5:
Call processing – soft switch - mobile phones – PDA - palm OS history, architecture and application - Symbian OS, architecture, applications, and controls – localization.

MODULE 6:
Java in handset-J2ME technology-programming for CLDC-multimedia-record management system-windows CE architecture - VoIP – convergence technologies - mobile VoIP - information security

Text books:

References:
113007 - NETWORK LAB

1. Retrieving data with URLs

2. Implementation of Socket Programming
   a. Using TCP/IP
   b. Using UDP

3. Implementation of FTP

4. Implementation of ECHO/PING/TALK

5. Implementation of Remote command Execution

6. Implementation of ARP

7. Implementation of RARP

8. Implementation of RMI / RPC

9. Implementation of Shortest Path Routing Algorithm

10. Implementation of Sliding Window Protocol
1. Write programs in Java to demonstrate the use of following components Text fields, buttons, Scrollbar, Choice, List and Check box.

2. Write Java programs to demonstrate the use of various Layouts like Flow Layout, Border Layout, Grid layout, Grid bag layout and card layout.

3. Write programs in Java to create applets incorporating the following features:
   - Create a color palette with matrix of buttons
   - Set background and foreground of the control text area by selecting a color from color palette.
   - In order to select Foreground or background use check box control as radio buttons
   - To set background images

4. Write programs in Java to do the following.
   - Set the URL of another server.
   - Download the homepage of the server.
   - Display the contents of home page with date, content type, and Expiration date. Last modified and length of the home page.

5. Write programs in Java using sockets to implement the following:
   - HTTP request
   - FTP
   - SMTP
   - POP3

6. Write a program in Java for creating simple chat application with datagram sockets and datagram packets.

7. Write programs in Java using Servlets:
   - To invoke servlets from HTML forms
   - To invoke servlets from Applets

8. Write programs in Java to create three-tier applications using servlets
   - for conducting on-line examination.
   - for displaying student mark list. Assume that student information is available in a database which has been stored in a database server.

9. Create a web page with the following using HTML
   i) To embed a map in a web page
   ii) To fix the hot spots in that map
   iii) Show all the related information when the hot spots are clicked.

10. Create a web page with the following.
    i) Cascading style sheets.
    ii) Embedded style sheets.
    iii) Inline style sheets.
    iv) Use our college information for the web pages.
OBJECTIVE: To make the students to understand the principles of encryption algorithms, conventional and public key cryptography.

MODULE 1:
Introduction to security attacks - services and mechanism - introduction to cryptography - Conventional Encryption: Conventional encryption model - classical encryption techniques - substitution ciphers and transposition ciphers – cryptanalysis – stereography - stream and block ciphers - Modern Block Ciphers: Block ciphers principals - Shannon’s theory of confusion and diffusion - fiestal structure - data encryption standard (DES) - strength of DES - differential and linear crypt analysis of DES - block cipher modes of operations - triple DES.

MODULE 2:
IDEA encryption and decryption - strength of IDEA - confidentiality using conventional encryption - traffic confidentiality - key distribution - random number generation - Introduction to graph - ring and field - prime and relative prime numbers - modular arithmetic - Fermat’s and Euler’s theorem - primality testing - Euclid’s Algorithm - Chinese Remainder theorem - discrete algorithms.

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: To provide a basic exposition to the goals and methods of artificial intelligence and to enable the student to apply these techniques in applications which involve perception, reasoning, and learning.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:

References:
OBJECTIVE: To understand their fast growing technologies related to networks and internetworking.

MODULE 1:

MODULE 2:

MODULE 3:

MODULE 4:

MODULE 5:

MODULE 6:

Text Books:
OBJECTIVE: Enhance the traditional information presentation technologies by bringing the data for their creation into a single source.

MODULE 1:
Data Warehouse – definition and characteristics – Data Warehouse Architecture – Client / Server computing model – Server Functions – Server Hardware Architecture – RISC Versus CISC – Distributed memory – Cluster Systems – Server OS, Unix, Windows NT, OS/2, NetWare

MODULE 2:

MODULE 3:
Data Warehouse Database, Sourcing, Acquisition, Cleanup and Transformation Tools – Access Tools - Query and Reporting Tools, OLAP – Data Marts – Information Delivery System

MODULE 4:

MODULE 5:

MODULE 6:
Decision Trees – Neural Networks – Business Score Card and Clustering and Nearest-Neighbor – Prediction and analysis – Genetic Algorithms - Usage and Applications - Data Visualization Principles – Data Warehouse market

Text Books:--
Alex Berson, Stephen J. Smith, “Data Warehousing, Data- Mining and OLAP”, Tata McGraw Hill

References:--
Jiawei Han, Micheline Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Publishers, 2002.